REMEDIAL INVESTIGATION REPORT

for

QUEENS PLAZA NORTH
29-37 41st Avenue /
29-27 Queens Plaza North
Long Island City, New York
Block 403, Lots 21 and 26
NYSDEC BCP Site No. C241171

Prepared For:

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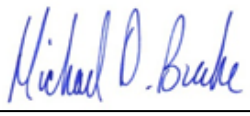

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Langan Project No. 170316401

LANGAN

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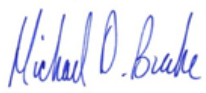
LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
ACM	Asbestos Containing Material
ASTM	American Society for Testing and Materials
AWQS	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	Benzene, Toluene, Ethlylbenzene, and Xylenes
CAMP	Community Air Monitoring Program
COC	Contaminant of Concern
CPT	Cone Petrometer Testing
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DO	Dissolved Oxygen
DUSR	Data Usability Summary Report
EDR	Environmental Data Resources
ELAP	Environmental Laboratory Approval Program
EPA	United Stated Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FINDS	Facility Index System/Facility Registry System
FWRIA	Fish and Wildlife Resources Impact Analysis
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
ID	Inside Diameter
IDW	Investigation Derived Waste
IRM	Interim Remedial Measure
LBP	Lead Based Paint
LNAPL	Light Non-Aqueous Phase Liquid
LQG	Large Quantity Generator
MIP	Membrane Interface Probe
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MTBE	Methyl butyl tert ether
NAVD88	North American Vertical Datum of 1988
NGVD29	National Geodetic Vertical Datum of 1929 at Sandy Hook, NJ
NYCRR	New York Codes, Rules, and Regulations
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
NTU	Nephelometric Turbidity Units

Acronym	Definition
OD	Outside Diameter
ORP	Oxidation-Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RRU	Restricted Residential Use
SCO	Soil Cleanup Objective
SIR	Site Investigation Report
SMD	Submembrane Depressurization System
SMMP	Soil/Materials Management Plan
STARS	Spills Technology and Remediation Series
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
UN/DOT	United Nations Department of Transportation
USGS	United States Geological Survey
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

CERTIFICATION

I, Michael D. Burke, certify that I am currently a Qualified Environmental Professional as defined in Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 and that this Remedial Investigation Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and that the remedial investigation was performed in accordance with the DER-approved Remedial Investigation Work Plan (RIWP).



Michael D. Burke, LEED AP, CHMM

1.0 INTRODUCTION

This Remedial Investigation Report (RIR) was prepared on behalf of Queens Plaza Park Development LLC (the "Volunteer") for the Queens Plaza North property at 29-37 41st Avenue/29-27 Queens Plaza North in Long Island City, New York (the "site"). The Volunteer will remediate the site in conjunction with new development under the New York State Brownfield Cleanup Program (BCP), pursuant to a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC), dated July 23, 2015, for Site No. C241171.

This RIR presents environmental data and findings from a remedial investigation (RI) that was implemented by Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) from February 10 to 26, 2016, and a supplemental soil investigation that was implemented by Langan on April 4, 2016. The objective of the RI and the supplemental soil investigation was to 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. Information presented in this RIR will be used to evaluate the appropriate remedial action alternatives, which will be presented in the forthcoming Remedial Action Work Plan (RAWP).

This RIR is organized as follows:

- Section 2.0 describes the setting and physical characteristics of the site.
- Section 3.0 describes the site background including results of previous investigations and identified areas of concern (AOCs).
- Section 4.0 presents the investigation field procedures.
- Section 5.0 describes the field observations and analytical results.
- Section 6.0 presents an assessment of the exposure risks of site contaminants to human, fish, and wildlife receptors.
- Section 7.0 presents the nature and extent of contamination in site media as determined through the field investigation and analysis of environmental samples.
- Section 8.0 summarizes the results of the investigation and presents conclusions based on field observations and analytical results.
- Section 9.0 presents the references used in preparation of this report.

2.0 SITE PHYSICAL CHARACTERISTICS

2.1. Site Description

The site is comprised of four contiguous lots in the Long Island City neighborhood of Queens:

- 29-19 41st Avenue (Block 403, Lot 6);
- 29-23 Queens Plaza North (Block 403, Lot 11);
- 29-47 Northern Boulevard (Block 403, Lot 10); and
- 29-27 Queens Plaza North (Block 403, Lot 9).

The cumulative footprint of the site is about 29,500 square feet (0.68 acres). The above tax lots constitute a reconfiguration of the site, which previously consisted of two tax lots (as referenced in the RIWP): 29-27 Queens Plaza North (Block 403, Lot 21) and 29-37 41st Avenue (Block 403, Lot 26). Lot 9 is improved with a landmarked 10-story commercial office building with a cellar, and Lot 10 consists of an eastern adjoining asphalt-paved parking lot. The building was vacated of all tenants on October 31, 2015. Lots 6 and 11 consist of vacant land covered with sand, gravel, vegetative overgrowth and construction debris. The Volunteer intends to amend the BCA to exclude Lot 9 from the BCP. A Site Location Map and Site Plan are provided in Figures 1 and 2, respectively.

Two storage tanks are registered with the NYSDEC Petroleum Bulk Storage (PBS) database, including an active 5,000-gallon heating oil aboveground storage tank (AST) located in the cellar of the existing building on Lot 9 (PBS No. 2-235040) and an abandoned 2,000-gallon fuel oil storage tank (PBS No. 2-347493) on Lot 6 or Lot 11 (formerly Lot 26). The location of the abandoned storage tank has not been identified. Two abandoned fill ports are located on the eastern adjoining sidewalk fronting Northern Boulevard and the western adjoining sidewalk fronting 41st Avenue, and may be associated with the former tank.

2.1.1. Description of Surrounding Properties

The site is located in an urban setting characterized by commercial and industrial buildings. The following is a summary of surrounding property usage:

Direction	Block	Lot	Adjoining Properties	Surrounding Properties
North	403	1	Metropolitan Transportation Authority (MTA) East Side Access (ESA) Tunnel Project (construction site)	Multiple-story commercial and industrial buildings

Direction	Block	Lot	Adjoining Properties	Surrounding Properties
South	NA	NA	41st Avenue (Queens Plaza North) followed by Queens Plaza (public space) and Queens Plaza South	Multiple-story commercial buildings and a vacant lot
East	New York City Transit Authority (NYCTA) elevated and underground subway lines and Northern Boulevard followed by:			MTA ESA Tunnel Project staging area and Long Island Railroad (LIRR) and Amtrak rail yard (Sunnyside Yard)
	239	36	MTA ESA Tunnel Project	
		34	Four-story commercial office building	
West	418	24	41st Avenue followed by a mid-rise building redevelopment site and a 12-story mixed-use building	Multiple-story commercial and residential buildings
		14		

Land use within a half mile of the site is primarily commercial and industrial, but also includes residential buildings, public park areas, day care centers and school facilities. The nearest ecological receptor is the Dutch Kills, which is located about 2,600 feet to the south. Sensitive receptors, as defined in NYSDEC Program Policy DER-10: Technical Guidance for Site Investigation and Remediation (DER-10), located within a half mile of the site include those listed in the following table. Potential sensitive receptors within 500 feet are in bold.

Number	Name (Approximate distance from Site)	Address
1	**Academy of American Studies High School (370 feet northwest)**	**28-04 41st Avenue, Queens, New York 11101**
2	**New York City Outward Bound Center (370 feet east)**	**29-46 Northern Boulevard Long Island City, New York 11101**

Number	Name (Approximate distance from Site)	Address
3	**Newcomers High School (430 feet northwest)**	**28-01 41st Avenue, Long Island City, New York 11101**
4	**Academy for New Americans (430 feet northwest)**	**28-04 41st Avenue, Long Island City, New York 11101**
5	21st Century – Sunnyside Community (530 feet northwest)	28-01 41st Avenue, Long Island City, New York 11101
6	OST Global Kids (530 feet northwest)	28-01 41st Avenue, Long Island City, New York 11101
7	Long Island City Family Daycare, Inc. (580 feet northwest)	40-34 28th Street Long Island City, New York 11101
8	St. Patrick's School (900 feet north)	39-37 28th Street, Long Island City, New York 11101
9	Growing Up Green Charter School (Q321) (960 feet north)	39-37 28th Street, Queens, New York 11101
10	Queens Adult Learning Center (1,170 feet southwest)	42-15 Crescent Street Long Island City, New York 11101
11	Evangel Christian School (1,320 feet northwest)	3921 Crescent Street Long Island City, New York 11101
12	Catholic Charities Neighborhood Services, Inc. (1,750 feet north)	38-11 27th Street Long Island City, New York 11101
13	Index 1 – CCNS (1,750 feet north)	38-11 27th Street Long Island City, New York 11101
14	Frank Sinatra High School (2,060 feet south)	30-20 Thomson Avenue, Long Island City, New York 11101
15	WIA InSchool Youth (2,120 feet south)	30-10 Thomson Avenue Long Island City, New York 11101
16	Queensbridge Daycare Center (2,120 feet north)	38-11 27th Street Long Island City, New York 11101
17	21st Century – Sunnyside Community (2,120 feet south)	30-20 Thomson Avenue, Long Island City, New York 11101
18	YMCA of Greater New York (2,170 feet south-southeast)	32-23 Queens Blvd, Long Island City, New York 11101
19	La Guardia Community College - ECLC (2,330 feet south)	31-10 Thomson Avenue, Long Island City, New York, 11101
20	Fiorello H Laguardia Community College (2,330 feet south)	31-10 Thomson Avenue, Long Island City, New York, 11101

Number	Name (Approximate distance from Site)	Address
21	City University of New York School of Law (2,330 feet southwest)	23-21 44th Drive Long Island City, New York 11101
22	International High School at La Guardia CC (2,330 feet south)	31-10 Thomson Avenue, Long Island City, New York, 11101
23	Middle College High School at La Guardia CC (2,330 feet south)	31-10 Thomson Avenue, Long Island City, New York, 11101
24	OST Global Kids (2,380 feet south)	31-10 Thomson Avenue, Long Island City, New York 11101
25	21st Century – Citizen Community of NY City (2,380 feet south)	31-10 Thomson Avenue Long Island City, New York 11101
26	Beacon – HANAC (2,540 feet north)	36-41 28th Street Astoria, New York 11106
27	IS 204 Oliver W Holmes (2,540 feet north)	36-41 28th Street Astoria, New York 11106
28	PS 112 Dutch Kills (2,640 feet north)	25-05 37th Avenue Long Island City, New York 11101

A map showing the surrounding land uses and the locations of the nearest sensitive receptors is included as Figure 3.

2.1.2. Topography

Sidewalk grades generally decrease from the northwestern to the southeastern corner of the site. The sidewalk elevations along Northern Boulevard at the eastern boundary of the site range from north to south between about elevation (el) 25[1] to el 27. The sidewalk elevations along 41st Avenue, at the western boundary of the site, range from north to south between about el 33 to el 29. Regional topography generally slopes downwards to the south towards the Dutch Kills.

2.1.3. Surface Water and Drainage

Lots 9 and 10 are covered by impervious surfaces consisting of a concrete building slab and an asphalt-paved parking lot. Lots 6 and 11 consist of vacant land covered with sand, gravel, vegetative overgrowth and construction debris, including compacted concrete. The majority of runoff from Lots 6, 10, and 11 is expected to drain to the city sewers via catch basins located along the street curbs south and east of the site. A portion of the precipitation that falls on the

[1] All elevations are referenced to North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.

exposed, uncompacted portions of Lots 6 and 11 is expected to infiltrate the water table via percolation through surface soil and the vadose zone.

The site is described within two National Flood Insurance Rate Maps for the City of New York published by the Federal Emergency Management Agency (FEMA); Community Panel No. 360497 0206 F and Community Panel No. 360497 0093 F. Both maps were last revised on September 5, 2007. The site is located within Zone X, which is designated for areas of 0.2 percent annual chance flood; areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood.

2.1.4. Wetlands

Wetlands on or near the site were evaluated by reviewing the National Wetlands Inventory and NYSDEC regulated wetlands map. There are no wetlands on or adjacent to the site. The nearest wetlands are the Dutch Kills and the East River, which are located about 2,600 feet to the south and 4,300 feet to the west, respectively.

2.2. Regional Geology and Hydrogeology

2.2.1. Regional Geology

Pleistocene glacial activity modified the landscapes and surficial features of Brooklyn, Queens, and the remainder of Long Island. The glaciation scoured upland areas and deposited varying amounts of till (an unsorted mixture of sand, clay and boulders) across the lowlands and valleys. The site is within the bounds of the former glacial Lake Flushing in the Coastal Plain geologic province. Lake Flushing deposits consist of inter-layered fine sand, silt, and clay. Boulder-laden glacial till and below that, bedrock, underlay the lacustrine deposits. Bedrock outcrops were not observed at the site.

According to the United States Geological Survey (USGS) Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York, and parts of Bergen and Hudson Counties, New Jersey, dated 1994, the site is underlain by the Middle Ordovician to Lower Cambrian Hartland Formation, which generally consists of mica schist and gneissic granite with local occurrences of amphibolite and pegmatite. A geotechnical investigation completed by Langan in May 2015 identified bedrock consisting of schist at depths varying between about 67 and 93 feet below grade surface (ft bgs) (el -43 to el -63).

2.2.2. Regional Hydrogeology

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeological

network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeologic and anthropogenic variables such as precipitation, evaporation, extent of vegetative cover, and coverage by impervious surfaces. Other factors influencing groundwater include depth to bedrock, the presence of artificial fill, and variability in local geology and groundwater sources or sinks.

Infiltration of precipitation to the water table is likely minimal due to the presence of impervious or semi-impervious surfaces throughout the site, including a concrete slab, asphalt, and compacted concrete, soil, and gravel in the vacant lot. The majority of runoff drains to city sewers, then to one of the several wastewater treatment plants that serve the city. Groundwater in New York City is not used as a potable water source. Potable water provided to the City of New York is derived from surface impoundments in the Croton, Catskill, and Delaware watersheds. Based on groundwater elevations measured during this remedial investigation, the inferred local groundwater gradient is from the southwest towards the northeast. The regional topographic profile and proximity of the site to the Dutch Kills indicate that groundwater regionally flows towards the south. Construction dewatering on the northern MTA East Side Access Tunnel property may result in an anomalous groundwater gradient at the site.

3.0 SITE BACKGROUND

This section describes historical site use, the proposed redevelopment, and provides discussion on the findings from previous environmental and geotechnical investigations. AOCs were developed based on a review of the previous reports and are summarized in Section 3.5.

3.1. Historical Site Use

The site has been developed since the late 1800s. As early as 1898, both lots were occupied by multiple structures, including a hotel, office building and motorcycle repair shop on Lots 9 and 10 and multiple-story buildings of indeterminate usage, a gymnasium, a bowling alley and a portion of a dance hall on Lots 6 and 11. The existing 10-story commercial office building on Lot 9 was constructed in 1926 and an addition was constructed in 1931. A hotel located on the northeastern corner of Lot 6 was demolished between 1947 and 1950.

A multiple-story commercial bank was constructed on Lot 11 in 1921, and a second multiple-story building was constructed directly north of the bank in 1962. Both buildings were demolished in the early 2000s, and backfill was used to grade the vacant portions of the site. From approximately 1936 to 1970, the southern portion of an automotive repair and painting facility with seven gasoline underground storage tanks (USTs) straddled the northeastern border of Lot 6. A historical site usage map is included as Figure 4.

3.2. Proposed Redevelopment Plan

The purpose of the project is to redevelop the northern portion of the site (Lot 6) into a 67-story residential tower (Building A) that connects to the existing 10-story building (Building C), which will be renovated to include residential amenities and commercial units. A two-story building (Building B) and a four-story commercial building (Building D) will be constructed on Lot 10 along Northern Boulevard and Lot 11 along 41st Avenue, respectively. Building B will contain commercial tenant spaces and mechanical rooms, including a stormwater detention tank. Building D will contain parking and commercial tenant spaces. The building locations are shown on Figure 5.

The development project will be constructed at a sub-grade elevation ranging between el -3 and el 26, as follows:

- Building A: Cellar top of slab (TOS) - el 22 (9 ft bgs)

  Sub-cellar TOS (eastern portion) – el 14 (14 ft bgs)

  Two elevator pits (TOS) – el -3 (30 ft bgs)
- Building B: Cellar TOS – el 14 (14 ft bgs)

Slab-on-Grade portion – el 26 (1 ft bgs); historic fill removal for Track 1 remediation from about 4 to 8 ft bgs

- Building C: No additional excavation below existing cellar
- Building D: Sub-cellar TOS – el 8 (24 ft bgs)
- Northern Boulevard Sidewalk Extension: el 26 to el 24 (1 ft bgs); historic fill removal for Track 1 remediation from about 4 to 8 ft bgs

The Volunteer intends to amend the BCA to exclude Building C from the BCP. Proposed development plans are provided in Appendix A.

3.3. Previous Environmental Reports and Documents

Previous environmental reports were reviewed as part of this RIR and are summarized in chronological order below. The environmental reports are included in Appendix B.

Phase I Environmental Site Assessment (ESA) for 29-27 Queens Plaza North in Long Island City, New York, prepared by Middleton Environmental Inc. (MEI), dated March 10, 2014

MEI performed a Phase I ESA of the former Lot 21 (Lots 9 and 10) on behalf of Criterion Group LLC. The Phase I ESA was conducted in accordance with the American Society for Testing Materials (ASTM) Standard Practice E1527-05. At the time of the assessment, the site building contained an art gallery in the cellar and ground floor and commercial office tenants on the upper floors. The building was constructed in 1926. The report did not identify recognized environmental conditions (RECs). However, an on-site spill associated with the removal of a 550-gallon gasoline UST was reported to NYSDEC (Spill No. 0612458) in 2006. Endpoint soil samples collected following the removal of the UST and underlying contaminated soil indicated "slightly elevated levels of semivolatile organic compounds (SVOC)." NYSDEC determined that the spill was properly remediated and closed the spill in February 2007. The report also noted that a 5,000-gallon fuel oil AST is located in the cellar of the building, and friable and non-friable asbestos-containing materials (ACM) were observed in multiple areas throughout the building.

Phase I ESA for 29-37 41st Avenue, prepared by Langan, dated August 7, 2014

Langan performed a Phase I ESA of the former Lot 26 (Lots 6 and 11) on behalf of Dynamic/Hakim LLC. The Phase I ESA was conducted in accordance with ASTM E1527-13 and the United States Environmental Protection Agency's (USEPA) All Appropriate Inquiry (AAI) Rule. At the time of the Phase I ESA, Lot 26 was a vacant lot covered mostly by sand, gravel, and vegetative overgrowth. The following RECs were identified:

- Historical PBS Tank: An on-site 2,000-gallon fuel oil storage tank is registered with the NYSDEC PBS Database (PBS Facility No. 2-347493). The tank may be associated with a

fuel oil fill port observed on the eastern adjoining Northern Boulevard sidewalk. Based on the absence of documentation regarding closure or removal of the tank, historical spills from the tank may have adversely impacted soil, soil vapor and/or groundwater.

- Historical Automotive Repair and Painting Facility (Partially On-Site): An automotive repair and painting facility containing seven gasoline storage tanks was located immediately north of the site along Northern Boulevard between 1936 and 1970. The southern corner of the facility protruded onto the northern portion of the site. Leakage or spillage of petroleum products or solvents associated with the gasoline tanks and facility operations and unauthorized dumping may have adversely impacted soil, soil vapor, and/or groundwater.
- Potential Uncontrolled Backfill: Site grading, following demolition of the former on-site buildings, may have required the import of backfill containing contaminant concentrations above regulatory cleanup objectives.
- Historical Off-Site Use and Releases: Potential adverse impacts to groundwater and soil vapor may have originated from historical petroleum or other chemical usage and/or releases at surrounding properties, including:
    - A gasoline station with three gasoline tanks located about 50 feet west of the site near the intersection of 41st Avenue and 29th Street (1936 – 1947);
    - A historical fuel oil spill (NYSDEC Spill No. 9100729) with no documented endpoint sampling located immediately east of the site across Northern Boulevard;
    - A cleaning chemical manufacturing facility about 250 feet north of the site on 41st Avenue (1947 – 1950); and
    - A historical chemical manufacturing facility with documented solvent and free-phase petroleum contamination, including off-site impacts, located about 400 feet south of the site near the intersection of Queens Boulevard and Jackson Avenue.

Phase II Environmental Site Investigation (ESI) for 29-37 41st Avenue and 29-27 Queens Plaza North, prepared by Langan, dated November 3, 2014

Langan performed a Phase II ESI on the site in October 2014 on behalf of Queens Plaza Park Development LLC. The Phase II ESI included a geophysical survey; advancement of nine soil borings; installation of temporary monitoring wells in seven of the nine soil borings; installation of five soil vapor sample points; and collection and laboratory analysis of fourteen soil samples, seven groundwater samples and five soil vapor samples.

The geophysical survey identified four anomalies indicative of potential USTs on the northern and eastern portions of Lot 6. One of the anomalies potentially corresponded to an abandoned, registered 2,000-gallon fuel oil UST and/or a fill port located on Northern Boulevard.

Multiple SVOCs, metals, and pesticides were detected at concentrations above the respective Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) in soil samples collected from the borings. One boring collected from underneath the existing building contained individual polycyclic aromatic hydrocarbon (PAH) concentrations (specifically benzo[b]fluoranthene) as high as 9.4 milligrams per kilogram (mg/kg), which, in conjunction with the presence of naphthalene, may indicate a potential petroleum release. SVOCs are not generally characteristic of native soil; however, SVOCs were detected in the sample collected from the 20 to 22 ft bgs depth interval on the southeastern portion of the site in boring SB-7.

A sample of historical fill material collected near the southeastern portion of the site in boring SB-5 exhibited a toxicity characteristic leaching procedure (TCLP) lead concentration above the USEPA Hazardous Waste Regulatory Limit. This soil will be considered a Resource Conservation and Recovery Act (RCRA) characteristic waste upon excavation.

The analytical results of groundwater sampling did not indicate petroleum or other chemical impacts. Multiple petroleum-related volatile organic compounds (VOC) were detected in the soil vapor samples. The Phase II ESI soil sampling locations and results are shown on Figure 6.

Supplementary Soil and Groundwater Sampling, completed by Langan in January 2015

Langan conducted supplemental soil and groundwater sampling on the former Lots 21 and 26 (Lots 6, 10, and 11) to further characterize historic fill, delineate the extent of lead-impacted hazardous waste material, and investigate the geophysical anomalies identified during the October 2014 Phase II ESI. The scope, findings, and data from the supplemental investigation have been incorporated into this RIR. The supplemental investigation included the following:

- Advancement of 15 borings on Lots 6 and 11 to depths ranging from 10 to 24 ft bgs, and collection of 37 grab soil samples for laboratory analysis.
- Advancement of 9 hazardous lead delineation borings on Lot 10 and collection of 10 grab soil samples for laboratory analysis.
- Advancement of 1 geotechnical boring on Lot 10 and collection of 2 grab soil samples for laboratory analysis.
- Excavation of 9 test pits on Lot 6 and collection of 9 grab soil samples for laboratory analysis.

- Installation of one permanent well (MW-8) on Lot 11 and one temporary groundwater monitoring well on Lot 6, and installation of one permanent well (MW-33) on Lot 10. Three groundwater samples were collected from the wells for laboratory analysis.

The investigation yielded the following findings:

- VOCs were not identified in soil at concentrations above the Part 375 Unrestricted Use SCOs.
- Soil samples collected from historic fill material within three borings and three test pits contained up to six SVOCs above the Part 375 Restricted Residential Use SCOs. One soil boring contained lead at a concentration above the Part 375 Restricted Residential Use SCO.
- Soil samples collected from Lot 10 indicated that hazardous lead waste is confined to an approximate 100 square-foot area that extends to a depth of 6 ft bgs.
- Groundwater samples exhibited concentrations of magnesium and sodium above the NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) for Class GA.

The supplemental soil sampling locations and results are shown on Figures 7 and 8.

Soil Excavation Work Plan, completed by Langan in January 2016

The Soil Excavation Work Plan (SEWP), which was approved by the NYSDEC in a letter dated January 26, 2016, covers earthwork to be completed during construction of the support of excavation (SOE) system and foundation elements and excavation to construction sub-grade. The scope of the SEWP includes the following:

- Removal of abandoned fuel oil fill ports and associated underground piping in the northeastern corner of Lot 6 near Northern Boulevard and in the western portion of Lot 11 near 41st Avenue, and decommissioning and removal of any associated USTs. A contingency is included in the event that USTs are found at these locations.
- Excavation and off-site disposal of soil impacted with hazardous concentrations of lead in the western portion of Lot 10.
- Excavation and off-site disposal of historic fill material impacted with SVOCs and metals and native soil to depths ranging from approximately 6 to 30 ft bgs to accommodate construction of the SOE and foundation elements and excavation to construction sub-grade. The historic fill ranges in thickness from approximately 3 to 18 feet.
- Decommissioning and removal of one 2,000-gallon abandoned UST that remains registered on Lots 6 or 11, if identified during earthwork activity.

- Stockpiling and off-site disposal of SVOC- and metals-impacted historic fill and native soil generated during installation of soldier piles, secant piles, and caissons.
- Stockpiling and off-site disposal of soil generated during excavation near soldier piles to allow for installation of tie-backs along the western site perimeter.

3.4. Geotechnical Engineering Study

Langan conducted a geotechnical subsurface investigation in March and June 2015. The investigation consisted of the advancement of eight soil borings, collection of soil and rock samples, performance of a standard penetration testing (SPT) in general accordance with ASTM D1586, and excavation of four test pits. The purpose of the investigation was to characterize subsurface conditions, develop foundation design recommendations, and develop geotechnical engineering recommendations related to the design and construction of the proposed development.

Geotechnical borings were completed to depths ranging from about 85 to 103 ft bgs, and the test pits were excavated to depths ranging from 5 to 15 ft bgs. The borings and test pits revealed historic fill material to depths ranging from about 4 to 14 ft bgs (el 31 to el 18). The fill generally consists of a mixture of sand, gravel, and silt with variable amounts of brick and concrete and is underlain by glacial till comprised of inter-layered sand, silty sand, and clayey sand. Glacial till was encountered below the fill to depths ranging from about 60 to 77 ft bgs (el -27 to el -47). A layer of decomposed rock that varies in thickness from 2 to 8 feet underlies the glacial till. Competent bedrock was encountered at depths ranging from about 62 to 93 feet bgs (el -29 to el -63). The Geotechnical Engineering Report, dated May 2015 and revised October 2015, is included in Appendix C.

3.5. Summary of Areas of Concern

Based on site observations, the site development history, and the findings of the previous environmental investigations, the AOCs that require further investigation include the following:

AOC 1: Historic Fill including Area of Hazardous Lead Contamination

Material from an unknown source was used as backfill during various phases of the site development history. The fill extends to depths ranging from about 3 to 19 ft bgs. Based on the findings of previous investigations, the fill is impacted with PAHs and metals at concentrations above the Part 375 Unrestricted Use and Restricted Residential Use SCOs. Fill containing hazardous concentrations of lead has been identified on Lot 10. The hazardous soil will be removed during the remedial excavation activities addressed in the NYSDEC-approved Soil Excavation Work Plan, prepared by Langan, dated January 26, 2016. The soil will be properly characterized, managed, transported, and disposed of at a facility permitted to accept such material.

AOC 2: Geophysical Anomalies

The October 2014 geophysical survey identified four geophysical anomalies on the northern and eastern portions of Lot 6. Test pit exploration during the January 2015 supplemental investigation did not reveal the source of the anomalies.

AOC 3: Potential Abandoned USTs

Fill ports were observed on the Northern Boulevard and 41st Avenue sidewalks near the eastern boundary of Lot 6 and the western boundary of Lot 11. The fill ports may be connected to abandoned USTs and buried pipe on the site.

AOC 4: Historical Auto Repair Facility

Between 1936 and 1970, an automotive repair and painting facility containing seven gasoline storage tanks was located along Northern Boulevard, and extended onto the northeastern portion of the site from the northern adjoining property. Leakage or spillage of petroleum products or solvents associated with the gasoline tanks and facility operations and unauthorized dumping may have adversely impacted soil, soil vapor, and/or groundwater.

An AOC map is provided as Figure 9.

4.0 FIELD INVESTIGATION

4.1. February 2016 Remedial Investigation

The scope of the RI included a geophysical survey, test pit excavation and sampling, soil boring advancement, monitoring well installation, soil vapor sample point installation, and collection of soil, groundwater, and soil vapor samples. A summary of samples collected is provided in Table 1, and sample locations are shown on Figure 9.

The RI consisted of the following:

Geophysical Survey

- The survey attempted to identify potential USTs, underground utilities, and other subsurface anomalies in areas throughout the site, including those near proposed boring locations and areas previously inaccessible due to vegetation. The test pit and soil boring locations were confirmed based on the results of the geophysical survey.

Test Pit Excavation and Sampling

- Seven test pits (TP10 through TP16) were excavated to further investigate potential subsurface structures.
- Five test pits (TP11 through TP15) were excavated to depths ranging from about 6 to 8 ft bgs to investigate potential USTs, vaults, and/or other contaminant sources associated with the geophysical anomalies identified during the Phase II ESI. One test pit (TP10) was excavated to about 8 ft bgs to investigate a potential abandoned fill line associated with the fill port on the 41st Avenue sidewalk, and a second test pit (TP16) was excavated to about 6 ft bgs to investigate a potential abandoned fill line associated with the fill port on the Northern Boulevard sidewalk.
- Evidence of potential soil impacts, based on staining, odors, and/or organic vapor concentrations above background, was not observed in the test pits; therefore, soil samples were collected only from test pits where subsurface structures (e.g., former foundation walls, a buried layer of recycled concrete aggregate [RCA], former utilities, etc.) were observed.

Soil Boring Advancement and Sampling

- Ten soil borings (SB37 through SB46) were advanced and two soil samples were collected from each soil boring, for a total of 20 soil samples (plus quality assurance/quality control [QA/QC] samples).
- Six of the borings (SB37, SB38, SB39, SB41, SB42 and SB46) were advanced to about 28 ft bgs (about 6 feet below the observed groundwater table) to accommodate monitoring well installation; one boring (SB40) was advanced to about 16 ft bgs (i.e., the

proposed development depth); one boring (SB43) was advanced to 20 ft bgs (i.e., about 2 ft above the groundwater interface); and the remaining two borings (SB44 and SB45) were advanced to about 28 and 24 ft bgs, respectively (i.e., below historic fill).

Monitoring Well Installation and Sampling

- Six permanent groundwater monitoring wells (MW37, MW38, MW39, MW41, MW42 and MW46) were installed at the corresponding soil boring locations. One groundwater sample was collected from each monitoring well, with the exception of MW41, and from existing wells MW8 and MW33, for a total of eight groundwater samples (including one field duplicate sample). Insufficient groundwater volume in well MW41 precluded sample collection.
- The new and existing monitoring wells were surveyed and gauged to evaluate groundwater flow direction.

Soil Vapor Sample Point Installation and Sampling

- Five soil vapor sample points (SV5 and SV7 through SV10) were installed to a depth about 6 inches below the corresponding planned development depth (about 13 ft bgs). Sample point SV6 was installed above the corresponding development depth in the proposed sub-cellar area (about 25 ft bgs) to facilitate sample collection above the groundwater table. One soil vapor sample was collected from each sample point for a total of six samples (plus QA/QC sampling).

Langan conducted the RI in accordance with 6 NYCRR Part 375, the NYSDEC DER-10 (May 2010), the NYSDEC Draft BCP Guide (May 2004), and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).

4.1.1. Geophysical Investigation

On November 24, 2015, NOVA Geophysical & Environmental, Inc. (NOVA) of Douglaston, New York, conducted a geophysical survey under the supervision of a Langan field engineer. The survey was conducted using electromagnetic and utility line locator instruments, a magnetometer, and ground-penetrating radar (GPR) to (1) identify potential subsurface utilities, USTs, and other buried structures across the site; (2) investigate for the presence of potential petroleum USTs associated with the fill ports located on Northern Boulevard and 41st Avenue; (3) locate the registered, 2,000-gallon UST; and (4) re-examine the location and depth of the anomalies identified during the 2014 Phase II ESI. A copy of the geophysical survey report is included in Appendix D.

4.1.2. Test Pit Investigation

4.1.2.1. Investigation Methodology

Seven test pits (TP10 through TP16) were excavated by AARCO Environmental Services Corp. (AARCO) of Lindenhurst, New York. Five test pit locations (TP11 through TP15) were selected to further investigate the geophysical anomalies identified during the 2014 Phase II ESI (i.e., AOC 2). Two test pit locations (TP10 and TP16) were selected to investigate potential abandoned fill lines associated with the fill ports on the 41st Avenue and Northern Boulevard sidewalks (i.e., AOC 3). The test pits were excavated using a Case backhoe. Test pit locations are shown on Figure 9.

The approximate test pit dimensions are summarized as follows:

- TP10: 9 feet by 9.5 feet to a depth of about 8 ft bgs
- TP11: 9 feet by 6 feet to a depth of about 6 ft bgs
- TP12: 9 feet by 5 feet to a depth of about 6.5 ft bgs
- TP13: 8 feet by 5 feet to a depth of about 6 ft bgs
- TP14: 10 feet by 5 feet to a depth of about 6 ft bgs
- TP15: 9 feet by 5 feet to a depth of about 8 ft bgs with an extended footprint of about 9 feet by 11 feet to a depth of about 2.5 ft bgs
- TP16: 9 feet by 5 feet to a depth of about 6 ft bgs

The exposed soil was screened for visual, olfactory, and instrumental evidence of environmental impacts, and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of VOCs was performed with a photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp. Test pit logs documenting these observations are included in Appendix E. Following sample collection, test pits were backfilled with excavated material that did not display evidence of environmental impacts.

4.1.2.2. Sampling Methodology

Twelve soil samples, including one field duplicate and one matrix spike/matrix spike duplicate (MS/MSD) sample pair, were collected for laboratory analysis. In general, one sample was collected from the historic fill layer, and one sample was collected from the native soil layer. Soil samples were not collected from test pits TP12 and TP13, because evidence of soil impacts was not observed.

Samples submitted for VOC analysis were collected directly from the excavator bucket using laboratory-supplied EnCore® soil samplers. The remaining sample volume was homogenized

and placed in appropriate laboratory-supplied containers for additional analyses. The sample containers were labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of about 4 degree Celsius [°C]). The samples were picked up and delivered via courier service to York Analytical Laboratories, Inc. (York), an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory in Stratford, Connecticut, under standard chain-of-custody protocol.

Soil samples collected from each test pit were analyzed for Target Compound List (TCL) + 30 VOCs and SVOCs, polychlorinated biphenyls (PCBs), pesticides, and Target Analyte List (TAL) metals. A sample summary is provided as Table 1.

4.1.3. Soil Boring Investigation

4.1.3.1. Investigation methodology

Ten soil borings (SB37 through SB46) were advanced by AARCO. Boring locations were selected to further investigate the AOCs listed in Section 3.5. Each soil boring was advanced using a direct-push Geoprobe® 7822DT drill rig. Boring locations are presented on Figure 9.

Borings were advanced to accommodate the installation of permanent groundwater monitoring wells to 2 feet above the groundwater table, to the proposed development depth, or to the bottom of historic fill, as summarized below.

- Borings SB37, SB38, SB39, SB41, SB42, SB44 and SB46 were advanced to 28 ft bgs;
- Boring SB40 was advanced to 16 ft bgs; and
- Boring SB45 was advanced to 24 ft bgs.

Soil was recovered continuously from surface to the bottom depth of each boring. Samples were collected into 4-foot long acetate liners using a 2-inch diameter Macrocore® sampler. The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts, and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of VOCs was performed with a PID equipped with a 10.6 eV lamp. Boring logs documenting these observations are included in Appendix F. Following sample collection, borings were backfilled with soil cuttings that did not display evidence of environmental impacts or converted to permanent groundwater monitoring wells.

4.1.3.2. Sampling Methodology

Twenty-one soil samples, including one field duplicate, were collected for laboratory analysis. In general, one sample was collected from the historic fill layer and a second sample was collected from about 2 feet below the proposed development depth, which ranges from about 13 to 25 ft bgs.

Samples submitted for VOC analysis were collected directly from the acetate liner via laboratory-supplied EnCore® soil samplers. The remaining sample volume was homogenized and placed in appropriate laboratory-supplied containers for all additional analyses. The sample containers were labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of about 4°C). The samples were picked up and delivered via courier service to York under standard chain-of-custody protocol.

Soil samples collected from borings SB37 through SB43, SB45 and SB46 were analyzed for TCL + 30 VOCs and SVOCs, PCBs, pesticides, and TAL metals. Soil samples collected from boring SB44 were analyzed for total lead and toxicity characteristic leaching procedure (TCLP) lead. Soil samples collected from SB45 were also analyzed for TCLP lead. A sample summary is provided as Table 1.

4.1.4. Groundwater Investigation

Six permanent groundwater monitoring wells (MW37, MW38, MW39, MW41, MW42, and MW46) were installed by AARCO. The new monitoring wells (excluding MW41) and existing monitoring wells (MW8 and MW33) were sampled to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs identified in Section 3.5.

4.1.4.1. Monitoring Well Installation and Development Methodology

Six soil borings (SB37, SB38, SB39, SB41, SB42 and SB46) were converted to permanent groundwater monitoring wells by inserting 2-inch diameter, schedule 40 polyvinyl chloride (PVC) well screen (0.020-inch slot) with attached risers into each borehole. Each well was installed such that the 10-foot well screen straddled the observed groundwater table. The annulus of each well was filled with clean sand (Morie No. 2) to about 2 feet above the top of the screen. Hydrated bentonite well seals (about 3 feet thick) were installed above the filter sand. The remainder of the annulus was filled with soil cuttings that did not display evidence of environmental impacts and/or grout, and each well was finished with a flush-mounted, bolt-down manhole set into a concrete collar. Following installation, each well was developed using a surge block and/or air compressor and purged using a submersible pump. Development water was placed into a labeled drum and stored on-site awaiting disposal at an appropriately permitted facility. Monitoring well locations are shown on Figure 9, well construction details are presented in Table 2, and well construction summary logs are included in Appendix G.

The top of casing of each groundwater monitoring well was surveyed by Langan on March 28, 2016. A Langan field engineer completed synoptic groundwater gauging of the monitoring wells on February 25 and 26, 2016. Groundwater elevations are presented in Table 3. A groundwater contour map based on the February 25 and 26, 2016 groundwater gauging event is presented as Figure 10.

4.1.4.2. Groundwater Sampling

Monitoring wells were sampled one week after development in accordance with the USEPA's low-flow groundwater sampling procedure to allow for collection of a representative sample ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", dated July 30, 1996 and revised January 19, 2010). Prior to sample collection, groundwater was purged from each well until the physical and chemical groundwater parameters (pH, conductivity, turbidity, dissolved oxygen [DO], temperature, and oxidation-reduction potential [ORP]) stabilized and turbidity measurements were below 50 Nephelometric Turbidity Units (NTU). At least three well casing volumes were purged from the wells before samples were collected. At the time of the sampling event, one groundwater well (MW41) did not contain sufficient sample volume; therefore a sample was not collected.

Eight groundwater samples, including five samples from the newly installed wells, one duplicate sample, and two samples from existing on-site wells, were collected into laboratory-supplied glassware and retrieved and delivered via courier service to York under standard chain-of-custody protocol. Groundwater samples were analyzed for TCL + 30 VOCs and SVOCs, PCBs, pesticides, and TAL metals (total and dissolved). Groundwater sampling logs are included in Appendix H.

4.1.5. Soil Vapor Investigation

NYSDEC DER-10 requires an assessment of soil vapor for contaminated sites to evaluate the health risk associated with potential exposure to VOCs through vapor intrusion into occupied spaces. Six soil vapor sample points were installed during the RI. Soil vapor sample point locations are presented on Figure 9.

4.1.5.1. Soil Vapor Sample Point Installation

Soil vapor sample points SV5 through SV10 were installed by AARCO under the supervision of a Langan engineer from February 10 to 12, 2016. Each sampling point was advanced to a depth of about 15 ft bgs using a Geoprobe® 7822DT drill rig. Sample points SV5 and SV7 through SV10 were installed at about 6 inches below the corresponding planned development depth. Sample point SV6 was installed above the corresponding development depth (about 25 ft bgs) to enable sample collection above the groundwater table.

The sample points were installed in accordance with the 2006 NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York and were comprised of a stainless steel screen implant (3/8-inch in diameter and about 6 inches in length) threaded into 3/16-inch diameter polyethylene tubing. The annulus of each sample point was filled with clean sand (Morie No. 2) to about 6 inches above the top of the screen. A hydrated bentonite seal was

installed above the sand pack to surface grade. Soil vapor construction logs are provided in Appendix I.

4.1.5.2. Soil Vapor Sampling and Analysis

As a quality assurance/quality control (QA/QC) measure, an inert tracer gas (i.e., helium) was introduced into an above-grade sampling chamber to ensure that the soil vapor sample points were properly sealed above the target sampling depth, thereby preventing subsurface infiltration of ambient air. Direct readings of helium of less than 10 percent in the sampling tube were considered sufficient to verify a tight seal. On the same day that soil vapor sampling was conducted, a sufficiently tight seal was verified at each sample point.

Each sample point was purged using a MultiRae meter at a rate of 0.2 liters per minute (L/min) to evacuate a minimum of three sample tubing volumes prior to sample collection. The purged soil vapor was also monitored for VOCs and the value was recorded. After purging was complete, soil vapor samples were collected into laboratory-supplied, batch-certified, 6-Liter Summa® canisters that were calibrated for a sampling rate of about 0.05 L/min over 120 minutes of sampling. For QA/QC purposes, one duplicate sample was collected from SV8, and one exterior ambient air sample was collected adjacent to the northwest corner of the building on Lot 6. The canisters were labeled and retrieved by a courier for delivery to York under standard chain-of-custody protocol. Soil vapor samples were analyzed for VOCs by USEPA Method TO-15. The soil vapor sampling logs are provided in Appendix I.

4.1.6. Quality Control Sampling

Field blanks, trip blanks, field duplicate samples, MS/MSD samples and an ambient air sample were collected and submitted for laboratory analysis. QA/QC samples are summarized in Table 1 and included the following:

<u>Soil</u>

- Two field duplicate samples (one from a soil boring and one from a test pit);
- One MS/MSD sample;
- One field blank sample; and
- One trip blank sample.

<u>Groundwater</u>

- One field duplicate sample;
- One MS/MSD sample;
- One field blank sample; and

- Two trip blank samples.

Soil Vapor

- One duplicate field sample; and
- One ambient air sample.

Field blanks were collected to determine the effectiveness of the decontamination procedures for the groundwater sampling equipment train and the cleanliness of unused neoprene gloves and acetate liners used to collect soil samples. Field blank samples consisted of deionized, distilled water provided by the laboratory that has passed through the sampling apparatus. Field blank samples were analyzed for the same list of analytes as the corresponding sampling event and sample matrix.

MS/MSD samples were collected to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The field duplicates were collected to assess the precision of the analytical methods relative to the sample matrix. Each duplicate was collected from the same material as the primary sample by splitting the volume of homogenized sample collected in the field into two sample containers.

The ambient air sample was collected to analyze ambient air conditions and determine whether conditions existed on the site during soil vapor sampling that could have potentially interfered with sampling results. The ambient air sample was analyzed for the same parameter list as the soil vapor samples.

The trip blank samples were collected to assess the potential for contamination of the sample containers and samples during transport between the laboratory and field. Trip blanks contain about 40 milliliters of acidic water (doped with hydrochloric acid). Trip blanks are sealed by the laboratory when the empty sample containers are shipped to the field, and unsealed and analyzed by the laboratory when the sample shipment is received from the field. The trip blank samples were analyzed for VOCs.

4.2. Supplemental Soil Sampling

Supplemental soil sampling was conducted in April 2016 to evaluate anomalous analytical results from two samples of native soil that were collected from the eastern portion of the site (Lot 10) during the October 2014 Phase II ESI and February 2016 RI. A soil sample collected from the 20- to 22-foot depth interval in boring SB7 during the Phase II ESI contained concentrations of SVOCs that exceed the Part 375 Restricted Use Restricted-Residential SCOs. A soil sample collected from the 16- to 18-foot depth interval in boring SB43 during the RI contained concentrations of cadmium, lead, and zinc above the Part 375 Unrestricted Use SCOs (as discussed in Section 5.3). The detected SVOC and metals concentrations in the two samples are commonly associated with historic fill material and may reflect infiltration of

historic fill into the soil samples during recovery through the borehole. Supplemental soil sampling was conducted to determine whether the Phase II ESI and RI data accurately reflect SVOC and metal concentrations in native soil at those locations.

On April 4, 2016, Aarco used a Geoprobe® 7822DT drill rig to advance 10 soil borings (SB47 through SB56) to collect confirmation soil samples near the former locations of SB7 and SB43. Boring SB47 was advanced at the former location of SB7, borings SB48 through SB51 were advanced about 5 feet north, south, east, and west of SB47, and soil samples were collected from the 20- to 22-foot depth interval in each boring. Boring SB52 was advanced at the former location of SB43, borings SB53 through SB56 were advanced about 5 feet north, south, east, and west of SB52, and soil samples were collected from the 16- to 18-foot depth interval in each boring. The locations of borings SB7 and SB43, and the supplemental borings are shown on Figure 9.

Soil was continuously retrieved into 4-foot long acetate liners to the target depth of each boring. The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts, and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of VOCs was performed with a PID equipped with a 10.6 eV lamp. Boring logs documenting these observations are included in Appendix F. Following sample collection, the borings were backfilled with soil cuttings that did not exhibit evidence of environmental impacts.

The sample volume was homogenized and placed in appropriate laboratory-supplied containers for the analyses. The sample containers were labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of about 4°C). The samples were retrieved and delivered via courier service to York under standard chain-of-custody protocol.

Soil samples collected from borings SB47 through SB51 were analyzed for lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. Soil samples collected from the 16- to 18-foot depth interval in borings SB52 through SB56 were analyzed for cadmium, lead, and zinc. A sample summary is provided as Table 1.

4.3. Data Validation

Data from the RI (including the April 2016 supplemental samples) was validated by a Langan data validator in accordance with USEPA and NYSDEC validation protocols. Copies of the data usability summary reports (DUSRs) and the data validator's credentials are provided in Appendix J.

4.3.1. Data Usability Summary Report Preparation

A DUSR was prepared for each sampling matrix. The DUSR presents the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. For the soil and groundwater samples, the following items were assessed:

- Holding times
- Sample preservation
- Sample extraction and digestion
- Laboratory blanks
- Laboratory control samples
- System monitoring compounds
- MS/MSD recoveries
- Field duplicate, trip blank, and field blank sample results

For the air samples, the following items were assessed:

- Holding times
- Canister certification
- Laboratory blanks
- Laboratory control samples
- System monitoring compounds
- Target compound identification and qualification
- Field duplicate sample results

Based on the results of data validation, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- "U" – The analyte was analyzed for but was not detected at a level greater than or equal to the reporting limit (RL) or the sample concentration for results impacted by blank contamination.
- "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.
- "J" – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

- "R" – The sample results are not useable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

After data validation activities were complete, validated data was used to prepare the tables and figures included in this report.

4.4. Field Equipment Decontamination

Handheld sampling equipment, including interface probes, water quality meters, and sampling pumps, was decontaminated by hand using an Alconox-based solution and triple rinsed with distilled water. Liquids were temporarily contained in 5-gallon buckets, and between rinses, equipment was placed such that contact with the ground was avoided. Decontamination wastewater was drummed for disposal.

4.5. Investigation-Derived Waste Management

Investigation-derived wastes (IDW) generated during the RI were properly handled and containerized, as necessary. Aqueous waste from monitoring well development and purging and decontamination water were placed into UN/DOT-approved 55-gallon steel drums with sealed tops. The drums were staged in a secured area on-site. The drums will be properly transported by a licensed waste hauler and disposed of at an appropriately licensed facility. Soil IDW was not generated during the RI.

5.0 FIELD OBSERVATIONS AND ANALYTICAL RESULTS

This section summarizes the field observations and laboratory analytical results from the RI. Soil analytical results are compared to the 6 NYCRR Part 375 Unrestricted Use (UU) SCOs and Restricted Use Restricted-Residential (RRU) SCOs. Groundwater analytical results are compared to the NYSDEC TOGS AWQS for Class GA (drinking water). Soil vapor sample results are compared to the Decision Matrices provided in the 2006 NYSDOH Soil Vapor Intrusion Guidance. The nature and extent of contamination is discussed in Section 7.0.

A summary of the soil, groundwater, and soil vapor samples collected during the RI (including the April 2016 supplemental soil sampling) is provided in Table 1. Copies of the laboratory analytical reports are provided in Appendix K. Summaries of the analytical results for the soil, groundwater, soil vapor, and QA/QC samples are provided in the following tables:

- Tables 4A through 4D: Soil Sample Analytical Results Summary
- Table 5: Groundwater Sample Analytical Results Summary
- Table 6: Soil Vapor and Ambient Air Sample Analytical Results Summary
- Table 7: QA/QC Sample Analytical Results Summary

The following sections describe the field observations and analytical data generated during the RI.

5.1. Geophysical Survey Findings

The November 2015 geophysical survey identified two areas with anomalies on Lot 6 to the north and east of the building on Lot 9. The rectangular anomaly located immediately north of Lot 9 was indicative of scattered debris at a depth of about 2 to 3 ft bgs (eastern portion) and a potential UST (western portion). The rectangular anomaly may be indicative of a UST, and the anomaly cluster may reflect debris buried approximately 2 to 3 ft bgs. The source of the anomaly adjacent to the fill port along 41st Avenue was not determined, due to signal interference. Anomalies were not identified on the eastern portion of the site, including the area near the fill port along Northern Boulevard (AOC 3). The anomalies identified during the 2014 geophysical survey are likely associated with debris within the historic fill material. A copy of the November 2015 Geophysical Engineering Survey Report is included in Appendix D.

5.2. Geology and Hydrogeology

Geologic and hydrogeologic observations during the RI are described below. A groundwater elevation contour map is provided as Figure 10, cross-sectional diagrams showing inferred soil profiles are shown on Figure 11, and soil boring logs are provided in Appendix F.

5.2.1. Historic Fill Material

Historic fill material was encountered beneath the surface cover and extends to depths that vary between about 4 ft bgs, 10 ft bgs, and 19 ft bgs in the northern, eastern, and western portions of the site, respectively. The historic fill generally consists of brown fine sand with accessory silt, gravel, cobbles, brick, concrete, glass, and organic material. Steel fragments resembling rebar were observed within the historic fill during the test pit investigation.

5.2.2. Native Soil

Based on the 2015 geotechnical investigation, the historic fill is underlain by glacial till that is generally comprised of inter-layered sand, silty sand, and clayey sand. Native soil encountered below the historic fill in the RI borings and test pits generally consisted of a sand layer comprised of banded light brown over dark brown, medium- to fine-grained sand with variable amounts of silt and gravel. The sand extended to the termination depth of each boring. Boring SB41 on the northwestern portion of the site contained a layer of brown, silty, fine-grained sand with trace amounts of clay from about 22 ft bgs to the boring termination depth of 28 ft bgs.

5.2.3. Bedrock

The USGS "Bedrock and Engineering Geologic Maps of New York County and Parts Kings and Queens Counties, New York, and Parts of Bergen and Hudson Counties, New Jersey" indicates that the bedrock underlying the site is part of the Hartland Formation, which generally consists of gneissic schist. Bedrock was not encountered during this RI; however, bedrock was encountered between about 63 and 93 ft bgs during the March 2015 geotechnical study conducted by Langan.

5.2.4. Hydrogeology

Synoptic groundwater level measurements were collected on February 25 and 26, 2016. Groundwater was encountered at elevations ranging between el 9.56 (MW42) to el 8.64 (MW39), and at depths ranging between 17.01 ft bgs (MW33) to 24.07 ft bgs (MW41). Based on this data, groundwater flows from southwest to northeast across the site footprint, which is inconsistent with regional topography. The disparity may be attributable to dewatering associated with the northern adjoining MTA ESA Tunnel project. The limited recharge during attempted sampling of well MW41 may also indicate that dewatering at the MTA ESA Tunnel project site is influencing groundwater elevation within the site footprint. The groundwater elevation measured in well MW39 was lower than that of nearby wells and inconsistent with the general groundwater gradient across the site. A groundwater elevation map is provided on Figure 10.

5.3. Soil Findings

5.3.1. Field Observations

Evidence of a chemical or petroleum release based on visual, olfactory and/or organic vapor readings was not observed in the soil borings or test pits. The test pit investigation did not reveal evidence of the NYSDEC PBS-registered 2,000-gallon fuel oil storage tank and/or other undocumented tanks. Subsurface observations during the test pit investigation are summarized as follows:

- A buried brick wall was observed along the western excavation wall of TP10, which was located on the western portion of the site near the 41st Avenue sidewalk.
- A collapsed clay pipe was observed within the southern wall of TP14, which was located in the central portion of Lot 6.
- An approximately three-foot thick layer of RCA was observed at a depth of about 2.5 ft bgs in TP15 and TP16 on the northeastern portion of the site near the Northern Boulevard sidewalk. In both test pits, historic fill material was observed above and native soil was observed below the RCA.
- Steel fragments resembling rebar were observed within the historic fill layer in TP10, TP12, TP13, TP14, TP15, and TP16.

5.3.2. Analytical Results

5.3.2.1. February 2016 Remedial Investigation

Thirty-three soil samples, including two duplicate samples and one MS/MSD sample, were collected and analyzed for TCL + 30 VOCs and SVOCs, PCBs, pesticides, and TAL metals. Two of the 33 samples were also analyzed for TCLP lead, and an additional two samples were analyzed only for total and TCLP lead. A summary of laboratory detections for soil samples collected during the February 2016 investigation are provided in Tables 4A through 4C with comparisons to the Part 375 UU SCOs and Part 375 RRU SCOs. Soil sample results that exceed SCOs for samples collected from the soil borings and test pits are shown on Figures 12 and 13, respectively. The analytical results are compared to the 6 NYCRR Part 375 UU and RRU SCOs as follows:

VOCs

VOCs, including tentatively identified compounds (TICs), were not detected at concentrations above the Part 375 UU SCOs.

SVOCs

Seven SVOCs were detected at concentrations above the Part 375 RRU and UU SCOs in historic fill material at depths ranging from 2 to 7 ft bgs. SVOC concentrations exceeding the SCOs were detected in borings SB37, SB38, SB39 and SB40, and in test pit TP10. The list below provides a summary of each SVOC that exceeded its respective Part 375 UU and/or RRU SCO and the range of concentrations above the SCOs. The applicable SCOs are shown in parentheses.

- Benzo(a)anthracene: 1.33 mg/kg in SB37_2-3 to 10.9 mg/kg in TP10_6-7 (UU and RRU SCO of 1 mg/kg)
- Benzo(a)pyrene: 2.5 mg/kg in SB40_4-6 to 8.8 mg/kg in TP10_6-7 (UU and RRU SCO of 1 mg/kg)
- Benzo(b)fluoranthene: 2.52 mg/kg in SB38_2-3 to 7.45 mg/kg in TP10_6-7 (UU and RRU SCO of 1 mg/kg)
- Benzo(k)fluoranthene: 0.9 mg/kg in SB39_4-6 to 10.4 mg/kg in TP10_6-7 (UU SCO of 0.8 mg/kg; RRU SCO of 3.9 mg/kg)
- Chrysene: 1.33 mg/kg in SB37_2-3 to 10.7 mg/kg in TP10_6-7 (UU SCO of 1 mg/kg; RRU SCO of 3.9 mg/kg)
- Dibenzo(a,h)anthracene: 0.609 mg/kg in SB38_2-3 to 1.21 mg/kg in TP10_6-7 (UU and RRU SCO of 0.33 mg/kg)
- Indeno(1,2,3-cd)pyrene: 0.786 mg/kg in SB38_2-3 to 1.78 mg/kg in TP10_6-7 (UU and RRU SCO of 0.5 mg/kg)

SVOCs identified above the Part 375 UU and/or RRU SCOs are characterized as polycyclic aromatic hydrocarbons (PAHs), which are commonly detected in historic fill material throughout New York City.

Metals

Metals were detected at concentrations above the respective Part 375 UU SCOs at depths ranging from 1 to 18 ft bgs in soil borings SB37, SB38, SB39, SB40, SB41, SB43, SB44, SB45 and SB46, and test pits TP10, TP11, TP15 and TP6. The list below provides a summary of each metal that exceeded its respective Part 375 UU and/or RRU SCO and the range of concentrations above the SCOs. The applicable SCOs are shown in parentheses.

- Cadmium: 11.7 mg/kg in SB43_16-18 (UU SCO of 2.5 mg/kg; RRU SCO of 4.3 mg/kg)
- Copper: 89.7 mg/kg in TP11_3-4 (UU SCO of 50 mg/kg)

- Lead: 63.7 mg/kg in SB46_2-3 to 582 mg/kg in TP10_6-7 (UU SCO of 63 mg/kg; RRU SCO of 400 mg/kg)
- Mercury: 0.193 mg/kg in TP16_1-2 to 2.8 mg/kg in TP10_2-3 (UU SCO of 0.18 mg/kg; RRU SCO of 0.81 mg/kg)
- Selenium: 4.47 mg/kg in SB38_2-3 (UU SCO of 3.9 mg/kg)
- Zinc: 150 mg/kg in TP10_2-3 to 3,500 mg/kg in SB43_16-18 (UU SCO of 109 mg/kg)

Metals concentrations above the Part 375 SCOs were generally confined to the historic fill layer. However, lead, zinc, and cadmium were detected at concentrations above the Part 375 SCOs in a sample of native soil collected from the 16- to 18-foot depth interval in boring SB43. Supplemental samples were collected in April 2016 to confirm these concentrations (discussed below).

Soil samples collected from borings SB44 and SB45 were also analyzed for TCLP lead. The highest TCLP lead concentration of 0.0442 milligrams per liter (mg/L) was detected in soil from the 1- to 2-foot depth interval in SB44. The detected concentrations were below the USEPA Hazardous Waste Regulatory Limit of 5 mg/L.

PCBs

Total PCBs were detected at concentrations above the Part 375 UU SCO in two soil samples of historic fill material: 0.101 mg/kg in SB40_4-6 and 0.15 in TP10_6-7. The Part 375 UU and RRU SCOs for total PCBs are 0.1 mg/kg and 1 mg/kg, respectively.

Pesticides

One pesticide, 4,4'-DDT, was detected at a concentration above the Part 375 UU SCO in samples of historic fill material collected from boring SB45 and test pits TP10 and TP16. The 4,4'-DDT concentrations ranged from 0.00374 mg/kg in DUP03 (duplicate sample of TP16_1-2) to 0.00795 mg/kg in TP10_2-3. The Part 375 UU and RRU SCOs for 4,4'-DDT are 0.0033 mg/kg and 7.9 mg/kg, respectively.

5.3.2.2. April 2016 Supplemental Soil Sampling

Fourteen samples were collected during the supplemental soil investigation to evaluate the accuracy of SVOC and metal detections in native soil samples during the 2014 Phase II ESI and February 2016 RI sampling. Five samples (SB47 through SB51) collected near the former location of Phase II ESI boring SB7 were analyzed for selected SVOCs, and five samples (SB52 through SB56) collected from the former location of RI boring SB43 were analyzed for cadmium, lead, and zinc. Neither metals nor SVOCs were detected above the respective Part 375 UU SCOs in the soil samples.

Table 4D provides a summary of analytical detections in the supplemental soil samples, and Figure 14 shows the soil sample locations and those results above the UU SCOs. Laboratory analytical reports are provided in Appendix K.

5.4. Groundwater Findings

5.4.1. Field Observations

Monitoring wells were gauged for non-aqueous phase liquid (NAPL) with an oil-water interface probe. NAPL was not encountered and PID headspace readings above background levels were not detected in the monitoring wells. Groundwater was encountered at elevations ranging between el 9.56 (MW42) to el 8.64 (MW39), and at depths ranging between 17.01 ft bgs (MW33) to 24.07 ft bgs (MW41). Eight groundwater samples (including one duplicate sample) were collected for laboratory analysis.

5.4.2. Analytical Results

Groundwater samples were collected from monitoring wells MW08, MW33, MW37, MW38, MW39, MW42, and MW46. The samples were analyzed for TCL + 30 VOCs and SVOCs, TAL metals (total and dissolved), pesticides, and PCBs. A summary of the analytical detections with comparison to the TOGS AWQS is presented in Table 5. Groundwater sample locations and results that exceed the respective TOGS AWQS are shown in Figure 15. The analytical results are compared to the TOGS AWQS as follows:

VOCs

One VOC, chloroform, was detected at a concentration above the TOGS AWQS in one groundwater sample. Chloroform was detected in the sample collected from well MW8 at a concentration of 17 micrograms per liter (µg/L), which exceeds the TOGS AWQS of 7 µg/L. Chloroform is a byproduct of the chlorination process in municipal drinking water.

SVOCs

SVOCs were not detected at concentrations above the TOGS AWQS.

Metals

Groundwater samples collected from each well contained total and dissolved metals at concentrations above the TOGS AWQS. The list below provides a summary of each metal that exceeded its respective TOGS AWQS and the range of concentrations above the TOGS AWQS. The applicable TOGS AWQS are shown in parentheses.

Total Metals

- Antimony: 6 µg/L in MW37 to 9 µg/L in MW8 (3 µg/L)

- Chromium: 59 µg/L in MW46 to 70 µg/L in MW37 (50 µg/L)
- Magnesium: 40,100 µg/L in MW37 to 55,300 µg/L in MW46 (35,000 µg/L)
- Manganese: 594 µg/L in MW38 to 702 µg/L in MW37 (300 µg/L)
- Sodium: 183,000 µg/L in MW39 to 340,000 µg/L in MW46 (20,000 µg/L)

Dissolved Metals

- Magnesium: 36,400 µg/L in MW37 to 51,100 µg/L in MW46 (35,000 µg/L)
- Sodium: 153,000 µg/L in MW39 to 290,000 µg/L in MW37 (20,000 µg/L)

The presence of magnesium and sodium in the samples reflects regional groundwater conditions. These compounds commonly occur in road salt and may reflect infiltration of dissolved road salt into the subsurface following winter application. The additional presence of manganese, chromium, and antimony as total metals concentrations above the TOGS AWQS may reflect interference from the soil matrix in the groundwater samples. The elevated concentrations of these metals in samples from MW37 and MW46 correlates with higher relative turbidity levels compared with other samples.

Pesticides/PCBs

Neither pesticides nor PCBs were detected in the groundwater samples.

5.5. Soil Vapor Findings

Seven soil vapor samples (including one duplicate sample) and one ambient air sample were collected and submitted for laboratory analysis of USEPA TO-15 VOCs. No standard currently exists for soil vapor samples in New York State. For reference, soil vapor sample results were compared to the decision matrices presented in the 2006 NYSDOH Soil Vapor Intrusion Guidance. Soil vapor sample results are summarized in Table 6 and shown on Figure 16.

Total VOC concentrations detected in soil vapor ranged from 69.89 micrograms per cubic meter (µg/m^3) in SV7 to 392.50 µg/m^3 in SV5.

VOCs detected in soil vapor samples include:

- 1,2,4-trimethylbenzene
- 1,2-dichloroethane
- 1,3,5-trimethylbenzene
- 2-butanone
- acetone
- benzene
- carbon disulfide
- chloroform
- cyclohexane
- dichlorodifluoromethane
- ethyl benzene
- methylene chloride
- n-heptane
- n-hexane
- o-xylene
- p- & m-xylenes
- p-ethyltoluene
- propylene
- styrene
- tetrachloroethene (PCE)
- toluene
- trichloroethene (TCE)
- trichlorotrifluoromethane

The NYSDOH soil vapor decision matrices present recommended actions based on the concentrations of 1,1-dichloroethene, 1,1,1-trichloroethane, cis-1,2-dichloroethene, carbon tetrachloride, TCE, PCE, and vinyl chloride in soil vapor and indoor air. 1,1-dichloroethene, 1,1,1-trichloroethane, cis-1,2-dichloroethene, carbon tetrachloride, and vinyl chloride were not detected in the soil vapor samples. The maximum detected concentrations of TCE and PCE in soil vapor were 1.40 µg/m³ in SV9 and 20.34 µg/m³ in SV6, respectively. By comparison, the ambient air sample contained PCE at a concentration of 1.15 µg/m³. The decision matrix recommendations range from "no further action" to "take reasonable and practical actions to identify source(s) and reduce exposures" for these soil vapor concentrations. Petroleum-related VOCs (e.g., benzene, toluene, ethylbenzene, and total xylenes) were detected in soil vapor samples at concentrations above those detected in the ambient air sample. The soil and groundwater sampling results did not reveal potential on-site sources for PCE, TCE, or petroleum-related VOCs.

5.6. Quality Control Results

Duplicates, MS/MSD sample pairs, field blanks, and trip blanks were collected during the RI and are listed in Table 1. The duplicate and field blank samples for soil and groundwater were collected at a frequency of 1 per 20 primary samples. Quality control sample results were evaluated during data validation. The analytical results of field blanks and trip blank samples are summarized in Table 7.

One minor deficiency was noted in the field blank sample collected as part of soil sampling on February 17, 2016 (i.e., SBFB01_021716); the field blank sample displayed a positive detection for acetone and as such, the associated soil sample results were qualified as "U" (i.e., the sample concentration results were impacted by blank contamination). Neither major nor minor deficiencies were identified for the remaining field blank samples. Major and minor deficiencies were not noted for the trip blank samples.

Field duplicate and parent sample pairs were collected for each media type and analyzed for the parameters described in the preceding paragraphs. For results less than five times the reporting limit, analytes meet the precision criteria if the absolute difference is less than plus/minus two times the reporting limit. For results greater than five times the reporting limit, analytes meet the precision criteria if the relative percent difference is less than or equal to 50 percent. The analytes for three of the four soil duplicate/parent sample pairs, and the analytes for the groundwater duplicate/parent sample pair met the precision criteria. The following is a summary of those analytes that did not meet the precision criteria:

- Soil sample pair
    - DUP03_021716 and TP16_1-2: anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, fluoranthene, 4,4'-DDT, Aroclor 1254, phenanthrene, pyrene.
- Soil vapor sample pair
    - DUP01_021816 and SV8_021816: styrene and toluene

5.7. Data Usability

New York Analytical Services Protocols (ASP) Category B laboratory reports for the soil, groundwater, soil vapor, and air samples were provided by York and reviewed by a Langan data validator for all samples collected during the RI. The soil, groundwater, and soil vapor data were determined to be acceptable. Completeness, defined as the percentage of analytical results that are judged to be valid, is 100% for each sample set. Copies of the DUSRs are provided in Appendix J.

5.8. Evaluation of Potential Areas of Concern

This section discusses the results of the RI with respect to the AOCs described in Section 3.5. The Part 375 RRU SCOs are the applicable soil standards for comparison, based on the anticipated use of the site as a mixed-use residential/commercial development. The results were also compared to the Part 375 UU SCOs to evaluate whether unrestricted land use is practical. AOC locations are shown on Figure 9.

5.8.1. AOC 1: Historic Fill Including Area of Hazardous Lead Contamination

Historic fill material located throughout the site contains PAHs and metals at concentrations above the Part 375 UU and RRU SCOs. Each boring and test pit was advanced through a layer of historic fill that ranged in depths from about 4 to 19 ft bgs. Contaminants of concern (COCs) generally associated with historic fill include SVOCs, pesticides, PCBs, and metals.

AOC 1 Findings Summary

Soil Samples

Field screening and analytical results from historic fill samples are summarized as follows:

- Staining, odors, elevated PID readings or other evidence of petroleum and/or chemical impacts were not observed in historic fill material.
- SVOCs, including 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 exceeding the Part 375 UU and/or RRU SCOs in borings SB37, SB38, SB39, and SB40, and in test pit TP10.
- Metals (cadmium, copper, lead, mercury, selenium and zinc) were detected at concentrations exceeding the Part 375 UU SCOs in seven of the nine borings and four of the seven test pits. Lead was also detected at concentrations above the Part 375 RRU SCO in TP10 and TP11. TCLP lead was not detected above the USEPA Maximum Hazardous Waste Regulatory Limit in the three historic fill samples analyzed for TCLP lead. Once soil sample collected from the 0 to 2 ft bgs depth interval on the eastern portion of the site (Lot 10) during the 2014 Phase II ESI contained lead at a TCLP concentration of 38 mg/l, which exceeds the Hazardous Waste Regulatory Limit of 5 mg/l. Subsequent delineation sampling conducted in 2015 indicated that the hazardous lead impacts are contained within an approximately 100-square-foot area that extends to a depth of about 6 ft bgs.
- PCBs and pesticides were not detected at concentrations above the Part 375 RRU SCOs in samples of historic fill material. One pesticide, 4,4'-DDT, was detected at concentrations exceeding the Part 375 UU SCO in boring SB45, test pit TP10, and the duplicate sample collected from test pit TP16 at depths ranging from about 1 to 3 ft bgs. Total PCBs were detected at concentrations exceeding the Part 375 UU SCO in boring SB40 and test pit TP10 at depths ranging from 4 to 7 ft bgs.
- VOCs were not detected at concentrations above the Part 375 UU SCOs.

Groundwater and Soil Vapor Samples

The bottom of the historic fill layer was encountered above the groundwater table in each boring. The metals, SVOCs, PCBs, and pesticide detected at concentrations above the SCOs in samples of historic fill material were not detected above the TOGS AWQS in groundwater samples. The concentrations of VOCs in soil vapor samples collected throughout the site were generally within a common order of magnitude; hence, areas of localized soil vapor impacts were not indicated.

AOC 1 Conclusions

Historic fill material, which is ubiquitous across the site, was encountered below surface cover to depths ranging from about 4 to 19 ft bgs. SVOCs, pesticides, PCBs, and metals were detected in samples of historic fill. TCLP analysis did not indicate that lead is present at hazardous waste concentrations outside of the area on Lot 10 identified during the 2014 Phase II ESI. Historic fill material did not extend to the depth of groundwater, and the analytical data indicate that the contaminants associated with historic fill have not impacted soil vapor or groundwater.

5.8.2. AOC 2: Geophysical Anomalies

Geophysical anomalies were identified on the northern and eastern portions of the site during the October 2014 geophysical survey. Based on the site history and fill ports observed on the Northern Boulevard and 41st Avenue sidewalks, the anomalies may be indicative of the abandoned, NYSDEC PBS-registered 2,000-gallon fuel oil storage tank and/or other undocumented tanks. A January 2015 test pit investigation did not uncover tanks, vaults, or other potential environmental concerns near the anomalies. A subsequent geophysical survey and test pit investigation were conducted to further investigate the anomalies.

AOC 2 Findings Summary

Geophysical Survey

The November 2015 geophysical survey identified a rectangular anomaly immediately north of Lot 9 that was indicative of scattered debris at a depth of about 2 to 3 ft bgs (eastern portion) and a potential UST (western portion). The eastern portion of the rectangular anomaly is consistent with the location of scattered anomalies identified during the October 2014 geophysical survey. A second rectangular anomaly was identified adjacent to the fill port along 41st Avenue. The source of the anomaly was not determined due to signal interference. An anomaly was not identified adjacent to the fill port along Northern Boulevard.

Test Pit Investigation

Six test pits (TP10 through TP15) were excavated to further investigate the geophysical anomalies identified during the 2014 and 2015 geophysical surveys. The depth of the test pits ranged from about 6 to 8 ft bgs. Soil exposed within the test pits did not exhibit staining, odors, elevated organic vapor concentrations, or other evidence of environmental impacts. The test pits did not contain indications of buried storage tanks. The following items were identified within the historic fill layer near the Lot 6 geophysical anomalies:

- A collapsed clay pipe was observed in the southern wall of TP14, which was located in the northeastern portion of Lot 6. The structure may be an abandoned sewer or water pipe.
- A layer of RCA was observed between about 2.5 and 5.5 ft bgs in TP15 and TP16. The RCA constitutes a boundary between the underlying native soil and historic fill cover material. The aerial extent of the RCA (≥ 40 ft) indicates that it is likely associated with historic demolition and backfill activities.
- A brick wall was observed along the western test pit wall in TP10 adjacent to the 41st Avenue sidewalk (western geophysical anomaly). The wall may be a foundation relict of the former bank building that was located on Lot 11 and demolished in the early 2000s.
- Steel rebar-like fragments were observed scattered throughout the historic fill layer in test pits TP10 and TP12 through TP15. The metal may be the signal source for the geophysical anomalies.

Soil, Groundwater, and Soil Vapor Sampling

Investigation of AOC 2 included the collection of soil samples from borings SB37 and SB45 and test pits TP11 through TP15, collection of a groundwater sample from well MW37, and collection of a soil vapor sample from SV05. Metals, PAHs, PCBs, and one pesticide (4,4'-DDT) were detected in samples of historic fill material. The groundwater and soil vapor samples did not contain compounds at concentrations indicative of a petroleum and/or chemical release.

AOC 2 Conclusions

The geophysical survey and subsequent test pit investigation did not indicate structures associated with abandoned USTs, vaults, or other potential sources of a petroleum or chemical release. An abandoned clay pipe, metal fragments, and a three-foot layer of RCA were identified within the historic fill on the central and northeastern portion of Lot 6. These structures may be the signal source for the geophysical anomalies. The analytical results of soil, groundwater, and soil vapor sampling did not indicate a petroleum and/or chemical release. Excavation of historic fill material throughout the site will occur during implementation of the SEWP. Buried tanks, vaults, other structures identified at the locations of the anomalies or in other areas will be managed and removed in accordance with the SEWP.

5.8.3. AOC 3: Potential Abandoned USTs

Abandoned fill ports are located on the Northern Boulevard and 41st Avenue sidewalks near the eastern and western boundaries of Lot 6, respectively. The fill ports may be connected to abandoned USTs and buried piping on the site. AOC 3 was investigated via a geophysical

survey, two test pits, and soil and groundwater sampling. COCs associated with AOC 3 include VOCs, SVOCs, PCBs, and metals.

AOC 3 Findings Summary

Geophysical Survey and Test Pit Investigation

The geophysical survey identified an anomaly near the 41st Avenue fill port, and no anomaly near the fill port along the Northern Boulevard sidewalk. Test pits TP10 and TP16 were excavated to investigate the areas near the fill ports. Evidence of abandoned USTs and associated structures was not observed. Subsurface observations included the following:

- A brick foundation wall was observed along the western test pit wall in TP10 adjacent to the 41st Avenue sidewalk. The former foundation may be a relic of the former bank building that was located on Lot 11 and demolished in the early 2000s.
- An approximately three-foot thick layer of RCA was observed between approximately 2.5 and 5.5 ft bgs in TP16. Historic fill was identified above the RCA layer, and native soil below. The RCA constitutes a boundary between the underlying native soil and historic fill cover material. The aerial extent of the RCA (≥ 40 ft) indicates that it is likely associated with historic demolition and backfill activities.
- Metal rebar-like fragments were observed within the historic fill in both test pits. The fragments may be the signal source for the geophysical anomaly near 41st Avenue.

Soil Sampling

Two soil samples were collected from each test pit, and two soil samples were collected from boring SB38, which was advanced near the fill port along the Northern Boulevard sidewalk. The sample collected from TP10 at a depth of 6 to 7 ft bgs contained lead and multiple PAHs at concentrations above the Part 375 RRU SCOs. The concentrations were the highest detected during the RI and were an order of magnitude higher than those detected in the sample collected from the 2 to 3 ft bgs depth interval. The concentrations are either indicative of localized conditions in the historic fill material or relict localized impacts from a historical UST system near the 41st Avenue fill port.

Groundwater and Soil Vapor Sampling

One groundwater sample (MW38) and one soil vapor sample (SV10) were collected near the fill port on the Northern Boulevard sidewalk. The groundwater sample did not contain pesticides, PCBs, or SVOCs, and VOCs were detected at concentrations below the TOGS AWQS. Sodium was detected at a concentration above the TOGS AWQS and is attributable to regional groundwater quality conditions, based on sodium detections in other samples throughout the

site. The soil vapor sample did not contain VOCs at concentrations systematically higher than those detected in other samples.

AOC 3 Conclusions

The investigation of AOC 3 did not reveal abandoned UST systems or evidence of impacts associated with former tank systems. A soil sample collected from the test pit near the fill port along the 41st Avenue sidewalk contained PAHs and lead at concentrations above the Part 375 RRU SCOs and generally higher than those detected in historic fill elsewhere on the site. The concentrations are either indicative of localized conditions in the historic fill material or localized relict impacts from a historical UST system.

5.8.4. AOC 4: Historical Auto Repair Facility

Between 1936 and 1970, an automotive repair and painting facility containing seven gasoline storage tanks extended onto the northeastern portion of the site from the northern adjoining property. COCs associated with the former facility include VOCs, SVOCs, and metals in soil and groundwater, and petroleum and chlorinated VOCs in soil vapor. A geophysical survey and soil, groundwater and soil vapor sampling were conducted to investigation AOC 4. Soil samples were collected from borings SB38 and SB46, groundwater samples were collected from wells MW38 and MW46, and soil vapor samples SV06 and SV09 were collected.

AOC 4 Findings Summary

Geophysical Survey

The geophysical survey did not identify anomalies indicative of USTs, vaults, or buried structures near AOC 4.

Soil, Groundwater, and Soil Vapor Sampling

Lead and PAHs were detected in historic fill material at concentrations above the Part 375 RRU SCOs. The groundwater samples did not contain pesticides, PCBs, SVOCs, or VOCs at concentrations above the TOGS AWQS. Dissolved-phase sodium and magnesium were detected at a concentrations above the TOGS AWQS and are attributable to regional groundwater quality conditions, based on similar detections in other samples throughout the site. The soil vapor samples did not contain VOCs at concentrations systematically higher than those observed in other samples.

AOC 4 Conclusions

The geophysical survey did not identify anomalies indicative of storage tanks, vaults, or other buried abandoned structures. The analytical results of soil, groundwater, and soil vapor sampling did not indicate a petroleum and/or chemical release associated with AOC 4.

6.0 QUALITATIVE HUMAN AND FISH/WILDLIFE EXPOSURE ASSESSMENT

Human health exposure risk was evaluated for both current and future on-site and off-site conditions, in accordance with the NYSDEC DER-10. The assessment includes an evaluation of potential sources and migration pathways of site contamination, potential receptors, exposure media, and receptor intake routes and exposure pathways.

In addition to the human health exposure assessment, the NYSDEC DER-10 requires an on-site and off-site Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, there was no need to prepare an FWRIA for the site. A completed form of DER-10 Appendix 3C is enclosed in Appendix L.

6.1. Current Conditions

The site is comprised of four contiguous tax lots in the Long Island City neighborhood of Queens:

- 29-19 41st Avenue (Block 403, Lot 6);
- 29-23 Queens Plaza North (Block 403, Lot 11);
- 29-47 Northern Boulevard (Block 403, Lot 10); and
- 29-27 Queens Plaza North (Block 403, Lot 9).

Lot 9 is improved with a landmarked 10-story commercial office building with a cellar, and Lot 10 consists of an eastern adjoining asphalt-paved parking lot. The building was vacated of all tenants on October 31, 2015. Lots 6 and 11 consist of vacant land covered with sand, gravel, vegetative overgrowth and construction debris.

The site is bordered by the MTA ESA tunnel project to the north; Northern Boulevard and multiple-story commercial buildings to the east; 41st Avenue (Queens Plaza North) and a public plaza (Queens Plaza) to the south; and 41st Avenue and multiple-story commercial and residential buildings to the west. NYCTA elevated and underground subway lines border the site to the east along Northern Boulevard. Mixed-use commercial, retail, and residential buildings characterize the surrounding area, and an LIRR train yard (Sunnyside Yard) is located approximately 200 feet east of the site.

Two storage tanks are registered with the NYSDEC PBS database, including an active 5,000-gallon heating oil AST located in the cellar of the existing building on Lot 9 (PBS No. 2-235040) and an abandoned 2,000-gallon fuel oil storage tank (PBS No. 2-347493) on Lot 6 or Lot 11. The location of the abandoned storage tank has not been identified after multiple geophysical and test pit investigations. Two abandoned fill ports are located on the eastern adjoining sidewalk

fronting Northern Boulevard and the western adjoining sidewalk fronting 41st Avenue, and may be associated with the former tank.

6.2. Proposed Conditions

The purpose of the project is to redevelop the northern portion of the site (Lot 6) into a 67-story residential tower (Building A) that connects to the existing 10-story building (Building C), which will be renovated to include residential amenities and commercial units. A two-story building (Building B) and a four-story commercial building (Building D) will be constructed on Lot 10 along Northern Boulevard and Lot 11 along 41st Avenue, respectively. Building B will contain commercial tenant spaces and mechanical rooms, including a stormwater detention tank. Building D will contain parking and commercial tenant spaces. The building locations are shown on Figure 5.

The development project will be constructed at a sub-grade elevation ranging between el -3 and el 26, as follows:

- Building A: Cellar top of slab (TOS) - el 22 (9 ft bgs)

  Sub-cellar TOS (eastern portion) – el 14 (14 ft bgs)

  Two elevator pits (TOS) – el -3 (30 ft bgs)
- Building B: Cellar TOS – el 14 (14 ft bgs)

  Slab-on-Grade portion – el 26 (1 ft bgs); historic fill removal for Track 1 remediation from about 4 to 8 ft bgs
- Building C: No additional excavation below existing cellar
- Building D: Sub-cellar TOS – el 8 (24 ft bgs)
- Northern Boulevard Sidewalk Extension: el 26 to el 24 (1 ft bgs); historic fill removal from about 4 to 8 ft bgs

Proposed development plans are provided in Appendix A.

6.3. Summary of Environmental Conditions

Areas of concern included historic backfilling of the site, potential USTs and other suspect buried structures, and a historical automotive repair facility on the northeastern portion of the site. COCs associated with the AOCs include VOCs, SVOCs, pesticides, PCBs, and metals. A lead concentration above the hazardous waste limit has also been detected on Lot 10.

The analytical results of soil sampling indicated that historic fill material contains concentrations of SVOCs, metals, PCBs, and one pesticide (4,4'-DDT) above the Part 375 UU SCOs. Multiple SVOCs, lead, and cadmium were also detected in historic fill at concentrations above the Part

375 RRU SCOs. TCLP analysis did not reveal additional areas containing hazardous waste concentrations of lead. The hazardous lead-impacted soil is confined to an area of about 100 square feet that extends to a depth of about 6 ft bgs on the northern portion of Lot 10. Cadmium, lead, and zinc were detected at concentrations above the Part 375 UU SCOs in a sample of native soil (SB43_16-18) on the eastern portion of the site. Confirmation sampling in that area indicated that the initial sample results were anomalous and likely indicative of historic fill contamination of sample SB43_16-18 during collection.

Groundwater samples contained one VOC (chloroform) and two dissolved metals (sodium and magnesium) at concentrations above the TOGS AWQS. Chloroform is a byproduct of the chlorination process in municipally-supplied water. The chloroform detection on the western portion of the site therefore likely indicates infiltration of municipal water into the well prior to sampling or infiltration into the sample during preparation and analysis in the laboratory. Dissolved sodium and magnesium, which were detected in multiple wells, are commonly associated with the infiltration of dissolved road salt into groundwater. The detections are therefore likely attributable to a regional groundwater condition.

The soil vapor samples contained several petroleum and chlorinated VOCs at concentrations above those detected in the ambient air sample. The detected concentrations of PCE, TCE, and other chlorinated VOCs were below those warranting mitigation, based on the 2006 NYSDOH Soil Vapor Intrusion Guidance document. The soil vapor samples generally contained VOCs at concentrations within a common order of magnitude; therefore, locally impacted areas were not identified.

6.4. Conceptual Site Model

A conceptual site model (CSM) has been developed based on the findings of the RI. 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.

6.4.1. Potential Sources of Contamination

Potential sources of contamination include historic fill material, hazardous lead-impacted soil, potential abandoned USTs, and a historical automotive repair and painting facility.

Historic fill material occurs throughout the site at depths ranging from directly below the surface cover to depths ranging from about 4 to 19 ft bgs. The historic fill originated from unidentified source areas and was placed as backfill during multiple phases of redevelopment between the late 19th century through the early 2000s. The historic fill is a potential source of SVOCs, pesticides, PCBs, and metals in soil. Historic fill containing a lead concentration above the EPA hazardous waste limit has also been identified in the upper 6 feet of soil within an approximately 100-square-foot area on the eastern portion of the site (Lot 10).

The source of dissolved sodium and magnesium in groundwater is likely rock salt, which dissolved after regional application to roadways and infiltrated groundwater via preferential pathways through the vadose zone. The source of chloroform detected in one well on the western portion of the site may be municipally-treated water, which infiltrated groundwater after local or regional discharge from construction operations (e.g., the adjoining MTA ESA Tunnel project) or from leaking sewer or water utility lines.

The analytical results of groundwater and soil sampling did not identify potential sources of the VOCs detected in soil vapor. Furthermore, the concentrations and distribution of VOCs did not indicate areas of locally impacted soil vapor. The low-level detections may be attributable to variability in historic fill material.

6.4.2. Exposure Media

The impacted media include soil and soil vapor. Analytical data indicates that SVOCs, metals, PCBs, and pesticides are limited to the historic fill layer. Petroleum and chlorinated VOCs were detected in soil vapor samples. On-site sources of VOCs were not identified during the RI and detected concentrations are below those warranting mitigation, based on the decision matrices provided in the 2006 NYSDOH Soil Vapor Intrusion Guidance Document.

6.4.3. Receptor Populations

Lots 6 and 11 are vacant and Lot 10 contains a parking lot. Lot 9 is occupied by a 10-story commercial office building with a cellar. The office building has been vacant, with the exception of the building superintendent, since October 2015. The building superintendent works in a 7th-floor office. Access is restricted to the building via locking doors and to Lots 6 and 11 via construction fencing with secured gates. During site development, human receptors will be limited to construction and remediation workers, authorized guests visiting the site, and the public and pedestrians adjacent to the site. Under future conditions, receptors will include the new building tenants, workers, and visitors to the residential and/or commercial properties and the nearby community, including children.

6.5. Potential Exposure Pathways – On-Site

6.5.1. Current Conditions

Lots 9 and 10 are covered entirely by an impermeable surface (the building foundation slab and an asphalt-paved parking lot); therefore, human exposure to contaminated soil is limited. Lots 6 and 11 are covered with sand, gravel, vegetative overgrowth, and construction debris; however, the site is surrounded by a wooden construction fence, which limits access to authorized workers and visitors. As such, human exposure to contaminated soil through

dermal absorption, inhalation, and ingestion is minimal and controlled through implementation of the Health and Safety Plan (HASP), which was included as an Appendix to the SEWP.

Because groundwater in this area of New York City is not used as a potable water source, there is no complete exposure pathway under current site conditions. There is a potential exposure pathway through dermal absorption, inhalation, and ingestion during groundwater sampling associated with site investigation, but it is controlled through implementation of the HASP provided in the RIWP. There is a potential exposure pathway to soil vapor through inhalation during soil, groundwater, and soil vapor sampling associated with site investigation. This pathway is controlled through implementation of the HASP.

6.5.2. Construction/Remediation Conditions

Potential exposures to site workers and surrounding community, including residents and pedestrians, via dermal absorption, inhalation, and ingestion of site contaminants during construction and remediation is eliminated or minimalized through implementation of the HASP and the Community Air Monitoring Plan (CAMP), as well as, vapor and dust suppression techniques, when warranted. As such, there is no complete exposure pathway for site workers or surrounding community. Construction and remedial activities include excavation and off-site disposal of both nonhazardous impacted and hazardous soils, dewatering for sub-cellar and elevator pit construction, and construction of foundation components.

6.5.3. Proposed Future Conditions

The proposed development will include residential and commercial uses. Upon completion of the new development, the site footprint will be capped by concrete building foundations. These barriers will prevent direct human exposure to impacted soil and groundwater. The new buildings will be constructed with a waterproofing membrane, which will minimize potential infiltration of soil vapor into the buildings. As such, there is no complete exposure pathway for future users.

There is no risk of ingesting groundwater COCs, because the site and surrounding area will continue to obtain municipally-supplied drinking water that originates from surface water reservoirs located upstate. In addition, the site will be capped with concrete building slabs, and the majority of the final development grade will be above the groundwater table.

6.6. Potential Exposure Pathways – Off-Site

In the absence of CAMP and a HASP, soil has the potential to be transported off-site by wind in the form of dust or on the tires of vehicles or equipment leaving the site during the excavation and foundation construction stage of redevelopment, which includes remediation. This could create an exposure risk to the public adjacent to the site. Groundwater will be removed during construction and either pre-treated groundwater, per New York City Department of

Environmental Protection permit requirements, will be directly discharged to the New York City sewer or to a temporary storage tank pending disposal at a permitted off-site facility. The potential for public exposure to groundwater on adjacent sites will be thereby eliminated. During construction on Lots 6, 10, and 11, soil vapor will primarily migrate vertically through the subsurface and dissipate and dilute with ambient air.

The potential off-site migration of site soil, groundwater, and/or soil vapor contaminants is not expected to result in a complete exposure pathway for current, construction-phase, or future conditions for the following reasons:

- The site is located in an urban area and covered with continuous impervious surface material (i.e., concrete building slab and asphalt paving) and graded soil covered with vegetation and/or construction debris.
- During site excavation, foundation construction and remediation, the following protective measures will be implemented:
    - Air monitoring will be conducted for particulates (i.e., dust) and VOCs during intrusive activities as part of a CAMP. Dust and/or vapor suppression techniques will be employed to limit the potential for off-site migration of soil and vapors.
    - Vehicle tires and undercarriages will be washed as necessary prior to leaving the site to prevent tracking material off-site.
    - A soil erosion/sediment control plan will be implemented during construction to control off-site migration of soil.
- The new buildings will include a waterproofing membrane to be installed beneath the lowest level cellar and/or sub-cellar slabs. A continuous impervious surface covering comprised of the proposed building slabs and/or at least 2 feet of clean fill will span the site footprint.
- Groundwater in New York City is not used as a potable water source and the nearest ecological receptor, the Dutch Kills, is located about 2,600 feet south of the site.

6.7. Evaluation of Human Health Exposure

Based on the CSM and the review of environmental data, complete on-site exposure pathways appear to be present, in the absence of institutional and engineering controls, in current and construction-phase conditions. The complete exposure pathways indicate there is a risk of exposure to humans from site contaminants via exposure to soil and groundwater if institutional and engineering controls are not implemented.

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.

6.7.1. Current Conditions

Contaminant sources include historic fill with varying levels of SVOCs, metals, PCBs, and pesticides, hazardous lead-impacted soil, and groundwater with elevated levels of dissolved sodium and magnesium.

Contaminant release and transport mechanisms include contaminated soil transported as dust and contaminated groundwater flow. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- Lots 9 and 10 are covered with a building slab and an asphalt-paved parking lot, which prevent contact with soil.
- Lots 6 and 11 are surrounded by a wooden, construction fence and access is limited via secured gates.
- Soil at the site is not currently being disturbed.
- Groundwater at the site is not a potable water source.

6.7.2. Construction/Remediation Activities

During the excavation and foundation construction stage of redevelopment, which includes remediation, points of exposure include disturbed and exposed soil during excavation, dust and potential organic vapors generated during excavation, and contaminated groundwater encountered during excavation and/or dewatering operations. 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, to a lesser extent, the public adjacent to the site.

The potential for completed exposure pathways is present since all five elements exist; however, the risk can be avoided or minimized by applying appropriate health and safety measures during construction and remediation, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, cleaning truck undercarriages before they leave the site to prevent off-site soil tracking, maintaining site security, and wearing the appropriate personal protective equipment (PPE).

In accordance with the SEWP and forthcoming RAWP, which include a HASP, a Soil/Materials Management Plan (SMMP), and a CAMP, measures such as conducting an air-monitoring

program, donning PPE, covering soil stockpiles, altering work sequencing, maintaining a secure construction entrance, proper housekeeping, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during construction will be implemented. Such measures will prevent completion of these potential migration pathways.

6.7.3. 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 and/or engineering controls are not implemented, points of exposure include potential cracks in the foundation or lowest-level slab of the proposed development, and exposure during any future soil-disturbing activities. Routes of exposure may include inhalation of vapors entering the building. The receptor population includes the building tenants, residential property employees, retail employees, commercial office employees, visitors, and maintenance/utility workers. The possible routes of exposure can be avoided or mitigated by removal of historic fill material, construction and maintenance of a site capping system (i.e., concrete or at least 2 feet of clean soil), and implementation of a Site Management Plan.

6.7.4. 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.
2. In the absence of institutional and engineering controls, 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, or 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, as all or the majority of historic fill material will be excavated and transported to an off-site disposal facility and residual soil will be capped with an impermeable cover or two feet of clean soil. Regional groundwater is not used as a potable water source in New York City and the new

building foundation will include waterproofing, thereby reducing the likelihood of exposure to groundwater contaminants. The potential pathway for soil vapor intrusion into the building would be addressed with a waterproofing membrane, which will minimize soil vapor infiltration into the new building.

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 engineering controls will be implemented to prevent completion of this pathway.

7.0 NATURE AND EXTENT OF CONTAMINATION

This section evaluates the nature and extent of soil, groundwater, and soil vapor contamination. The nature and extent of the contamination is derived from a combination of field observations and analytical data that were discussed in Section 5.0.

7.1. Soil Contamination

Historic fill material was encountered beneath the surface cover at depths that vary between about 4 ft bgs on the northern portion of the site, 10 ft bgs on the eastern portion of the site, and 19 ft bgs on the western portion of the site. The historic fill contains varying concentrations of SVOCs, metals, PCBs, and pesticides. An area of hazardous lead-impacted soil was identified in the historic fill on Lot 10 during the 2014 Phase II ESI. Native soil, which does not contain contaminants at concentrations above the Part 375 UU SCOs, underlies the historic fill.

7.1.1. Historic Fill Material

The COCs associated with historic fill material include SVOCs, pesticides, PCBs, and metals. Thirty-three samples of historic fill were collected for laboratory analysis during the RI. Historic fill on Lots 6, 10, and 11 generally extends to depths above the proposed development depth, with the exception of areas on the southwestern, northern, and southeastern portions of the site. PAHs, PCBs, metals, and one pesticide (4,4'-DDT) were detected at concentrations above the Part 375 UU and/or RRU SCOs soil samples collected from the upper 7 ft of fill in soil borings and test pits. One soil sample collected from a test pit located adjacent to an abandoned fill port along 41st Avenue contained PAH concentrations above those encountered elsewhere on site. The detected concentrations may be indicative of residual petroleum impacts from a former UST system in that area. No other evidence of USTs or potentially associated impacts was encountered.

7.1.2. Hazardous Lead-Impacted Material

A sample of historic fill collected from a depth of 2 ft bgs on the southeastern portion of the site during the 2014 Phase II ESI contained lead at a concentration above the USEPA Characteristic Hazardous Waste Regulatory Limit. Supplemental soil sampling conducted in January 2015 indicated that the area containing lead at hazardous waste concentrations is confined to an area of about 100 square feet that extends to a depth of about 6 ft bgs. Other areas of potentially hazardous levels of lead were not encountered during the 2015 supplemental investigation or 2016 RI.

7.1.3. Native Soil

Samples of native soil generally did not contain contaminants at concentrations above the Part 375 UU SCOs. Three samples of native soil collected during the 2014 Phase II ESI and February 2016 RI field investigation contained concentrations of PAHs and/or metals above the Part 375 UU SCOs. Samples SB7 and SB5 were collected from 20 to 22 ft bgs during the Phase II ESI, and sample SB43 was collected from 16 to 18 ft bgs during the RI. The following constituents were detected at concentrations above the Part 375 UU SCOs:

- SB7_20-22: lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene
- SB5_20-22: lead
- SB43_16-18: cadmium, lead, and zinc.

The detections were anomalous with respect to other native soil samples collected during the investigations. Supplemental soil sampling conducted in April 2016 at corresponding depths near the former boring locations indicated that native soil in those areas does not contain PAHs or metals at concentrations above the Part 375 UU SCOs. The anomalous findings are therefore not considered representative of conditions in native soil and are attributed to infiltration of historic fill material into the borehole during sample collection.

7.2. Groundwater Contamination

Groundwater sampling identified one VOC, chloroform, and two dissolved metals, magnesium and sodium, at concentrations above the TOGS AWQS. Chloroform is a byproduct of the chlorination process in municipally-treated water. The detection of chloroform in a single well is therefore attributed to either infiltration of municipally-supplied water into the well or off-site infiltration of municipally-supplied water into groundwater (e.g., via buried sewer or water lines. The detection of sodium and magnesium in multiple wells indicates that those metals are indicative of a regional groundwater condition. Their detection is attributed to infiltration of groundwater by dissolved road salt, which is applied to roadways during the winter months.

7.3. Soil Vapor Contamination

Twenty-three VOCs, including petroleum and chlorinated VOCs, were detected in soil vapor samples collected across the site footprint. VOCs were not detected in site soil or groundwater at concentrations exceeding NYSDEC criteria. The detected soil vapor VOC concentrations in the samples were generally within a common order of magnitude; therefore, areas of locally impacted soil vapor were not encountered. The NYSDOH recommendations, based on comparison of the concentrations of applicable VOCs to the decision matrices

provided in the 2006 Soil Vapor Intrusion Guidance, are "no further action" and "take reasonable and practical actions to identify source(s) and reduce exposures".

8.0 CONCLUSIONS

The conclusions are based on RI data collected in February and April 2016. The RI was completed in accordance with the NYSDEC-approved RIWP, with the exception that insufficient recharge precluded collection of a groundwater sample from well MW41. The findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results. Relevant findings from the 2014 Phase II ESI, January 2015 supplemental investigation, and May 2015 geotechnical investigation are also referenced. Findings and conclusions are as follows:

1. Stratigraphy: Historic fill material was encountered beneath the surface cover and extended to depths of about 4 ft bgs on the northern portion, 10 ft bgs on the eastern portion, and about 19 ft bgs on the western portion of the site. The fill generally consists of brown fine sand with variable amounts of silt, gravel and/or cobbles, brick, concrete, glass, and organic material. Metal fragments resembling rebar and a three-foot layer of RCA were observed in shallow historic fill on then northern portion of the site. The fill layer is underlain by glacial till material. The native soil generally consists of laminated light brown over dark brown, medium- to fine-grained sand with variable amounts of silt and gravel. Soil boring SB41 on the northwestern portion of the site contained a layer of brown, silty, fine-grained sand with trace amounts of clay between about 22 ft bgs and the boring termination depth (i.e., about 28 ft bgs). Bedrock was not encountered in the soil borings or test pits; however, a geotechnical investigation completed by Langan in May 2015 identified bedrock (schist) at depths varying between about 67 and 93 ft bgs (el -43 to el -63). Neither staining, odors, organic vapor concentrations above background, nor other indications of petroleum or chemical release were encountered in the soil.

2. Hydrogeology: Synoptic groundwater level measurements collected in February 2016 indicated that groundwater elevations range from about el 8.64 to el 9.56 and groundwater depths range from about 17 to 24 ft bgs. The inferred groundwater gradient is generally from the southwest towards the northeast, which is incongruous with the regional topographic gradient. Groundwater elevations may be locally influenced by dewatering occurring at the northern adjoining MTA ESA Tunnel project site. The groundwater elevation measured in a monitoring well on the southwestern portion of the site (MW39) was asystematically lower than the elevations in surrounding wells. The reason for the lower elevation has yet to be determined and will be confirmed during subsequent monitoring events.

3. Historic Fill: Laboratory analytical results indicated that historic fill material contains SVOCs (i.e., PAHs), metals, PCBs, and one pesticide (4,4'-DDT) at concentrations above the respective Part 375 UU and/or RRU SCOs. One soil sample collected from a test pit

located adjacent to an abandoned fill port along 41st Avenue contained PAH concentrations above those encountered elsewhere on site. The detected concentrations may be indicative of residual petroleum impacts from a former UST system in that area. Groundwater sampling results indicate that the detected contaminants are not a source of groundwater contamination.

4. Hazardous Lead-Impacted Soil: Laboratory analytical results indicate that soil containing lead at concentrations above the USEPA Hazardous Waste Regulatory Limit is limited to an area of about 100 square feet that extends to a depth of about 6 ft bgs on the southeastern portion of the site.

5. Native Soil: Laboratory analytical results indicate that native soil does not contain contaminants at concentrations above the Part 375 UU SCOs. Confirmation sampling conducted in April 2016 indicated that previous detections of PAHs and metals at concentrations above the Part 375 UU SCOs are not representative of conditions in native soil, and instead likely reflect infiltration of historic fill material into the samples.

6. Groundwater: Dissolved magnesium and sodium were detected in multiple groundwater samples at concentrations above the TOGS AWQS. The concentrations are indicative of regional groundwater conditions and attributed to the infiltration of dissolved road salt into groundwater following surface application during winter months. Chloroform detected in one sample at a concentration above the TOGS AWQS is attributed to either infiltration of municipally-supplied water into the well or local groundwater.

7. Soil Vapor: Petroleum and chlorinated VOCs were detected in soil vapor samples collected throughout the site. Areas of localized soil vapor impacts were not identified, and comparison of the results with the decision matrices provided in the 2006 NYSDOH Soil Vapor Intrusion Guidance indicates that the NYSDOH recommendations are "no further action" and "take reasonable and practical actions to identify source(s) and reduce exposures". Corresponding VOC detections were not identified in soil and groundwater.

8. Abandoned On-Site Tanks: The test pit investigation and laboratory analytical results did not identify evidence of USTs or contamination associated with historical USTs. PAHs detected at concentrations above the Part 375 RRU SCOs in a test pit near the fill port along 41st Avenue may indicate residual impacts associated with a historical UST system. A brick foundation wall was observed near the western fill port along the 41st Avenue sidewalk, and a layer of RCA between about 2.5 and 5.5 ft bgs and extending at least 40 ft laterally was identified on the eastern portion of the site near the Northern Boulevard fill port. The RCA may have been placed following historical demolition, removal, and backfilling.

9. Sufficient analytical data were gathered during the RI and previous studies to establish site-specific soil cleanup levels and to develop a remedy for the site. The remedy will be described and evaluated in a RAWP prepared in accordance with NYS BCP guidelines. The remedy will need to address historic fill material impacted with metals, SVOCs, PCBs and pesticides; and hazardous lead-impacted soil.

9.0 REFERENCES

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C, Geotechnical Engineering Study, dated May 8, 2015 and revised October 19, 2015

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C, Phase I Environmental Site Assessment, dated August 7, 2014

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Middleton Environmental Inc. (MEI) Phase I Environmental Site Assessment, dated March 10, 2014

New York State Department of Health, Final Guidance for the Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006.

New York State Department of Environmental Conservation, Division of Environmental Remediation, Draft Brownfield Cleanup Program Guide, dated May 2004.

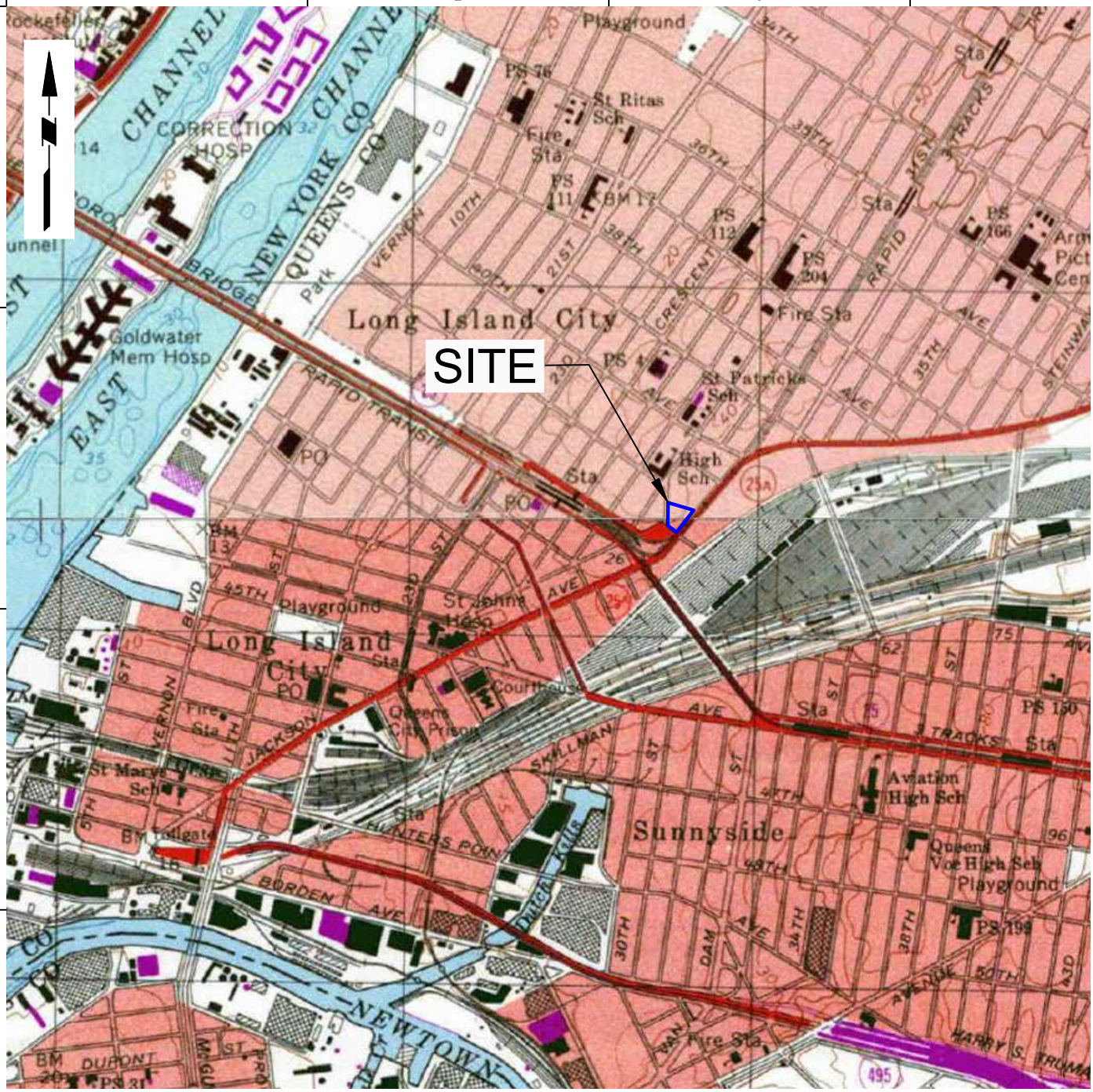
New York State Department of Environmental Conservation, DER-10 Technical Guidance for Site Investigation and Remediation, issued May 3, 2010; effective June 18, 2010.

New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006.

New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) dated June 1998.

United States Environmental Protection Agency, Low Flow Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001, January 19, 2010.

FIGURES



LEGEND:

APPROXIMATE SITE BOUNDARY

BASE MAP REFERENCE: UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5 MINUTE CENTRAL PARK, N.Y. AND BROOKLYN,. N.Y. TOPOGRAPHIC QUADRANGLE MAPS, DATED 1995

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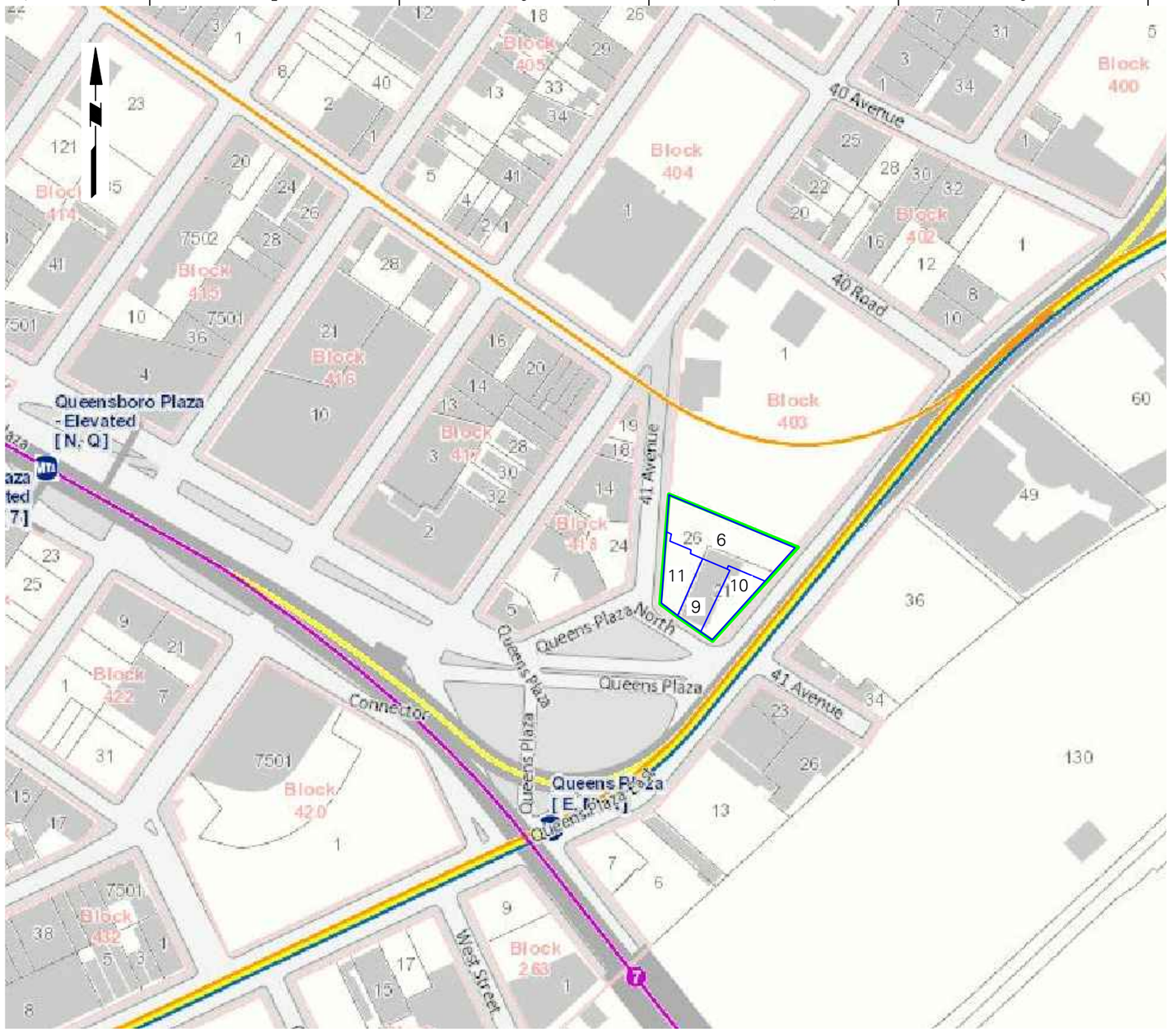
Project
QUEENS PLAZA NORTH
BLOCK No. 403
LOT Nos. 6, 9, 10, and 11
LONG ISLAND CITY
QUEENS NEW YORK

Figure Title
SITE LOCATION MAP

Project No. 170316401	Figure No. 1
Date 09/21/2015	
Scale NTS	
Drawn By MLR / Checked By SK	
Submission Date 09/22/2015	Sheet 1 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 1 - Site Location Ma□.dwg Date: 5/19/2016 Time: 10:03 User: mrogers Style Table: Langan.stb Layout: 1-SITE



LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES

NOTE:

1. THE BASE MAP IS REFERENCED FROM WWW.OASISNYC.NET/MAP, DATED MARCH 25, 2016.
2. NUMERICAL LABELS INDICATE LOT NUMBERS.

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BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
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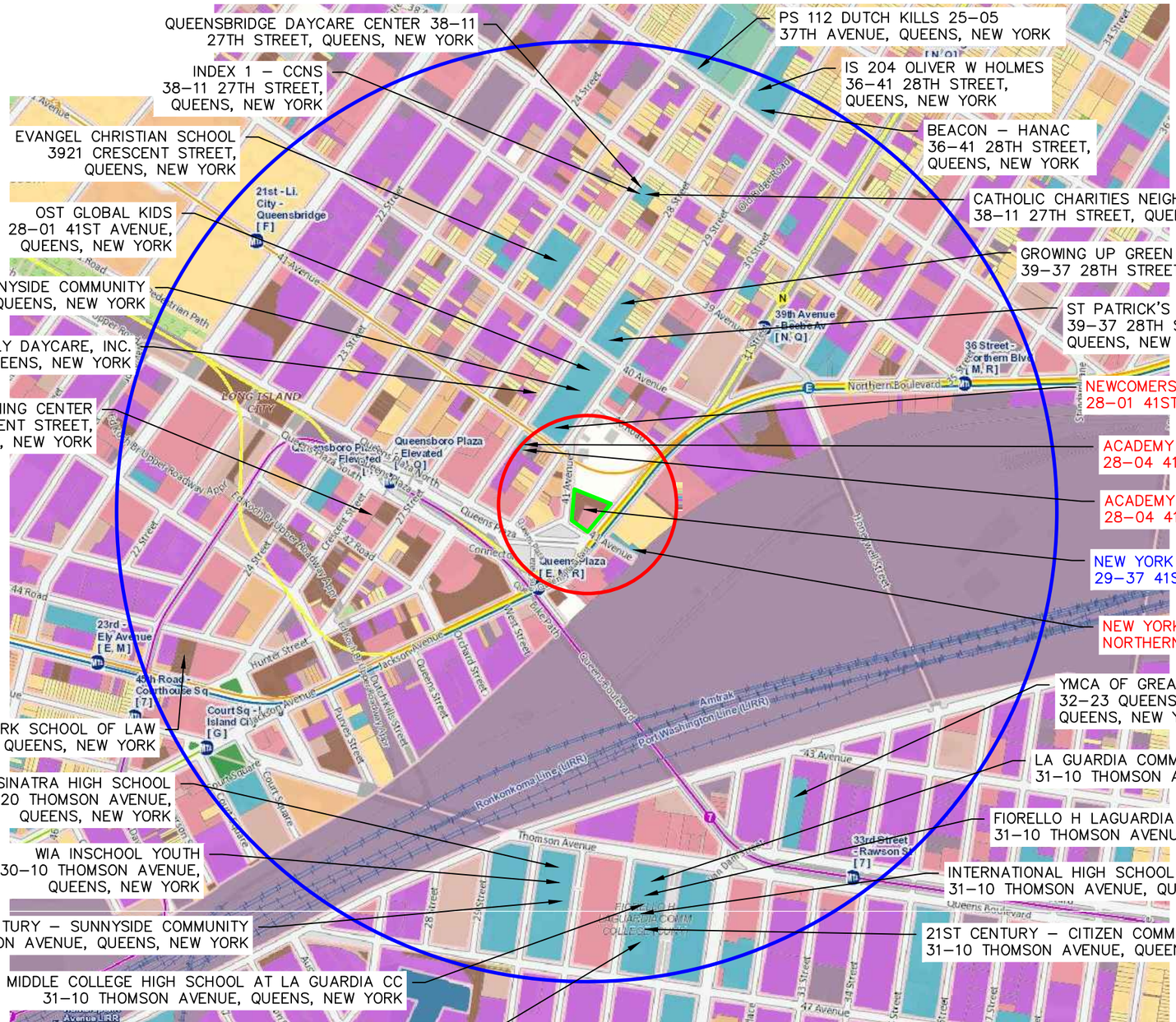
QUEENS NEW YORK

Figure Title
SITE PLAN

Project No. 170316401	Figure No. 2
Date 10/19/2015	
Scale N.T.S.	
Drawn By NM / Checked By SK	
Submission Date	Sheet 2 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 2 - Site Location Plan.dwg Date: 5/20/2016 Time: 13:13 User: dhannam Style Table: Langan.stb Layout: Figure 2



NOTE:

1. THE BASE MAP IS REFERENCED FROM WWW.OASISNYC.NET/MAP, DATED MARCH 25, 2016.
2. SENSITIVE RECEPTORS WITHIN 500 FEET OF THE PROPERTY BOUNDARY ARE SHOWN IN RED.
3. THE SITE IS SHOWN IN BLUE.

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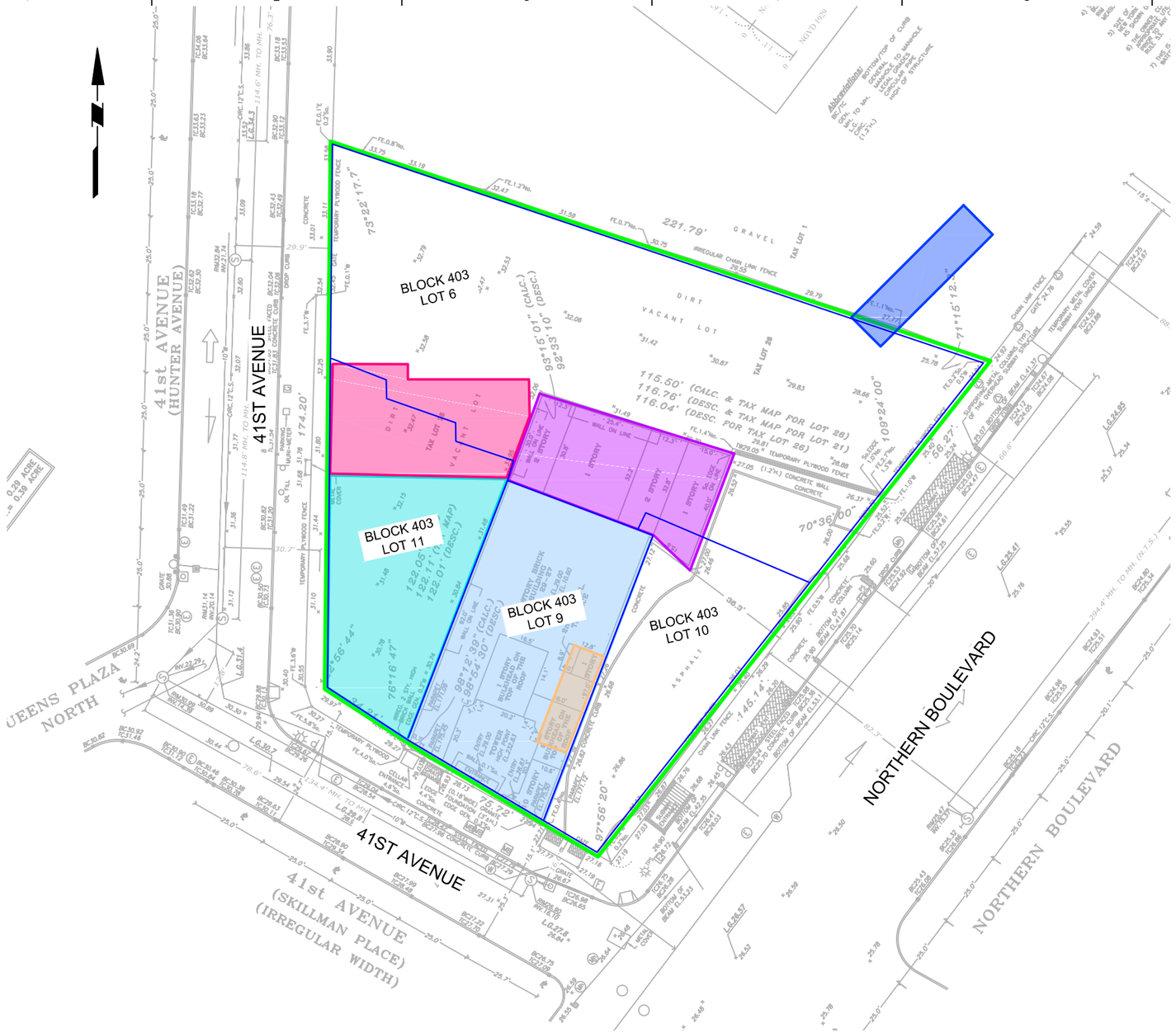
Figure Title

SURROUNDING LAND USE AND SENSITIVE RECEPTORS

Project No. 170316401	Figure No. 3
Date 5/12/2016	
Scale 1" = 700'	
Drawn By MLR / Checked By SK	
Submission Date	Sheet 3 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 3 - Surrounding Land Use and Sensiti□e Rece□tors.dwg Date: 5/19/2016 Time: 10:09 User: mrogers Style Table: Langan.stb Layout: Figure 2



LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- EXISTING COMMERCIAL OFFICE BUILDING (1926 TO PRESENT)
- EXISTING COMMERCIAL OFFICE BUILDING ADDITION (1931 TO PRESENT)
- MULTIPLE-STORY COMMERCIAL BANK (1921 TO EARLY 2000's)
- MULTIPLE-STORY COMMERCIAL BUILDING (1962 TO EARLY 2000's)
- AUTOMOTIVE REPAIR AND PAINTING FACILITY (1936 TO 1970)
- MOTORCYCLE REPAIR SHOP (1915)

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014.
2. FORMER BUILDING LOCATIONS ARE REFERENCED FROM THE CERTIFIED SANBORN MAPS AND ARE CONSIDERED TO BE APPROXIMATE.
3. THE PROPERTY HAS BEEN DEVELOPED SINCE THE LATE 1800's. THOSE BUILDINGS NOT SHOWN ON THIS MAP INCLUDE:
   - A HOTEL AND OFFICE BUILDING THAT OCCUPIED LOTS 9 AND 10 BETWEEN 1889 AND 1926
   - MULTIPLE-STORY BUILDINGS OF INDETERMINATE USAGE, A GYMNASIUM, A BOWLING ALLEY, AND THE PORTION OF A DANCEHALL THAT OCCUPIED LOT 6 BETWEEN 1889 AND 1926
   - A HOTEL THAT OCCUPIED THE NORTHEASTERN CORNER OF LOT 6, WHICH WAS DEMOLISHED BETWEEN 1947 AND 1950

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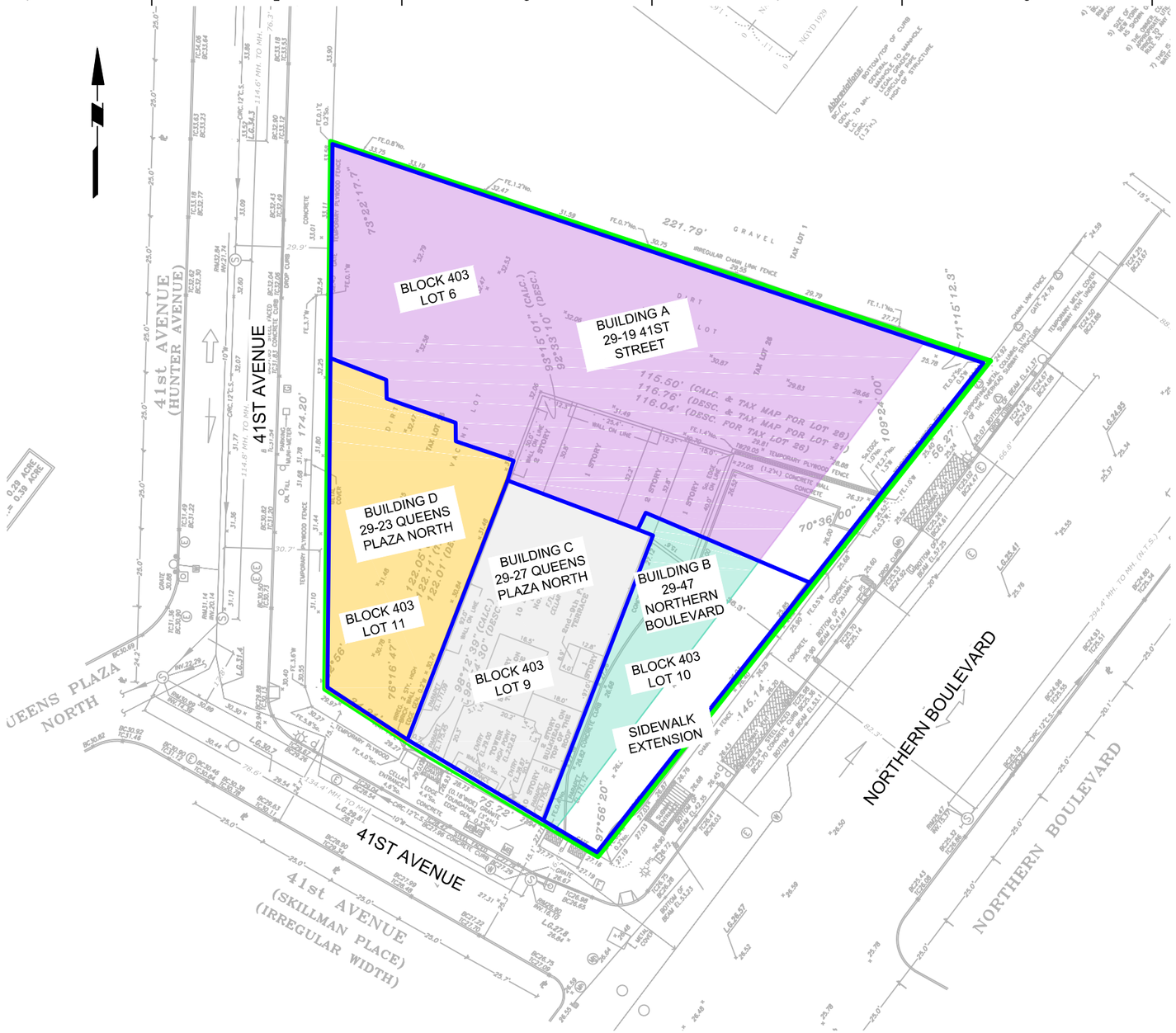
Figure Title
HISTORICAL SITE USAGE MAP

Project No. 170316401	Figure No. 4
Date 5/12/2016	
Scale 1" = 40'	
Drawn By MLR / Checked By SK	
Submission Date	Sheet 4 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 4 - Historical Use dah 05.20.2016.dwg Date: 5/24/2016 Time: 10:29 User: mrogers Style Table: Langan.stb Layout: Figure 2



LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- BUILDING A: 67-STORY RESIDENTIAL TOWER WITH A CELLAR AND SUB-CELLAR
- BUILDING B: 2-STORY COMMERCIAL BUILDING WITH A PARTIAL CELLAR
- BUILDING C: EXISTING, 10-STORY BUILDING WITH A CELLAR THAT WILL BE RENOVATED TO INCLUDE COMMERCIAL AND RESIDENTIAL AMENITY SPACE
- BUILDING D: 4-STORY COMMERCIAL BUILDING WITH A CELLAR AND SUB-CELLAR

NOTE:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014.

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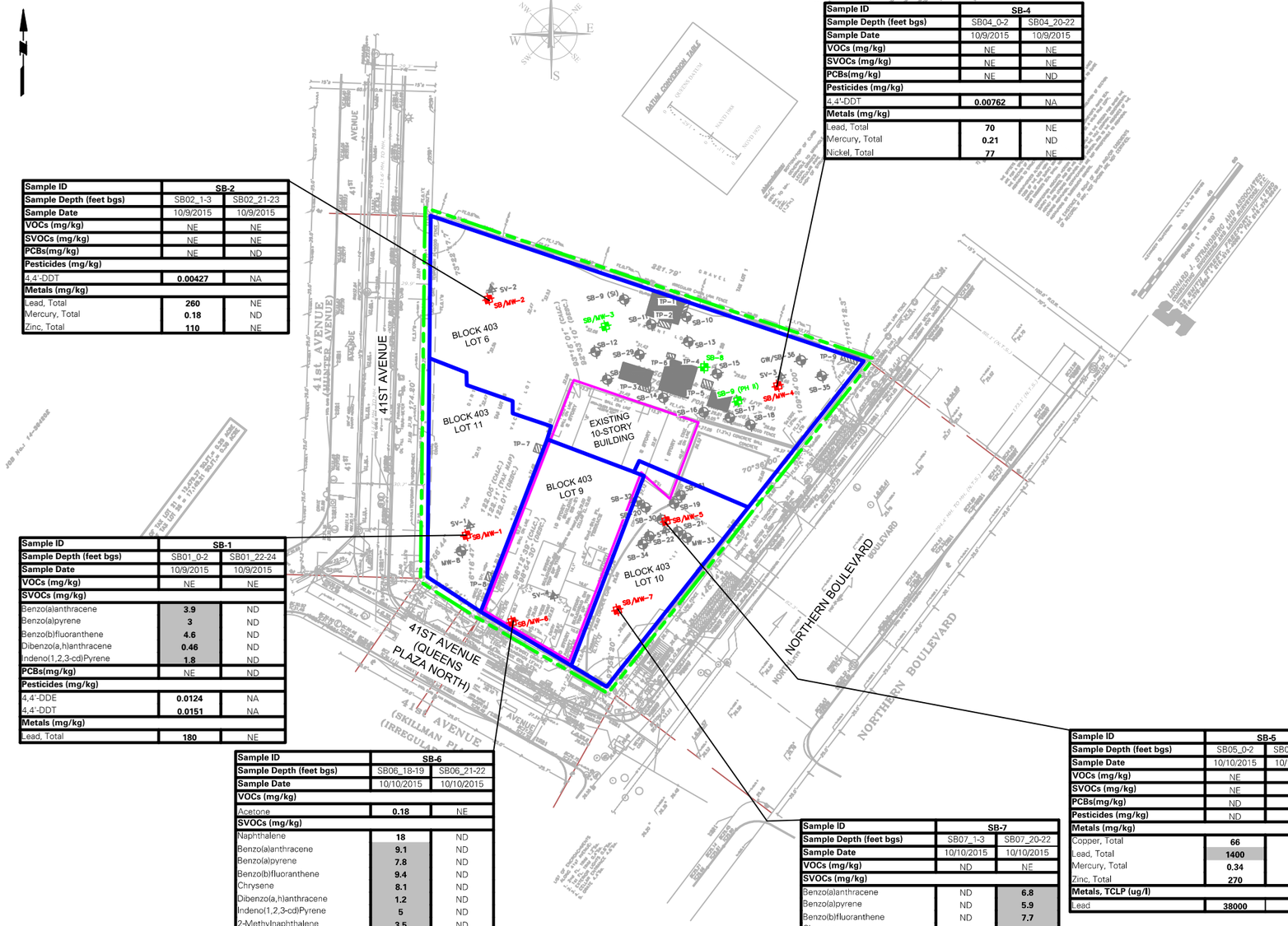
Project
QUEENS PLAZA NORTH
BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
LONG ISLAND CITY
QUEENS **NEW YORK**

Figure Title
PROPOSED BUILDING LOCATION PLAN

Project No. 170316401	Figure No. 5
Date 5/12/2016	
Scale 1" = 40'	
Drawn By MLR / Checked By SK	
Submission Date	Sheet 5 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 5 - Building Location Plan DAH 05.20.2016.dwg Date: 5/20/2016 Time: 13:30 User: dhannam Style Table: Langan.stb Layout: Figure 2



Sample ID	SB-2	
Sample Depth (feet bgs)	SB02_1-3	SB02_21-23
Sample Date	10/9/2015	10/9/2015
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
PCBs(mg/kg)	NE	ND
Pesticides (mg/kg)		
4,4'-DDT	**0.00427**	NA
Metals (mg/kg)		
Lead, Total	**260**	NE
Mercury, Total	**0.18**	ND
Zinc, Total	**110**	NE

Sample ID	SB-1	
Sample Depth (feet bgs)	SB01_0-2	SB01_22-24
Sample Date	10/9/2015	10/9/2015
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)anthracene	**3.9**	ND
Benzo(a)pyrene	**3**	ND
Benzo(b)fluoranthene	**4.6**	ND
Dibenzo(a,h)anthracene	**0.46**	ND
Indeno(1,2,3-cd)Pyrene	**1.8**	ND
PCBs(mg/kg)	NE	ND
Pesticides (mg/kg)		
4,4'-DDE	**0.0124**	NA
4,4'-DDT	**0.0151**	NA
Metals (mg/kg)		
Lead, Total	**180**	NE

Sample ID	SB-6	
Sample Depth (feet bgs)	SB06_18-19	SB06_21-22
Sample Date	10/10/2015	10/10/2015
VOCs (mg/kg)		
Acetone	**0.18**	NE
SVOCs (mg/kg)		
Naphthalene	**18**	ND
Benzo(a)anthracene	**9.1**	ND
Benzo(a)pyrene	**7.8**	ND
Benzo(b)fluoranthene	**9.4**	ND
Chrysene	**8.1**	ND
Dibenzo(a,h)anthracene	**1.2**	ND
Indeno(1,2,3-cd)Pyrene	**5**	ND
2-Methylnaphthalene	**3.5**	ND
PCBs(mg/kg)	ND	ND
Pesticides (mg/kg)	ND	NA
Metals (mg/kg)		
Barium, Total	**960**	NE
Lead, Total	**820**	NE
Zinc, Total	**830**	NE

Sample ID	SB-4	
Sample Depth (feet bgs)	SB04_0-2	SB04_20-22
Sample Date	10/9/2015	10/9/2015
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
PCBs(mg/kg)	NE	ND
Pesticides (mg/kg)		
4,4'-DDT	**0.00762**	NA
Metals (mg/kg)		
Lead, Total	**70**	NE
Mercury, Total	**0.21**	ND
Nickel, Total	**77**	NE

Sample ID	SB-5	
Sample Depth (feet bgs)	SB05_0-2	SB05_20-22
Sample Date	10/10/2015	10/10/2015
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
PCBs(mg/kg)	ND	ND
Pesticides (mg/kg)	ND	NA
Metals (mg/kg)		
Copper, Total	**66**	NE
Lead, Total	**1400**	**78**
Mercury, Total	**0.34**	ND
Zinc, Total	**270**	NE
Metals, TCLP (ug/l)		
Lead	**38000**	NT

Sample ID	SB-7	
Sample Depth (feet bgs)	SB07_1-3	SB07_20-22
Sample Date	10/10/2015	10/10/2015
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)		
Benzo(a)anthracene	ND	**6.8**
Benzo(a)pyrene	ND	**5.9**
Benzo(b)fluoranthene	ND	**7.7**
Chrysene	ND	**5.7**
Dibenzo(a,h)anthracene	ND	**1.2**
Indeno(1,2,3-cd)Pyrene	ND	**3.4**
PCBs(mg/kg)	ND	ND
Pesticides (mg/kg)	ND	NA
Metals (mg/kg)		
Lead, Total	ND	**92**

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- EXISTING BUILDING
- SB/MW-1 — SOIL BORINGS - OCTOBER 2014 PHASE II ESI (ANALYTICAL RESULTS EXCEED PART 375 UNRESTRICTED USE SCOs)
- SB/MW-3 — SOIL BORINGS - OCTOBER 2014 PHASE II ESI (ANALYTICAL RESULTS DO NOT EXCEED PART 375 UNRESTRICTED USE SCOS)
- SV-1 — SOIL VAPOR SAMPLES - OCTOBER 2014 PHASE II ESI
- SB-13 — SOIL BORING - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- TP-7 — TEST PITS - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- GEOPHYSICAL ANOMALY

NOTES:

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2. ESI = ENVIRONMENTAL SITE INVESTIGATION
3. SCO = SOIL CLEANUP OBJECTIVE
4. bgs = BELOW GRADE SURFACE
5. ONLY PARAMETERS WITH PART 375 EXCEEDANCES ARE SHOWN IN TABLES
6. SOIL CONCENTRATIONS THAT EXCEED 6 NYCRR PART 375 UNRESTRICTED USE SCOS ARE BOLDED
7. SOIL CONCENTRATIONS THAT EXCEED 6 NYCRR PART 375 RESTRICTED RESIDENTIAL USE SCOS ARE BOLDED AND SHADED
8. NE = NO EXCEEDANCE
9. NA = NOT APPLICABLE
10. ND = NOT DETECTED
11. VOCs = VOLATILE ORGANIC COMPOUNDS
12. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
13. PCBs = POLYCHLORINATED BIPHENYLS
14. mg/kg = MILLIGRAMS PER KILOGRAM
15. ug/L = MICROGRAMS PER LITER

Compound	Part 375 Unrestricted Use SCO	Part 375 Restricted Residential Use SCO	USEPA RCRA TCLP
VOCs (mg/kg)			
Acetone	0.05	100	NA
SVOCs (mg/kg)			
Benzo(a)anthracene	1	1	NA
Benzo(a)pyrene	1	1	NA
Benzo(b)fluoranthene	1	1	NA
Benzo(k)fluoranthene	0.8	3.9	NA
Chrysene	1	3.9	NA
Dibenzo(a,h)anthracene	0.33	0.33	NA
Indeno(1,2,3-cd)Pyrene	0.5	0.5	NA
Naphthalene	12	100	NA
Metals (mg/kg)			
Barium, Total	350	400	NA
Copper, Total	50	270	NA
Lead, Total	63	400	NA
Mercury, Total	0.18	0.81	NA
Zinc Total	109	10000	NA
Pesticides (mg/kg)			
4,4'-DDE	0.0033	8.9	NA
4,4'-DDT	0.0033	7.9	NA
TCLP Metals (ug/l)			
Lead	NA	NA	5000

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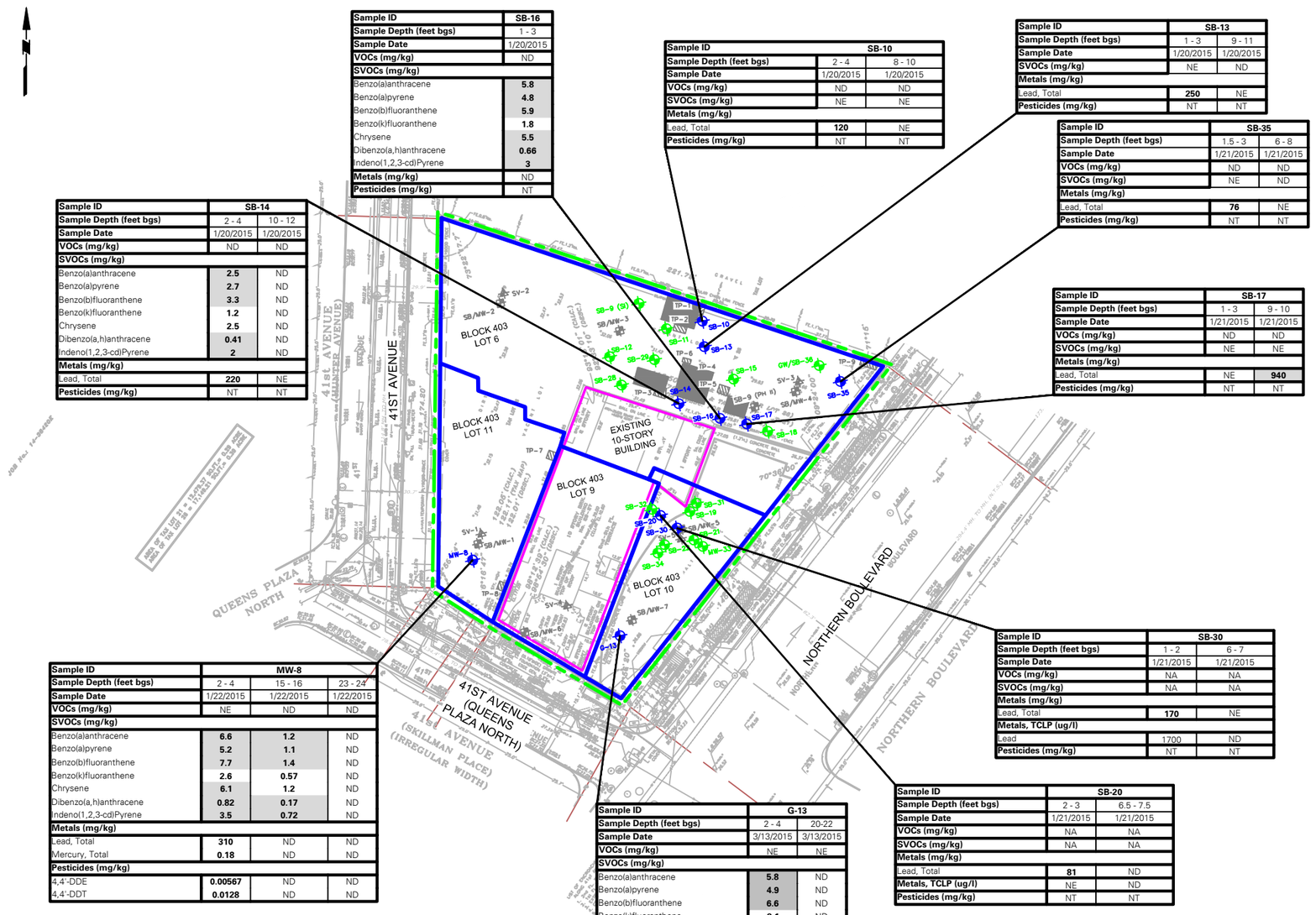
Figure Title
PHASE II ESI SOIL SAMPLING RESULTS MAP

Project No. 170316401	Figure No. 6
Date 09/25/2015	
Scale 1" = 60'	
Drawn By DAH / Checked By SK	
Submission Date 09/22/2015	Sheet 6 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 6 - Phase II ESI Soil Sam□ling Results Ma□.dwg Date: 5/23/2016 Time: 10:27 User: mrogers Style Table: Langan.stb Layout: Figure 3



Sample ID	SB-16
Sample Depth (feet bgs)	1 - 3
Sample Date	1/20/2015
VOCs (mg/kg)	ND
SVOCs (mg/kg)	
Benzo(a)anthracene	**5.8**
Benzo(a)pyrene	**4.8**
Benzo(b)fluoranthene	**5.9**
Benzo(k)fluoranthene	**1.8**
Chrysene	**5.5**
Dibenzo(a,h)anthracene	**0.66**
Indeno(1,2,3-cd)Pyrene	**3**
Metals (mg/kg)	ND
Pesticides (mg/kg)	NT

Sample ID	SB-10	
Sample Depth (feet bgs)	2 - 4	8 - 10
Sample Date	1/20/2015	1/20/2015
VOCs (mg/kg)	ND	ND
SVOCs (mg/kg)	NE	NE
Metals (mg/kg)		
Lead, Total	**120**	NE
Pesticides (mg/kg)	NT	NT

Sample ID	SB-13	
Sample Depth (feet bgs)	1 - 3	9 - 11
Sample Date	1/20/2015	1/20/2015
SVOCs (mg/kg)	NE	ND
Metals (mg/kg)		
Lead, Total	**250**	NE
Pesticides (mg/kg)	NT	NT

Sample ID	SB-35	
Sample Depth (feet bgs)	1.5 - 3	6 - 8
Sample Date	1/21/2015	1/21/2015
VOCs (mg/kg)	ND	ND
SVOCs (mg/kg)	NE	ND
Metals (mg/kg)		
Lead, Total	**76**	NE
Pesticides (mg/kg)	NT	NT

Sample ID	SB-14	
Sample Depth (feet bgs)	2 - 4	10 - 12
Sample Date	1/20/2015	1/20/2015
VOCs (mg/kg)	ND	ND
SVOCs (mg/kg)		
Benzo(a)anthracene	**2.5**	ND
Benzo(a)pyrene	**2.7**	ND
Benzo(b)fluoranthene	**3.3**	ND
Benzo(k)fluoranthene	**1.2**	ND
Chrysene	**2.5**	ND
Dibenzo(a,h)anthracene	**0.41**	ND
Indeno(1,2,3-cd)Pyrene	**2**	ND
Metals (mg/kg)		
Lead, Total	**220**	NE
Pesticides (mg/kg)	NT	NT

Sample ID	SB-17	
Sample Depth (feet bgs)	1 - 3	9 - 10
Sample Date	1/21/2015	1/21/2015
VOCs (mg/kg)	ND	ND
SVOCs (mg/kg)	NE	NE
Metals (mg/kg)		
Lead, Total	NE	**940**
Pesticides (mg/kg)	NT	NT

Sample ID	MW-8		
Sample Depth (feet bgs)	2 - 4	15 - 16	23 - 24
Sample Date	1/22/2015	1/22/2015	1/22/2015
VOCs (mg/kg)	NE	ND	ND
SVOCs (mg/kg)			
Benzo(a)anthracene	**6.6**	**1.2**	ND
Benzo(a)pyrene	**5.2**	**1.1**	ND
Benzo(b)fluoranthene	**7.7**	**1.4**	ND
Benzo(k)fluoranthene	**2.6**	**0.57**	ND
Chrysene	**6.1**	**1.2**	ND
Dibenzo(a,h)anthracene	**0.82**	**0.17**	ND
Indeno(1,2,3-cd)Pyrene	**3.5**	**0.72**	ND
Metals (mg/kg)			
Lead, Total	**310**	ND	ND
Mercury, Total	**0.18**	ND	ND
Pesticides (mg/kg)			
4,4'-DDE	**0.00567**	ND	ND
4,4'-DDT	**0.0128**	ND	ND

Sample ID	G-13	
Sample Depth (feet bgs)	2 - 4	20-22
Sample Date	3/13/2015	3/13/2015
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)anthracene	**5.8**	ND
Benzo(a)pyrene	**4.9**	ND
Benzo(b)fluoranthene	**6.6**	ND
Benzo(k)fluoranthene	**2.1**	ND
Chrysene	**5.2**	ND
Dibenzo(a,h)anthracene	**0.75**	ND
Indeno(1,2,3-cd)Pyrene	**3.6**	ND
Metals (mg/kg)	NE	NE
Pesticides (mg/kg)		
4,4'-DDE	NE	ND
4,4'-DDT	**0.00632**	ND

Sample ID	SB-30	
Sample Depth (feet bgs)	1 - 2	6 - 7
Sample Date	1/21/2015	1/21/2015
VOCs (mg/kg)	NA	NA
SVOCs (mg/kg)	NA	NA
Metals (mg/kg)		
Lead, Total	**170**	NE
Metals, TCLP (ug/l)		
Lead	1700	ND
Pesticides (mg/kg)	NT	NT

Sample ID	SB-20	
Sample Depth (feet bgs)	2 - 3	6.5 - 7.5
Sample Date	1/21/2015	1/21/2015
VOCs (mg/kg)	NA	NA
SVOCs (mg/kg)	NA	NA
Metals (mg/kg)		
Lead, Total	**81**	ND
Metals, TCLP (ug/l)	NE	ND
Pesticides (mg/kg)	NT	NT

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- EXISTING BUILDING
- SB/MW-1 — SOIL BORINGS/GROUNDWATER MONITORING WELLS - OCTOBER 2014 PHASE II ESI
- SV-1 — SOIL VAPOR SAMPLES - OCTOBER 2014 PHASE II ESI
- SB-13 — SOIL BORING - JANUARY 2015 SUPPLEMENTAL INVESTIGATION (ANALYTICAL RESULTS EXCEED PART 375 UNRESTRICTED USE SCOs)
- SB-15 — SOIL BORING - JANUARY 2015 SUPPLEMENTAL INVESTIGATION (ANALYTICAL RESULTS DO NOT EXCEED PART 375 UNRESTRICTED USE SCOS)
- TP-7 — TEST PITS - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- GEOPHYSICAL ANOMALY

NOTES:

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10. ND = NOT DETECTED
11. VOCs = VOLATILE ORGANIC COMPOUNDS
12. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
13. PCBs = POLYCHLORINATED BIPHENYLS
14. mg/kg = MILLIGRAMS PER KILOGRAM
15. ug/L = MICROGRAMS PER LITER

Compound	Part 375 Unrestricted Use SCO	Part 375 Restricted Residential Use SCO	USEPA RCRA TCLP
VOCs (mg/kg)			
Acetone	0.05	100	NA
SVOCs (mg/kg)			
Benzo(a)anthracene	1	1	NA
Benzo(a)pyrene	1	1	NA
Benzo(b)fluoranthene	1	1	NA
Benzo(k)fluoranthene	0.8	3.9	NA
Chrysene	1	3.9	NA
Dibenzo(a,h)anthracene	0.33	0.33	NA
Indeno(1,2,3-cd)Pyrene	0.5	0.5	NA
Naphthalene	12	100	NA
Metals (mg/kg)			
Barium, Total	350	400	NA
Copper, Total	50	270	NA
Lead, Total	63	400	NA
Mercury, Total	0.18	0.81	NA
Zinc Total	109	10000	NA
Pesticides (mg/kg)			
4,4'-DDE	0.0033	8.9	NA
4,4'-DDT	0.0033	7.9	NA
TCLP Metals (ug/l)			
Lead	NA	NA	5000

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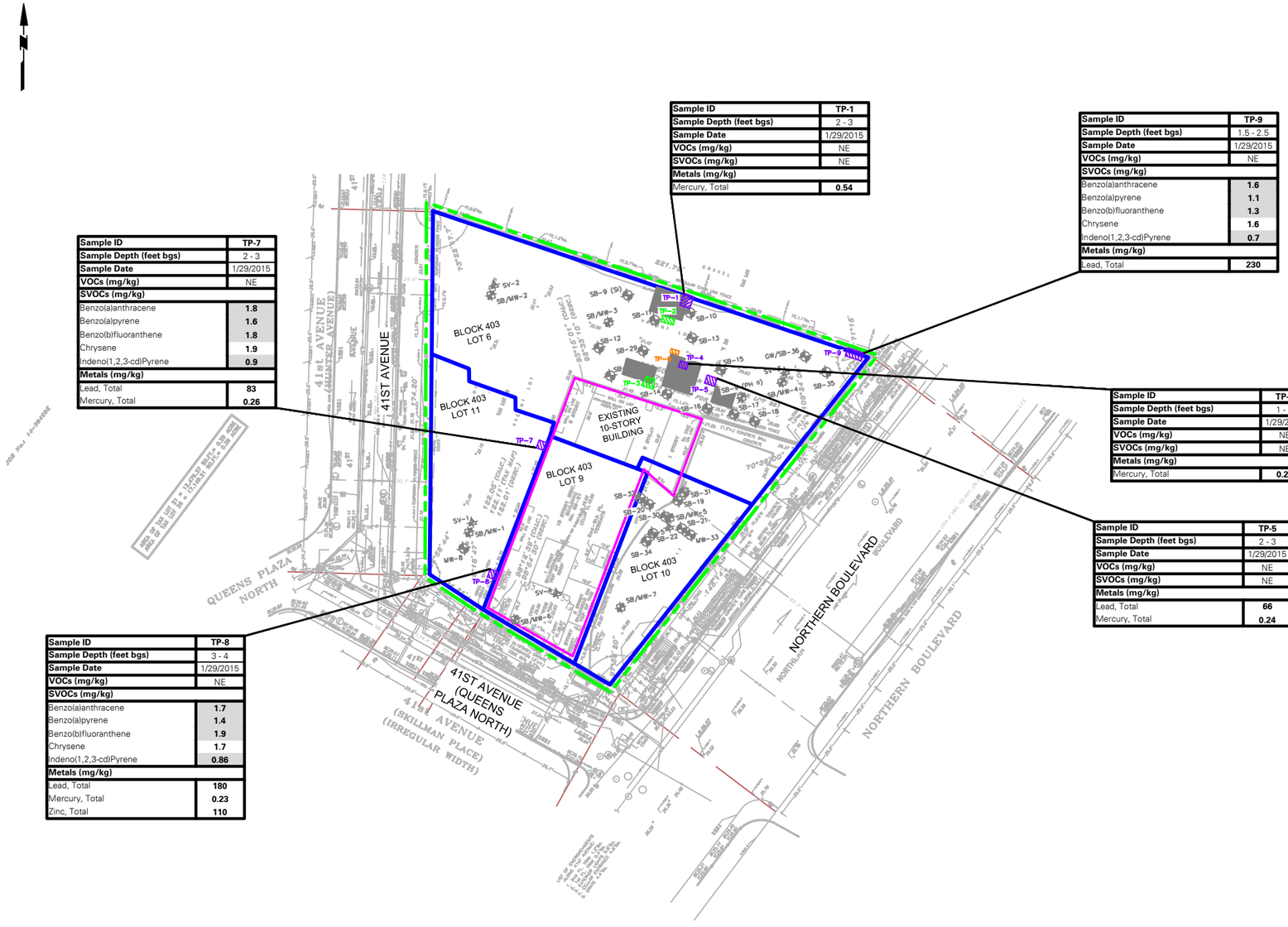
BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
LONG ISLAND CITY
QUEENS NEW YORK

Figure Title
SUPPLEMENTAL SOIL SAMPLING RESULTS MAP (SOIL BORINGS)

Project No. 170316401
Date 09/25/2015
Scale 1" = 60'
Drawn By DAH
Checked By SK
Submission Date 09/22/2015

Figure No. 7

Sheet 7 of 16



Sample ID	TP-1
Sample Depth (feet bgs)	2 - 3
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
Metals (mg/kg)	
Mercury, Total	**0.54**

Sample ID	TP-9
Sample Depth (feet bgs)	1.5 - 2.5
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
Benzo(a)anthracene	**1.6**
Benzo(a)pyrene	**1.1**
Benzo(b)fluoranthene	**1.3**
Chrysene	**1.6**
Indeno(1,2,3-cd)Pyrene	**0.7**
Metals (mg/kg)	
Lead, Total	**230**

Sample ID	TP-7
Sample Depth (feet bgs)	2 - 3
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
Benzo(a)anthracene	**1.8**
Benzo(a)pyrene	**1.6**
Benzo(b)fluoranthene	**1.8**
Chrysene	**1.9**
Indeno(1,2,3-cd)Pyrene	**0.9**
Metals (mg/kg)	
Lead, Total	**83**
Mercury, Total	**0.26**

Sample ID	TP-4
Sample Depth (feet bgs)	1 - 2
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
Metals (mg/kg)	
Mercury, Total	**0.25**

Sample ID	TP-5
Sample Depth (feet bgs)	2 - 3
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	NE
Metals (mg/kg)	
Lead, Total	**66**
Mercury, Total	**0.24**

Sample ID	TP-8
Sample Depth (feet bgs)	3 - 4
Sample Date	1/29/2015
VOCs (mg/kg)	NE
SVOCs (mg/kg)	
Benzo(a)anthracene	**1.7**
Benzo(a)pyrene	**1.4**
Benzo(b)fluoranthene	**1.9**
Chrysene	**1.7**
Indeno(1,2,3-cd)Pyrene	**0.86**
Metals (mg/kg)	
Lead, Total	**180**
Mercury, Total	**0.23**
Zinc, Total	**110**

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- EXISTING BUILDING
- SB/MW-1 — SOIL BORINGS/GROUNDWATER MONITORING WELLS - OCTOBER 2014 PHASE II ESI
- SV-1 — SOIL VAPOR SAMPLES - OCTOBER 2014 PHASE II ESI
- SB-13 — SOIL BORING - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- TP-7 — TEST PITS - JANUARY 2015 SUPPLEMENTAL INVESTIGATION (ANALYTICAL RESULTS EXCEED THE PART 375 UNRESTRICTED USE SCOs)
- TP-2 — TEST PITS - JANUARY 2015 SUPPLEMENTAL INVESTIGATION (ANALYTICAL RESULTS DO NOT EXCEED THE PART 375 UNRESTRICTED USE SCOS)
- TP-6 — TEST PITS - JANUARY 2015 SUPPLEMENTAL INVESTIGATION (SOIL SAMPLES WERE NOT COLLECTED FROM THE TEST PIT)
- GEOPHYSICAL ANOMALY

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
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10. ND = NOT DETECTED
11. VOCs = VOLATILE ORGANIC COMPOUNDS
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13. PCBs = POLYCHLORINATED BIPHENYLS
14. mg/kg = MILLIGRAMS PER KILOGRAM
15. ug/L = MICROGRAMS PER LITER

Compound	Part 375 Unrestricted Use SCO	Part 375 Restricted Residential Use SCO
VOCs (mg/kg)		
Acetone	0.05	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
Dibenzo(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)Pyrene	0.5	0.5
Naphthalene	12	100
Metals (mg/kg)		
Lead, Total	63	400
Mercury, Total	0.18	0.81

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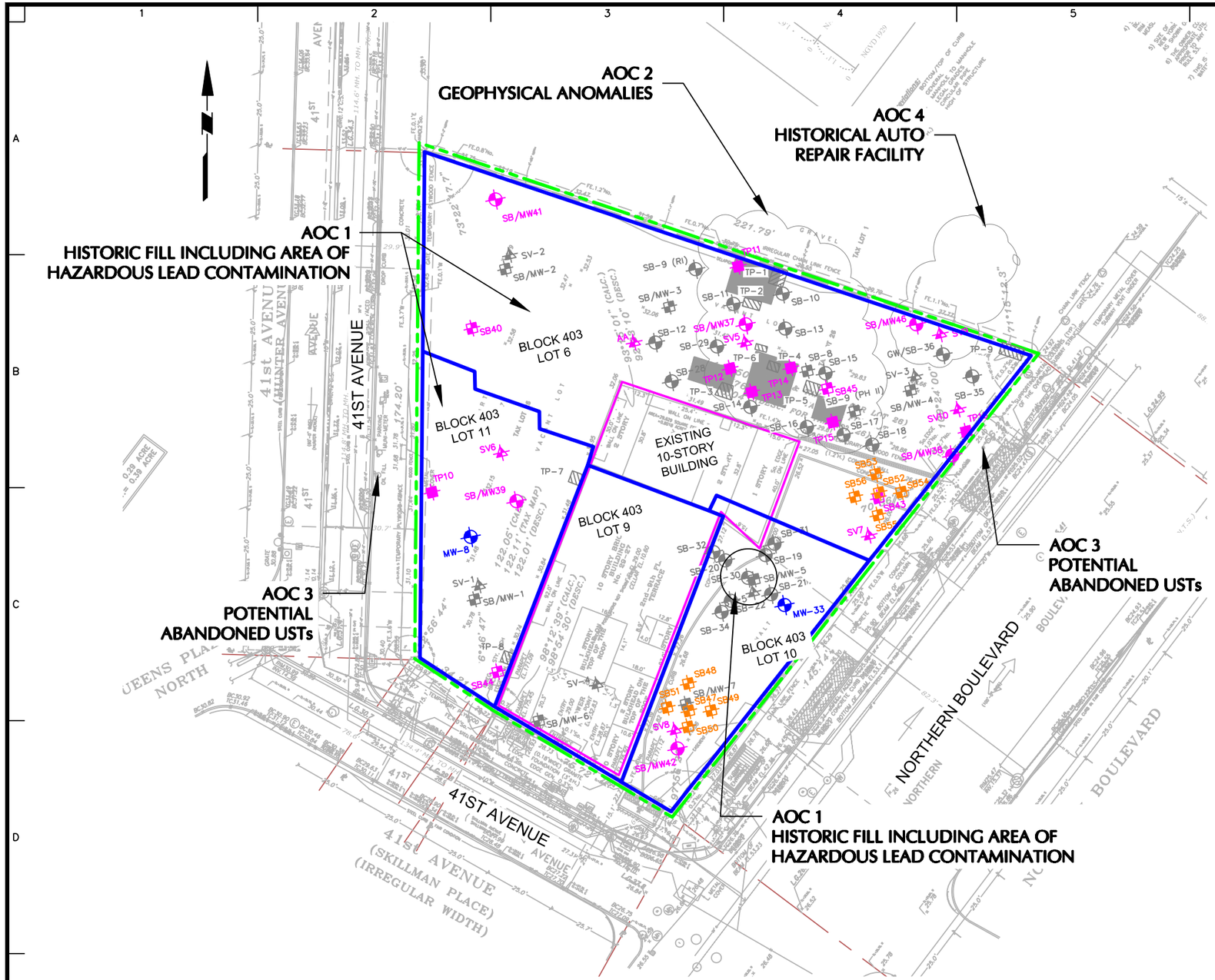
Figure Title
SUPPLEMENTAL SOIL SAMPLING RESULTS MAP (TEST PITS)

Project No. 170316401
Date 09/25/2015
Scale 1" = 60'
Drawn By DAH | Checked By SK
Submission Date 09/22/2015
Figure No. 8
Sheet 8 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 8 - Su□lemental Soil Sam□ling Results Ma□(Test Pits).dwg Date: 5/24/2016 Time: 16:54 User: mrogers Style Table: Langan.stb Layout: Figure 3



LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE TAX LOT BOUNDARIES
- EXISTING BUILDING
- SB/MW-1 — SOIL BORING/GROUNDWATER MONITORING WELL - OCTOBER 2014 PHASE II ESI
- SV-1 — SOIL VAPOR PROBE - OCTOBER 2014 PHASE II ESI
- SB-13 — SOIL BORING - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- TP-7 — TEST PIT - JANUARY 2015 SUPPLEMENTAL INVESTIGATION
- SB40 — SOIL BORING - FEBRUARY 2016 RI
- SB/MW30 — SOIL BORING/GROUNDWATER MONITORING WELL - FEBRUARY 2016 RI
- SV7 — SOIL VAPOR PROBE - FEBRUARY 2016 RI
- TP10 — TEST PIT - FEBRUARY 2016 RI
- MW-33 — EXISTING WELL - RESAMPLED DURING THE FEBRUARY 2016 RI
- SB50 — SOIL BORING - APRIL 2016 SUPPLEMENTAL SOIL INVESTIGATION
- GEOPHYSICAL ANOMALY - LOCATED DURING THE OCTOBER 2014 PHASE II ESI

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. ESI = ENVIRONMENTAL SITE INVESTIGATION
3. RI = REMEDIAL INVESTIGATION
4. AOC = AREA OF CONCERN
5. UST = UNDERGROUND STORAGE TANK

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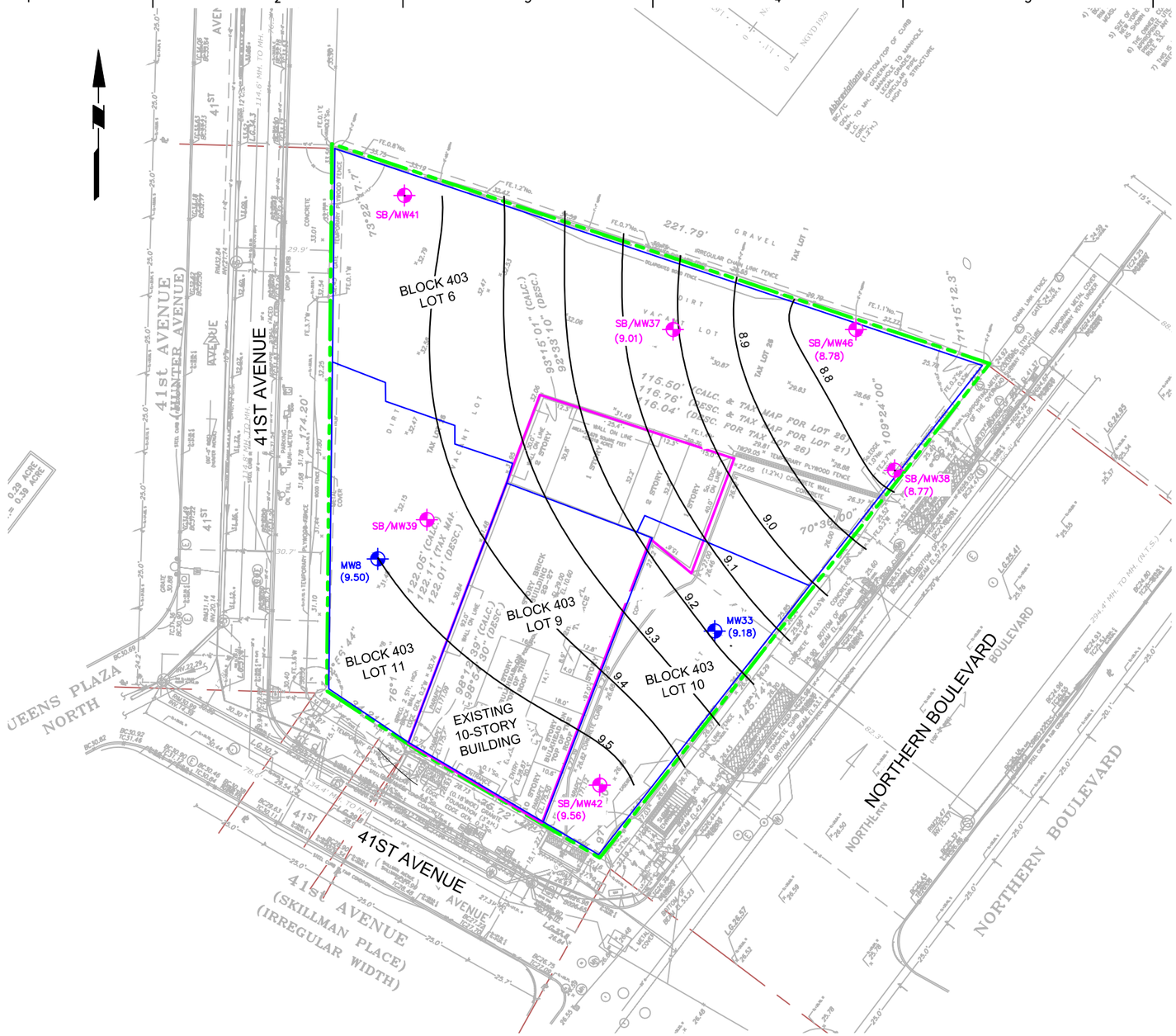
Figure Title
AOC AND SAMPLE LOCATION PLAN

Project No. 170316401	Figure No. 9
Date 09/25/2015	
Scale 1" = 40'	
Drawn By DAH / Checked By SK	
Submission Date 11/16/2015	Sheet 9 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 9 - AOC and Sam le Location Plan.dwg Date: 5/23/2016 Time: 10:57 User: mrogers Style Table: Langan.stb Layout: Figure 3



LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- APPROXIMATE TAX LOT BOUNDARIES
- GROUNDWATER CONTOUR
- SB/MW46 (8.78) — SOIL BORING/GROUNDWATER MONITORING WELL - FEBRUARY 2016 RI (GROUNDWATER ELEVATION)
- MW33 (9.18) — EXISTING WELL - RESAMPLED DURING THE FEBRUARY 2016 RI (GROUNDWATER ELEVATION)

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. RI = REMEDIAL INVESTIGATION
3. THE GROUNDWATER CONTOURS ARE BASED ON DEPTH TO GROUNDWATER MEASUREMENTS TAKEN ON FEBRUARY 25 AND 26, 2016, AND SURVEY DATA (I.E., TOP OF CASING ELEVATIONS) COLLECTED BY LANGAN IN MARCH 2016.
4. GROUNDWATER ELEVATION CONTOURS ARE PRESENTED IN 0.1-FOOT INTERVALS.
5. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
6. SURFER® 11 BY GOLDEN SOFTWARE, WAS USED TO DEVELOP THE GROUNDWATER CONTOURS.
7. ELEVATION DATA FROM WELL MW39 WAS NOT INCORPORATED INTO THE MODEL, DUE TO AN OUTLIER DATA POINT (EL. 8.8).

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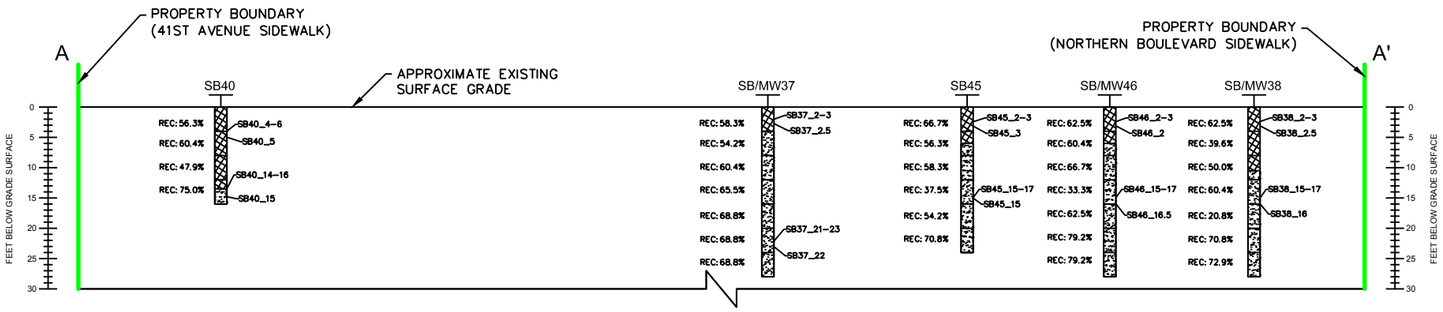
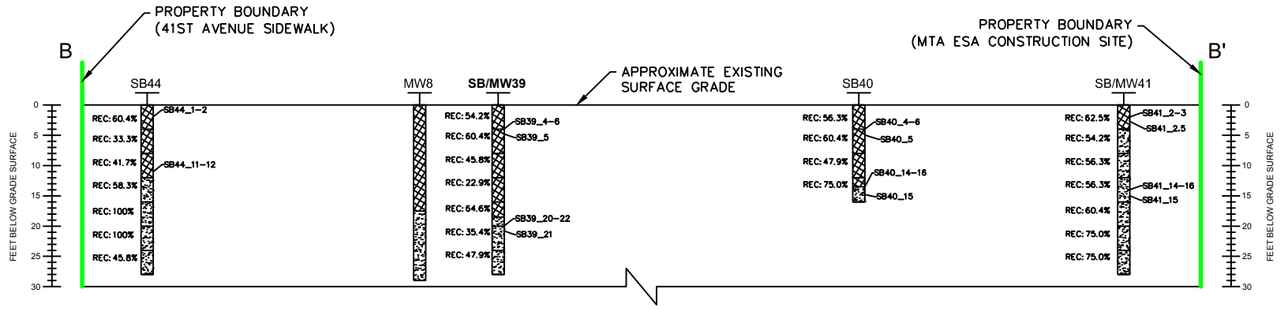
Figure Title
GROUNDWATER CONTOUR MAP

Project No. 170316401	Figure No. 10
Date 08/16/2016	
Scale 1" = 40'	
Drawn By DAH / Checked By SK	
Submission Date AUGUST 2016	Sheet 10 of 16

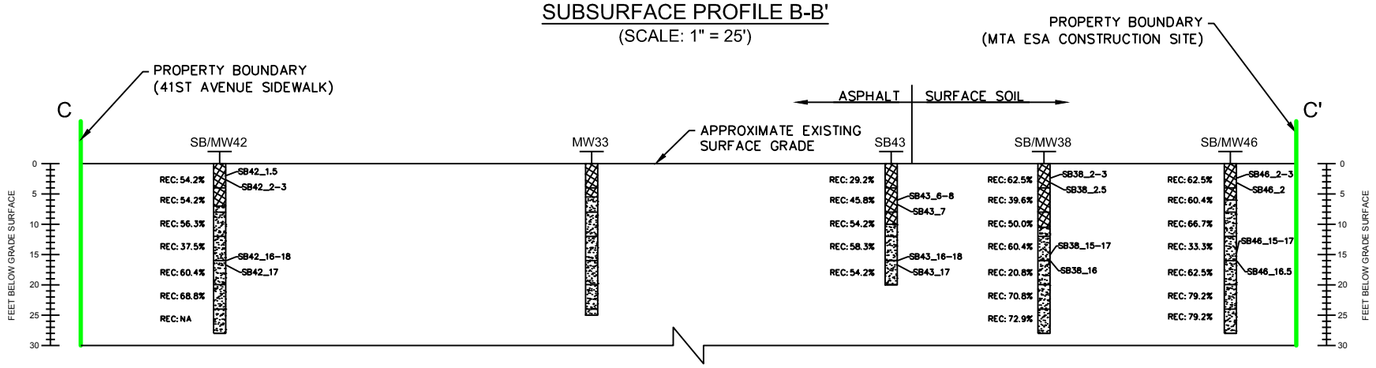
Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 10 - GW Contours MW41.dwg Date: 8/16/2016 Time: 11:29 User: mrogers Style Table: Langan.stb Layout: Figure 3



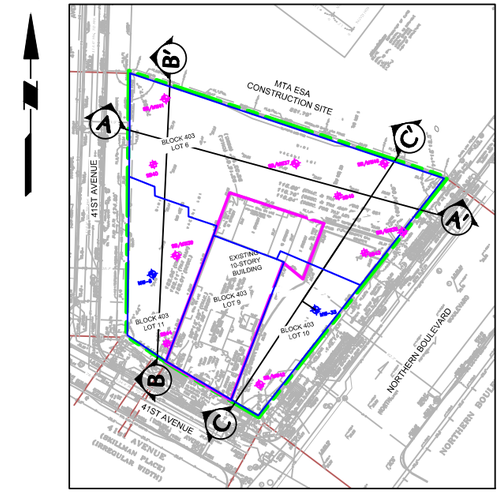
SUBSURFACE PROFILE A-A'
(SCALE: 1" = 25')



SUBSURFACE PROFILE B-B'
(SCALE: 1" = 25')



SUBSURFACE PROFILE C-C'
(SCALE: 1" = 25')

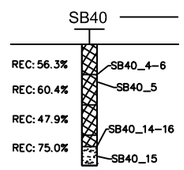


KEY MAP
(SCALE: 1" = 100')

LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- SB40 — SOIL BORING - FEBRUARY 2016 RI
- SB/MW30 — SOIL BORING/GROUNDWATER MONITORING WELL - FEBRUARY 2016 RI
- SB-13 — EXISTING WELL - RESAMPLED DURING THE FEBRUARY 2016 RI
- HISTORIC FILL MATERIAL
- GRANULAR SOILS

BORING KEY DIAGRAM AND NOTES



SB40_5 — GRAB SAMPLE_DEPTH INTERVAL OF SAMPLE COLLECTION

REC — (LENGTH OF SOIL RETRIEVED) / (LENGTH OF MACROCORE SLEEVE) * 100%

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. MTA ESA = METROPOLITAN TRANSPORTATION AUTHORITY EASTSIDE ACCESS
3. BORING LOCATIONS ARE APPROXIMATE.
4. SUBSURFACE LITHOLOGY INTERPRETED FROM RECOVERED SOIL SAMPLES. REFER TO BORING LOGS (APPENDIX F) FOR ADDITIONAL INFORMATION.
5. MACROCORE SLEEVES ARE 4 FEET LONG.

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Figure Title
SUBSURFACE PROFILES

Project No. 170316401	Figure No. 11
Date 09/25/2015	
Scale AS SHOWN	
Drawn By DAH / Checked By SK	
Submission Date 11/16/2015	Sheet 11 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 11 - Subsurface Profiles.dwg Date: 5/20/2016 Time: 14:34 User: dhannam Style Table: Langan.stb Layout: Figure 3 (2)

SB41						
Sample ID	**SB41_2.5**	**SB41_2-3**	**SB41_15**	**DUP01_021216**	**SB41_14-16**	**DUP02_021216**
Lab Sample ID	**16B0462-09**	**16B0462-10**	**16B0462-03**	**16B0462-01**	**16B0462-04**	**16B0462-02**
Sample Date	**2/12/2016**	**2/12/2016**	**2/12/2016**	**2/12/2016**	**2/12/2016**	**2/12/2016**
Sample Depth (ft bgs)	**2.5**	**2-3**	**15**	**15**	**14-16**	**14-16**
VOC (mg/kg)						
Total VOCs	ND	NT	NE	ND	NT	NT
SVOC (mg/kg)						
Total SVOCs	NT	NE	NT	NT	ND	ND
Pesticides (mg/kg)						
Total Pesticides	NT	ND	NT	NT	ND	ND
PCB (mg/kg)						
Total PCBs	NT	ND	NT	NT	ND	ND
Total Metals (mg/kg)						
Lead	NT	**139**	NT	NT	NE	NE
Mercury	NT	**0.224**	NT	NT	ND	ND
Zinc	NT	**340**	NT	NT	NE	NE

SB37				
Sample ID	**SB37_2.5**	**SB37_2-3**	**SB37_22**	**SB37_21-23**
Lab Sample ID	**16B0462-11**	**16B0462-12**	**16B0462-07**	**16B0462-08**
Sample Date	**2/12/2016**	**2/12/2016**	**2/12/2016**	**2/12/2016**
Sample Depth (ft bgs)	**2.5**	**2-3**	**22**	**21-23**
VOC (mg/kg)				
Total VOCs	NE	NT	ND	NT
SVOC (mg/kg)				
Benzo(a)anthracene	NT	**1.33** J	NT	ND
Benzo(k)fluoranthene	NT	**0.971** D	NT	ND
Chrysene	NT	**1.33** D	NT	ND
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	ND
PCB (mg/kg)				
Total PCBs	NT	ND	NT	ND
Total Metals (mg/kg)				
Lead	NT	**65.4**	NT	NE
Mercury	NT	**0.201**	NT	ND

SB40				
Sample ID	**SB40_5**	**SB40_4-6**	**SB40_15**	**SB40_14-16**
Lab Sample ID	**16B0462-13**	**16B0462-14**	**16B0462-05**	**16B0462-06**
Sample Date	**2/12/2016**	**2/12/2016**	**2/12/2016**	**2/12/2016**
Sample Depth (ft bgs)	**5**	**4-6**	**15**	**14-16**
VOC (mg/kg)				
Total VOCs	NE	NT	ND	NT
SVOC (mg/kg)				
Benzo(a)anthracene	NT	**6.12** J	NT	ND
Benzo(a)pyrene	NT	**2.5** D	NT	ND
Benzo(b)fluoranthene	NT	**2.96** D	NT	ND
Benzo(k)fluoranthene	NT	**1.91** D	NT	ND
Chrysene	NT	**5.85** D	NT	ND
Dibenzo(a,h)anthracene	NT	**0.711** D	NT	ND
Indeno(1,2,3-cd)pyrene	NT	**1.08** D	NT	ND
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	ND
PCB (mg/kg)				
Total PCBs	NT	**0.101**	NT	ND
Total Metals (mg/kg)				
Lead	NT	**92**	NT	NE

SB39				
Sample ID	**SB39_5**	**SB39_4-6**	**SB39_21**	**SB39_20-22**
Lab Sample ID	**16B0508-03**	**16B0508-04**	**16B0508-01**	**16B0508-02**
Sample Date	**2/16/2016**	**2/16/2016**	**2/16/2016**	**2/16/2016**
Sample Depth (ft bgs)	**5**	**4-6**	**21**	**20-22**
VOC (mg/kg)				
Total VOCs	NE	NT	NE	NT
SVOC (mg/kg)				
Benzo(a)anthracene	NT	**1.5** J	NT	ND
Benzo(k)fluoranthene	NT	**0.9** J	NT	ND
Chrysene	NT	**1.43** D	NT	ND
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	NE
PCB (mg/kg)				
Total PCBs	NT	NE	NT	ND
Total Metals (mg/kg)				
Lead	NT	**163**	NT	NE

SB44		
Sample ID	**SB44_1-2**	**SB44_11-12**
Lab Sample ID	**16B0462-16**	**16B0462-15**
Sample Date	**2/12/2016**	**2/12/2016**
Sample Depth (ft bgs)	**1-2**	**11-12**
VOC (mg/kg)		
Total VOCs	NT	NT
SVOC (mg/kg)		
Total SVOCs	NT	NT
Pesticides (mg/kg)		
Total Pesticides	NT	NT
PCB (mg/kg)		
Total PCBs	NT	NT
Total Metals (mg/kg)		
Lead	**204**	NE
TCLP Metals (mg/l)		
Lead	NE	ND

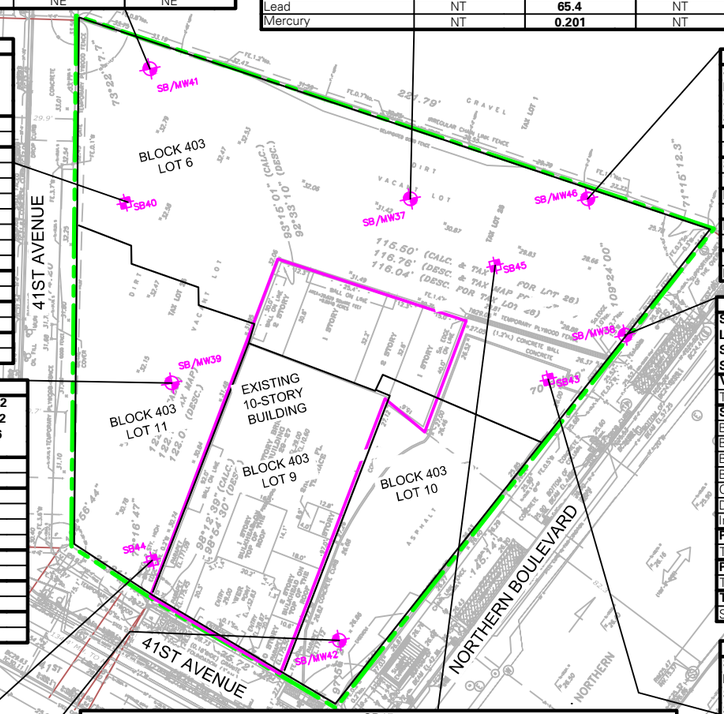
SB42				
Sample ID	**SB42_1.5**	**SB42_2-3**	**SB42_17**	**SB42_16-18**
Lab Sample ID	**16B0345-01**	**16B0345-02**	**16B0345-03**	**16B0345-04**
Sample Date	**2/10/2016**	**2/10/2016**	**2/10/2016**	**2/10/2016**
Sample Depth (ft bgs)	**1.5**	**2-3**	**17**	**16-18**
VOC (mg/kg)				
Total VOCs	ND	NT	ND	NT
SVOC (mg/kg)				
Total SVOCs	NT	ND	NT	NE
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	ND
PCB (mg/kg)				
Total PCBs	NT	ND	NT	ND
Total Metals (mg/kg)				
Total Metals	NT	NE	NT	NE

SB45				
Sample ID	**SB45_2-3**	**SB45_3**	**SB45_15**	**SB45_15-17**
Lab Sample ID	**16B0410-12**	**16B0410-11**	**16B0410-09**	**16B0410-10**
Sample Date	**2/11/2016**	**2/11/2016**	**2/11/2016**	**2/11/2016**
Sample Depth (ft bgs)	**2-3**	**3**	**15**	**15-17**
VOC (mg/kg)				
Total VOCs	NT	ND	NE	NT
SVOC (mg/kg)				
Total SVOCs	NE	NT	NT	NE
Pesticides (mg/kg)				
4,4'-DDT	**0.0049** D	NT	NT	ND
PCB (mg/kg)				
Total PCBs	ND	NT	NT	ND
Total Metals (mg/kg)				
Lead	**75.2**	NT	NT	NE
Mercury	**0.279**	NT	NT	ND
TCLP Metals (mg/l)				
Lead	NE	NT	NT	NE

SB46				
Sample ID	**SB46_2**	**SB46_2-3**	**SB46_16.5**	**SB46_15-17**
Lab Sample ID	**16B0410-03**	**16B0410-06**	**16B0410-07**	**16B0410-08**
Sample Date	**2/11/2016**	**2/11/2016**	**2/11/2016**	**2/11/2016**
Sample Depth (ft bgs)	**2**	**2-3**	**16.5**	**15-17**
VOC (mg/kg)				
Total VOCs	ND	NT	NE	NT
SVOC (mg/kg)				
Total SVOCs	NT	NE	NT	NE
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	ND
PCB (mg/kg)				
Total PCBs	NT	ND	NT	ND
Total Metals (mg/kg)				
Lead	NT	**63.7**	NT	NE

SB38				
Sample ID	**SB38_2-3**	**SB38_2.5**	**SB38_15-17**	**SB38_16**
Lab Sample ID	**16B0410-04**	**16B0410-01**	**16B0410-05**	**16B0410-02**
Sample Date	**2/11/2016**	**2/11/2016**	**2/11/2016**	**2/11/2016**
Sample Depth (ft bgs)	**2-3**	**2.5**	**15-17**	**16**
VOC (mg/kg)				
Total VOCs	NT	NE	NT	NE
SVOC (mg/kg)				
Benzo(a)anthracene	**5.55** D	NT	NE	NT
Benzo(a)pyrene	**2.59** D	NT	NE	NT
Benzo(b)fluoranthene	**2.52** D	NT	NE	NT
Benzo(k)fluoranthene	**1.3** D	NT	NE	NT
Chrysene	**6.26** D	NT	NE	NT
Dibenzo(a,h)anthracene	**0.609** D	NT	NE	NT
Indeno(1,2,3-cd)pyrene	**0.786** D	NT	NE	NT
Pesticides (mg/kg)				
Total Pesticides	ND	NT	ND	NT
PCB (mg/kg)				
Total PCBs	ND	NT	ND	NT
Total Metals (mg/kg)				
Selenium	**4.47**	NT	NE	NT

SB43				
Sample ID	**SB43_7**	**SB43_7-8**	**SB43_17**	**SB43_16-18**
Lab Sample ID	**16B0345-05**	**16B0345-06**	**16B0345-07**	**16B0345-08**
Sample Date	**2/10/2016**	**2/10/2016**	**2/10/2016**	**2/10/2016**
Sample Depth (ft bgs)	**7**	**7-8**	**17**	**16-18**
VOC (mg/kg)				
Total VOCs	ND	NT	ND	NT
SVOC (mg/kg)				
Total SVOCs	NT	NE	NT	NE
Pesticides (mg/kg)				
Total Pesticides	NT	ND	NT	ND
PCB (mg/kg)				
Total PCBs	NT	ND	NT	ND
Total Metals (mg/kg)				
Cadmium	NT	ND	NT	**11.7**
Lead	NT	NE	NT	**123**
Zinc	NT	NE	NT	**3500** D



50 0 25 50

SCALE IN FEET

LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- APPROXIMATE TAX LOT BOUNDARIES
- SB40 — SOIL BORING - FEBRUARY 2016 RI
- SB/MW30 — SOIL BORING/GROUNDWATER MONITORING WELL - FEBRUARY 2016 RI

GENERAL NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. ALL SAMPLING LOCATIONS ARE APPROXIMATE.
3. SOIL SAMPLE RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED-RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO), AND US ENVIRONMENTAL PROTECTION AGENCY (USEPA) HAZARDOUS WASTE REGULATORY LIMIT.
4. CONTAMINANTS EXCEEDING PART 375 UNRESTRICTED USE SCOs, RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs, OR USEPA HAZARDOUS WASTE REGULATORY LIMIT ARE SHOWN.
5. RESULTS ABOVE NYSDEC UNRESTRICTED USE SCOs ARE BOLDED.
6. RESULTS ABOVE NYSDEC RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs ARE SHADED AND BOLDED.
7. NYSDEC PART 375 SCOs AND THE USEPA HAZARDOUS WASTE REGULATORY LIMIT FOR LEAD ARE PRESENTED IN THE TABLE BELOW.
8. EACH SAMPLE WAS ANALYZED FOR VOCs, SVOCs, PCBs, PESTICIDES, AND METALS.
9. FOUR SAMPLES WERE ANALYZED FOR TCLP LEAD.
10. RI = REMEDIAL INVESTIGATION
11. TCLP = TOXICITY CHARACTERISTIC LEACHING PROCEDURE.
12. VOCs = VOLATILE ORGANIC COMPOUNDS
13. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
14. PCBs = POLYCHLORINATED BIPHENYLS
15. mg/kg = MILLIGRAMS PER KILOGRAM
16. mg/l = MILLIGRAMS PER LITER
17. ND = DID NOT EXCEED REGULATORY CRITERIA
18. NE = NO EXCEEDANCES
19. NT = NOT TARGETED
20. FT BGS = FEET BELOW GRADE SURFACE

Analyte	Part 375 Unrestricted Use SCOs	Part 375 Restricted Use Restricted-Residential SCOs
VOC (mg/kg)		
Total VOCs	~	~
SVOC (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
Dibenzo(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)pyrene	0.5	0.5
Pesticides (mg/kg)		
4,4'-DDT	0	7.9
PCBs (mg/kg)		
Total PCBs	0.1	1
Metals (mg/kg)		
Cadmium	2.5	4.3
Copper	50	270
Lead	63	400
Mercury	0.18	0.81
Selenium	39	180
Zinc	109	10000
Analyte	**USEPA Hazardous Waste Regulatory Limit**	
TCLP Metals (mg/l)		
Lead	5	

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QUEENS PLAZA NORTH

BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
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QUEENS **NEW YORK**

Figure Title

SOIL SAMPLE ANALYTICAL RESULTS MAP (SOIL BORINGS)

Project No. 170316401	Figure No. 12
Date 3/9/2016	
Scale 1" = 50'	
Drawn By MB / Checked By SK	
Submission Date 3/30/2016	Sheet 12 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 12 - Soil Sam□le Location and Results Ma□ - Soil Borings.dwg Date: 5/23/2016 Time: 11:35 User: mrogers Style Table: Langan.stb Layout: Figure 6A -Soil Tags

TP11

Sample ID	TP11_3-4	TP11_3.5	TP11_5-6	TP11_5.5
Lab Sample ID	16B0560-15	16B0560-16	16B0560-17	16B0560-18
Sample Date	2/17/2016	2/17/2016	2/17/2016	2/17/2016
Sample Depth (ft bgs)	3-4	3.5	5-6	5.5
VOC (mg/kg)				
Total VOCs	NT	NE	NT	NE
SVOC (mg/kg)				
Total SVOCs	NE	NT	NE	NT
Pesticides (mg/kg)				
4,4'-DDT	ND	NT	ND	NT
PCB (mg/kg)				
Total PCBs	ND	NT	ND	NT
Total Metals (mg/kg)				
Copper	**89.7**	NT	NE	NT
Lead	**518**	NT	NE	NT
Mercury	**0.282**	NT	ND	NT
Zinc	**388**	NT	NE	NT

TP10

Sample ID	TP10_2-3	TP10_2.5	TP10_6-7	TP10_6.5
Lab Sample ID	16B0560-07	16B0560-08	16B0560-05	16B0560-06
Sample Date	2/17/2016	2/17/2016	2/17/2016	2/17/2016
Sample Depth (ft bgs)	2-3	2.5	6-7	6.5
VOC (mg/kg)				
Total VOCs	NT	NE	NT	NE
SVOC (mg/kg)				
Benzo(a)anthracene	NE	NT	**10.9** J	NT
Benzo(a)pyrene	NE	NT	**8.8** D	NT
Benzo(b)fluoranthene	NE	NT	**7.45** D	NT
Benzo(k)fluoranthene	NE	NT	**10.4** D	NT
Chrysene	NE	NT	**10.7** D	NT
Dibenzo(a,h)anthracene	NE	NT	**1.21** D	NT
Indeno(1,2,3-cd)pyrene	NE	NT	**1.78** D	NT
Pesticides (mg/kg)				
4,4'-DDT	**0.00795** D	NT	ND	NT
PCB (mg/kg)				
Total PCBs	NE	NT	**0.15**	NT
Total Metals (mg/kg)				
Lead	**188**	NT	**582**	NT
Mercury	**0.466**	NT	**0.195**	NT
Zinc	**150**	NT	**231**	NT

TP14

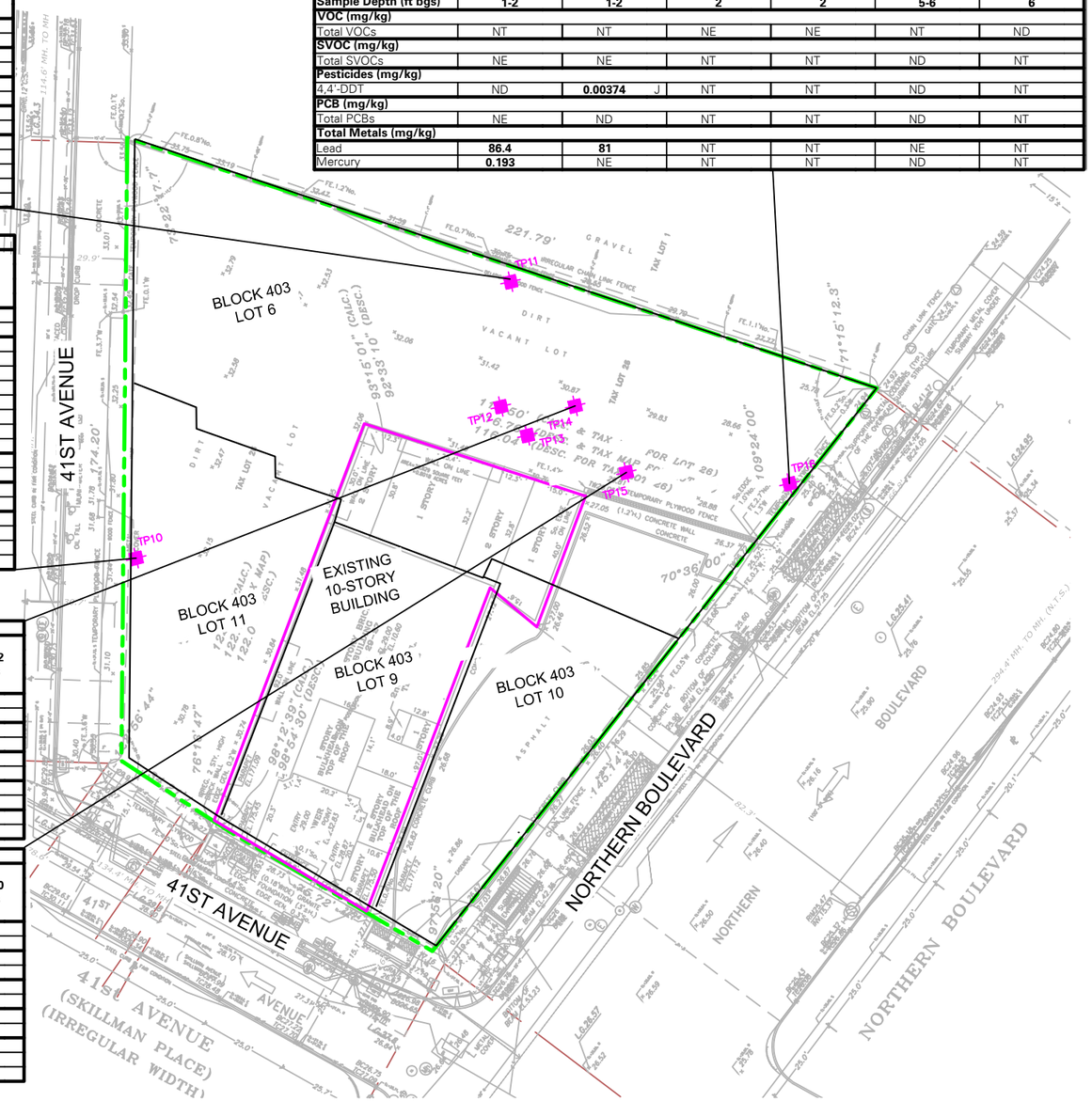
Sample ID	TP14_4.5-5.5	TP14_5	TP14_5.5-6	TP14_6
Lab Sample ID	16B0560-13	16B0560-14	16B0560-11	16B0560-12
Sample Date	2/17/2016	2/17/2016	2/17/2016	2/17/2016
Sample Depth (ft bgs)	4.5-5.5	5	5.5-6	6
VOC (mg/kg)				
Total VOCs	NT	NE	NT	NE
SVOC (mg/kg)				
Total SVOCs	ND	NT	ND	NT
Pesticides (mg/kg)				
4,4'-DDT	ND	NT	ND	NT
PCB (mg/kg)				
Total PCBs	ND	NT	ND	NT
Total Metals (mg/kg)				
Zinc	NE	NT	NE	NT

TP15

Sample ID	TP15_1.5-2.5	TP15_2	TP15_7-8	TP15_7.5
Lab Sample ID	16B0560-21	16B0560-22	16B0560-19	16B0560-20
Sample Date	2/17/2016	2/17/2016	2/17/2016	2/17/2016
Sample Depth (ft bgs)	1.5-2.5	2	7-8	7.5
VOC (mg/kg)				
Total VOCs	NT	ND	NT	NE
SVOC (mg/kg)				
Total SVOCs	NE	NT	ND	NT
Pesticides (mg/kg)				
4,4'-DDT	ND	NT	ND	NT
PCB (mg/kg)				
Total PCBs	ND	NT	ND	NT
Total Metals (mg/kg)				
Lead	**66.9**	NT	NE	NT
Mercury	**0.373**	NT	ND	NT

TP16

Sample ID	TP16_1-2	DUP03_021716	TP16_2	DUP04_021716	TP16_5-6	TP16_6
Lab Sample ID	16B0560-09	16B0560-03	16B0560-10	16B0560-04	16B0560-01	16B0560-02
Sample Date	2/17/2016	2/17/2016	2/17/2016	2/17/2016	2/17/2016	2/17/2016
Sample Depth (ft bgs)	1-2	1-2	2	2	5-6	6
VOC (mg/kg)						
Total VOCs	NT	NT	NE	NE	NT	ND
SVOC (mg/kg)						
Total SVOCs	NE	NE	NT	NT	ND	NT
Pesticides (mg/kg)						
4,4'-DDT	ND	**0.00374** J	NT	NT	ND	NT
PCB (mg/kg)						
Total PCBs	NE	ND	NT	NT	ND	NT
Total Metals (mg/kg)						
Lead	**86.4**	**81**	NT	NT	NE	NT
Mercury	**0.193**	NE	NT	NT	ND	NT



LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- APPROXIMATE TAX LOT BOUNDARIES
- TP10 — TEST PIT - FEBRUARY 2016 RI

GENERAL NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. ALL SAMPLING LOCATIONS ARE APPROXIMATE.
3. SOIL SAMPLE RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED-RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCOs).
4. CONTAMINANTS EXCEEDING PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs ARE SHOWN.
5. SOIL SAMPLES WERE NOT COLLECTED FROM TP12 AND TP13 BECAUSE VISUAL AND OLFACTORY EVIDENCE OF IMPACTS WAS NOT OBSERVED, AND ELEVATED PHOTOIONIZATION DETECTOR (PID) READINGS WERE NOT DETECTED.
6. RESULTS ABOVE NYSDEC UNRESTRICTED USE SCOs ARE BOLDED.
7. RESULTS ABOVE NYSDEC RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs ARE SHADED AND BOLDED.
8. NYSDEC PART 375 SCOs ARE PRESENTED IN THE TABLE BELOW.
9. EACH SAMPLE WAS ANALYZED FOR VOCs, SVOCs, PCBs, PESTICIDES, AND METALS.
10. RI = REMEDIAL INVESTIGATION
11. VOCs = VOLATILE ORGANIC COMPOUNDS
12. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
13. PCBs = POLYCHLORINATED BIPHENYLS
14. mg/kg = MILLIGRAMS PER KILOGRAM
15. ND = DID NOT EXCEED REGULATORY CRITERIA
16. NE = DID NOT EXCEED REGULATORY CRITERIA
17. NT = NOT TARGETED
18. FT BGS = FEET BELOW GRADE SURFACE

Analyte	Part 375 Unrestricted Use SCOs	Part 375 Restricted Use Restricted-Residential SCOs
VOC (mg/kg)		
Total VOCs	~	~
SVOC (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
Dibenzo(a,h)anthracene	0.33	0.33
Indeno(1,2,3-cd)pyrene	0.5	0.5
Pesticides (mg/kg)		
4,4'-DDT	0	7.9
PCBs (mg/kg)		
Total PCBs	0.1	1
Metals (mg/kg)		
Cadmium	2.5	4.3
Copper	50	270
Lead	63	400
Mercury	0.18	0.81
Selenium	39	180
Zinc	109	10000

40 0 10 25 40
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BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
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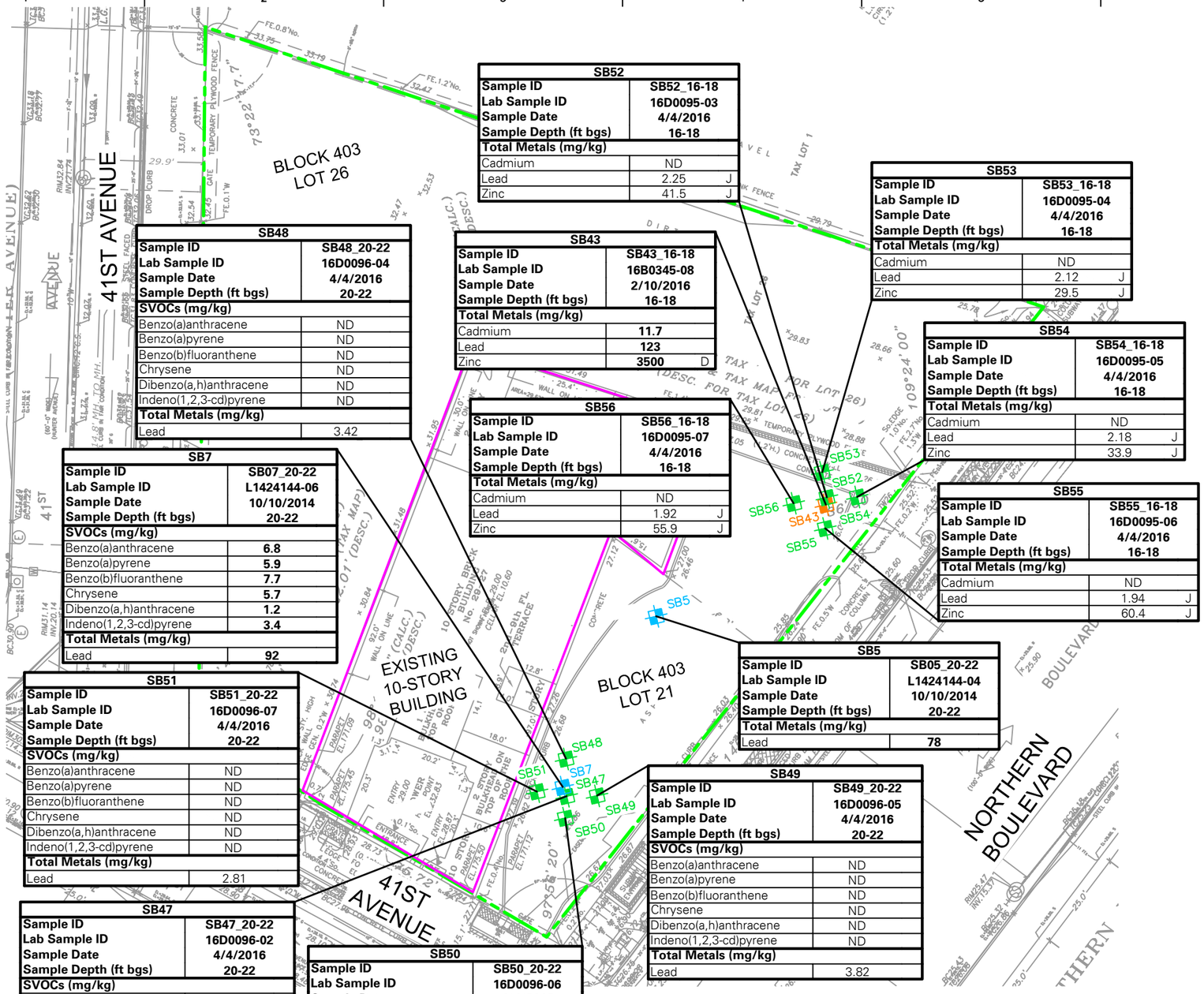
QUEENS **NEW YORK**

Figure Title
SOIL SAMPLE ANALYTICAL RESULTS MAP (TEST PITS)

Project No. 170316401
Date 3/9/2016
Scale 1" = 40'
Drawn By MB | Checked By SK
Submission Date 3/30/2016

Figure No. 13
Sheet 13 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 13 - Soil Sam□le Location and Results Ma□ - Test Pits.dwg Date: 5/23/2016 Time: 11:40 User: mrogers Style Table: Langan.stb Layout: Figure 6B -Soil Tags



SB52	
Sample ID	**SB52_16-18**
Lab Sample ID	**16D0095-03**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	ND
Lead	2.25 J
Zinc	41.5 J

SB53	
Sample ID	**SB53_16-18**
Lab Sample ID	**16D0095-04**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	ND
Lead	2.12 J
Zinc	29.5 J

SB48	
Sample ID	**SB48_20-22**
Lab Sample ID	**16D0096-04**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	ND
Total Metals (mg/kg)	
Lead	3.42

SB43	
Sample ID	**SB43_16-18**
Lab Sample ID	**16B0345-08**
Sample Date	**2/10/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	**11.7**
Lead	**123**
Zinc	**3500** D

SB54	
Sample ID	**SB54_16-18**
Lab Sample ID	**16D0095-05**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	ND
Lead	2.18 J
Zinc	33.9 J

SB56	
Sample ID	**SB56_16-18**
Lab Sample ID	**16D0095-07**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	ND
Lead	1.92 J
Zinc	55.9 J

SB55	
Sample ID	**SB55_16-18**
Lab Sample ID	**16D0095-06**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**16-18**
Total Metals (mg/kg)	
Cadmium	ND
Lead	1.94 J
Zinc	60.4 J

SB7	
Sample ID	**SB07_20-22**
Lab Sample ID	**L1424144-06**
Sample Date	**10/10/2014**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	**6.8**
Benzo(a)pyrene	**5.9**
Benzo(b)fluoranthene	**7.7**
Chrysene	**5.7**
Dibenzo(a,h)anthracene	**1.2**
Indeno(1,2,3-cd)pyrene	**3.4**
Total Metals (mg/kg)	
Lead	**92**

SB5	
Sample ID	**SB05_20-22**
Lab Sample ID	**L1424144-04**
Sample Date	**10/10/2014**
Sample Depth (ft bgs)	**20-22**
Total Metals (mg/kg)	
Lead	**78**

SB51	
Sample ID	**SB51_20-22**
Lab Sample ID	**16D0096-07**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	ND
Total Metals (mg/kg)	
Lead	2.81

SB49	
Sample ID	**SB49_20-22**
Lab Sample ID	**16D0096-05**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	ND
Total Metals (mg/kg)	
Lead	3.82

SB47	
Sample ID	**SB47_20-22**
Lab Sample ID	**16D0096-02**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	ND
Total Metals (mg/kg)	
Lead	3.43

SB50	
Sample ID	**SB50_20-22**
Lab Sample ID	**16D0096-06**
Sample Date	**4/4/2016**
Sample Depth (ft bgs)	**20-22**
SVOCs (mg/kg)	
Benzo(a)anthracene	ND
Benzo(a)pyrene	ND
Benzo(b)fluoranthene	ND
Chrysene	ND
Dibenzo(a,h)anthracene	ND
Indeno(1,2,3-cd)pyrene	ND
Total Metals (mg/kg)	
Lead	2.84

LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- SB7 — SOIL BORING - OCTOBER 2014 PHASE II ESI
- SB43 — SOIL BORING - FEBRUARY 2016 REMEDIAL INVESTIGATION
- SB48 — SOIL BORING - APRIL 2016 SUPPLEMENTAL SOIL INVESTIGATION

NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. SOIL SAMPLE RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) PART 375 UNRESTRICTED USE (UU) SCOs.
3. CONTAMINANT CONCENTRATIONS EXCEEDING THE PART 375 UU SCOs ARE BOLDED.
4. THE NYSDEC PART 375 UU SCOs ARE SHOWN IN THE TABLE BELOW.
5. ESI = ENVIRONMENTAL SITE INVESTIGATION
6. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
7. mg/kg = MILLIGRAMS PER KILOGRAM
8. ND = THE CONTAMINANT WAS NOT DETECTED IN THE SOIL SAMPLE
9. FT BGS = FEET BELOW GRADE SURFACE

Analyte	Part 375 Unrestricted Use SCOs
SVOCs (mg/kg)	
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Metals (mg/kg)	
Cadmium	2.5
Lead	63
Zinc	109

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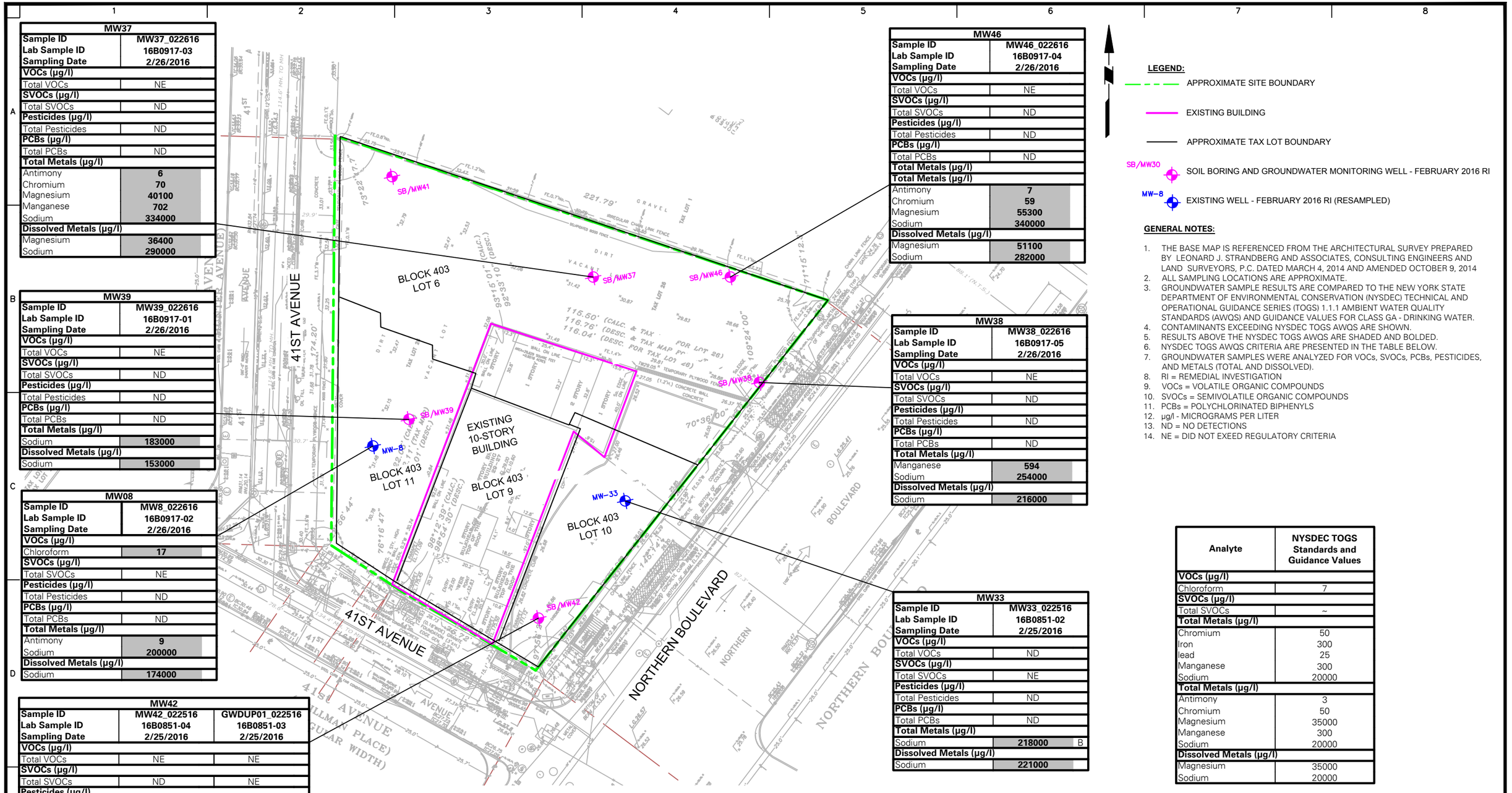
Figure Title
SUPPLEMENTAL SOIL SAMPLE ANALYTICAL RESULTS MAP

Project No. 170316401	Figure No. 14
Date 04/22/2016	
Scale 1" = 30'	
Drawn By MLR / Checked By SK	
Submission Date	Sheet 14 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 14 - Su□□lemental Soil Sam□le Location and Results Ma□.dwg Date: 5/23/2016 Time: 11:43 User: mrogers Style Table: Langan.stb Layout: All



MW37	
Sample ID	**MW37_022616**
Lab Sample ID	**16B0917-03**
Sampling Date	**2/26/2016**
VOCs (µg/l)	
Total VOCs	NE
SVOCs (µg/l)	
Total SVOCs	ND
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Antimony	**6**
Chromium	**70**
Magnesium	**40100**
Manganese	**702**
Sodium	**334000**
Dissolved Metals (µg/l)	
Magnesium	**36400**
Sodium	**290000**

MW39	
Sample ID	**MW39_022616**
Lab Sample ID	**16B0917-01**
Sampling Date	**2/26/2016**
VOCs (µg/l)	
Total VOCs	NE
SVOCs (µg/l)	
Total SVOCs	ND
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Sodium	**183000**
Dissolved Metals (µg/l)	
Sodium	**153000**

MW08	
Sample ID	**MW8_022616**
Lab Sample ID	**16B0917-02**
Sampling Date	**2/26/2016**
VOCs (µg/l)	
Chloroform	**17**
SVOCs (µg/l)	
Total SVOCs	NE
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Antimony	**9**
Sodium	**200000**
Dissolved Metals (µg/l)	
Sodium	**174000**

MW42		
Sample ID	**MW42_022516**	**GWDUP01_022516**
Lab Sample ID	**16B0851-04**	**16B0851-03**
Sampling Date	**2/25/2016**	**2/25/2016**
VOCs (µg/l)		
Total VOCs	NE	NE
SVOCs (µg/l)		
Total SVOCs	ND	NE
Pesticides (µg/l)		
Total Pesticides	ND	ND
PCBs (µg/l)		
Total PCBs	ND	ND
Total Metals (µg/l)		
Sodium	**273000** B	**267000** B
Dissolved Metals (µg/l)		
Sodium	**249000**	**258000**

MW46	
Sample ID	**MW46_022616**
Lab Sample ID	**16B0917-04**
Sampling Date	**2/26/2016**
VOCs (µg/l)	
Total VOCs	NE
SVOCs (µg/l)	
Total SVOCs	ND
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Total Metals (µg/l)	
Antimony	**7**
Chromium	**59**
Magnesium	**55300**
Sodium	**340000**
Dissolved Metals (µg/l)	
Magnesium	**51100**
Sodium	**282000**

MW38	
Sample ID	**MW38_022616**
Lab Sample ID	**16B0917-05**
Sampling Date	**2/26/2016**
VOCs (µg/l)	
Total VOCs	NE
SVOCs (µg/l)	
Total SVOCs	ND
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Manganese	**594**
Sodium	**254000**
Dissolved Metals (µg/l)	
Sodium	**216000**

MW33	
Sample ID	**MW33_022516**
Lab Sample ID	**16B0851-02**
Sampling Date	**2/25/2016**
VOCs (µg/l)	
Total VOCs	ND
SVOCs (µg/l)	
Total SVOCs	NE
Pesticides (µg/l)	
Total Pesticides	ND
PCBs (µg/l)	
Total PCBs	ND
Total Metals (µg/l)	
Sodium	**218000** B
Dissolved Metals (µg/l)	
Sodium	**221000**

LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- APPROXIMATE TAX LOT BOUNDARY
- SB/MW30 — SOIL BORING AND GROUNDWATER MONITORING WELL - FEBRUARY 2016 RI
- MW-8 — EXISTING WELL - FEBRUARY 2016 RI (RESAMPLED)

GENERAL NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. ALL SAMPLING LOCATIONS ARE APPROXIMATE.
3. GROUNDWATER SAMPLE RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS) AND GUIDANCE VALUES FOR CLASS GA - DRINKING WATER.
4. CONTAMINANTS EXCEEDING NYSDEC TOGS AWQS ARE SHOWN.
5. RESULTS ABOVE THE NYSDEC TOGS AWQS ARE SHADED AND BOLDED.
6. NYSDEC TOGS AWQS CRITERIA ARE PRESENTED IN THE TABLE BELOW.
7. GROUNDWATER SAMPLES WERE ANALYZED FOR VOCs, SVOCs, PCBs, PESTICIDES, AND METALS (TOTAL AND DISSOLVED).
8. RI = REMEDIAL INVESTIGATION
9. VOCs = VOLATILE ORGANIC COMPOUNDS
10. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
11. PCBs = POLYCHLORINATED BIPHENYLS
12. µg/l - MICROGRAMS PER LITER
13. ND = NO DETECTIONS
14. NE = DID NOT EXEED REGULATORY CRITERIA

Analyte	NYSDEC TOGS Standards and Guidance Values
VOCs (µg/l)	
Chloroform	7
SVOCs (µg/l)	
Total SVOCs	~
Total Metals (µg/l)	
Chromium	50
Iron	300
lead	25
Manganese	300
Sodium	20000
Total Metals (µg/l)	
Antimony	3
Chromium	50
Magnesium	35000
Manganese	300
Sodium	20000
Dissolved Metals (µg/l)	
Magnesium	35000
Sodium	20000

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Figure Title
GROUNDWATER SAMPLE ANALYTICAL RESULTS MAP

Project No. 170316401	Figure No. 15
Date 3/10/2016	
Scale 1" = 40'	
Drawn By MB / Checked By SK	
Submission Date 3/30/2016	Sheet 15 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 15 - GW Sam□le Location and Results Ma□dwg Date: 5/19/2016 Time: 11:25 User: mrogers Style Table: Langan.stb Layout: Figure 7 -GW Tags

Sample ID	AA_021816
Lab Sample ID	16B0603-07
Sampling Date	2/18/2016
VOCs (µg/m³)	
2-Butanone	2
Acetone	5
Benzene	1
Chloromethane	1.03
Dichlorodifluoromethane	2
Methylene chloride	2
p- & m- Xylenes	1
Tetrachloroethylene	1
Toluene	3
Trichlorofluoromethane	1

SV05		
Sample ID	SV05_022516	
Lab Sample ID	16B0851-01	
Sampling Date	2/25/2016	
VOCs (µg/m³)		
1,3,5-Trimethylbenzene	13	D
2-Butanone	13	D
Acetone	280	D
Ethyl Benzene	10	D
o-Xylene	10	D
p- & m- Xylenes	36	D
p-Ethyltoluene	11	D
Toluene	20	D

Sample ID	SV9_021816	
Lab Sample ID	16B0603-04	
Sampling Date	2/18/2016	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	6	D
1,2-Dichloroethane	2.27	D
1,3,5-Trimethylbenzene	2	D
2-Butanone	2	D
Acetone	24	D
Benzene	2	D
Chloroform	20	D
Cyclohexane	1	D
Dichlorodifluoromethane	2	D
Ethyl Benzene	6	D
n-Heptane	1.39	D
n-Hexane	2	D
o-Xylene	6	D
p- & m- Xylenes	20	D
p-Ethyltoluene	6	D
Styrene	3	D
Tetrachloroethylene	13	D
Toluene	23	D
Trichloroethylene	1	D
Trichlorofluoromethane	1	D

SV06		
Sample ID	SV6_021816	
Lab Sample ID	16B0603-01	
Sampling Date	2/18/2016	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	9	D
1,3,5-Trimethylbenzene	3	D
2-Butanone	2	D
Acetone	29	D
Benzene	1	D
Dichlorodifluoromethane	2	D
Ethyl Benzene	9	D
n-Heptane	1.52	D
o-Xylene	12	D
p- & m- Xylenes	33	D
p-Ethyltoluene	12	D
Styrene	5	D
Tetrachloroethylene	20	D
Toluene	15	D
Trichlorofluoromethane	2	D

Sample ID	SV10_021816	
Lab Sample ID	16B0603-05	
Sampling Date	2/18/2016	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	4	D
1,3,5-Trimethylbenzene	1	D
2-Butanone	1	D
Acetone	13	D
Dichlorodifluoromethane	2	D
Ethyl Benzene	7	D
n-Hexane	1	D
o-Xylene	8	D
p- & m- Xylenes	22	D
p-Ethyltoluene	5	D
Tetrachloroethylene	4	D
Toluene	15	D
Trichlorofluoromethane	1	D

Sample ID	SV8_021816		DUP01_021816	
Lab Sample ID	16B0603-03		16B0603-06	
Sampling Date	2/18/2016		2/18/2016	
VOCs (µg/m³)				
1,2,4-Trimethylbenzene	17	D	13	D
1,3,5-Trimethylbenzene	5	D	4	D
2-Butanone	1	D	1	D
Acetone	6	D	5	D
Benzene	1	D	1	D
Carbon disulfide	1	D	1	D
Chloroform	1	D	1	D
Dichlorodifluoromethane	2	D	2	D
Ethyl Benzene	6	D	7	D
n-Heptane	0.74	U	0.98	D
o-Xylene	10	D	11	D
p- & m- Xylenes	26	D	29	D
p-Ethyltoluene	17	D	14	D
Propylene	1.62	D	1.72	D
Styrene	4	J	1	UJ
Tetrachloroethylene	16	D	16	D
Toluene	7	J	11	J
Trichlorofluoromethane	3	D	3	D

Sample ID	SV7_021816	
Lab Sample ID	16B0603-02	
Sampling Date	2/18/2016	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	2	D
2-Butanone	1	D
Acetone	23	D
Benzene	1	D
Dichlorodifluoromethane	2	D
Ethyl Benzene	4	D
Methylene chloride	3	D
o-Xylene	4	D
p- & m- Xylenes	13	D
p-Ethyltoluene	4	D
Styrene	1	D
Tetrachloroethylene	5	D
Toluene	7	D
Trichlorofluoromethane	1	D

LEGEND:

- APPROXIMATE SITE BOUNDARY
- EXISTING BUILDING
- APPROXIMATE TAX LOT BOUNARIES
- SV7 — SOIL VAPOR SAMPLE PROBE - FEBRUARY 2016 RI
- AA — AMBIENT AIR SAMPLE LOCATION - FEBRUARY 2016 RI

GENERAL NOTES:

1. THE BASE MAP IS REFERENCED FROM THE ARCHITECTURAL SURVEY PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C. DATED MARCH 4, 2014 AND AMENDED OCTOBER 9, 2014
2. ALL SAMPLING LOCATIONS ARE APPROXIMATE.
3. SOIL VAPOR ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH) MINIMUM DECISION MATRICES 1 AND 2 MINIMUM SUB-SLAB VAPOR CONCENTRATIONS WARRANTING MITIGATION.
4. CONTAMINANTS WITH DETECTED CONCENTRATIONS ARE SHOWN.
5. REPORTED RESULTS DO NOT EXCEED THE NYSDOH DECISION MATRIX VALUES.
6. NYSDOH DECISION MATRICES CRITERIA ARE PRESENTED IN THE TABLE BELOW.
7. SOIL VAPOR SAMPLES AND THE AMBIENT AIR SAMPLE WERE ANALYZED FOR VOCs VIA THE USEPA METHOD TO-15.
8. RI = REMEDIAL INVESTIGATION
9. VOCs = VOLATILE ORGANIC COMPOUNDS
10. µg/m3 = MICROGRAMS PER CUBIC METER
11. USEPA = UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC	Decision Matrix	Minimum Sub-Slab Vapor Conc. (µg/m3)
Carbon tetrachloride	1	5
1,1-Dichloroethene	2	100
cis-1,2-Dichloroethene	2	100
Tetrachloroethene	2	100
1,1,1-Trichloroethane	2	100
Trichloroethene	1	5
Vinyl chloride	1	5

40 0 10 25 40
SCALE IN FEET

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Langan International LLC
Collectively known as Langan

Project
QUEENS PLAZA NORTH
BLOCK No. 403, LOT Nos. 6, 9, 10, and 11
LONG ISLAND CITY
QUEENS NEW YORK

Figure Title
SOIL VAPOR SAMPLE ANALYTICAL RESULTS MAP

Project No. 170316401	Figure No. 16
Date 3/10/2016	
Scale 1" = 40'	
Drawn By MB / Checked By SK	
Submission Date 3/30/2016	Sheet 16 of 16

Filename: \\langan.com\data\NY\data4\170316401\Cadd Data - 170316401\SheetFiles\BCP RIR\Figure 16 - Soil Va□or Sam□le Location and Results Ma□.dwg Date: 5/19/2016 Time: 11:28 User: mrogers Style Table: Langan.stb Layout: Figure 8 -SV Tags

TABLES

Table 1
2016 Remedial Investigation Sample Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample Name	Sample Location	Sample Depth (feet bgs)	Sample Media	Rationale	Analysis
SOIL - FEBRUARY 2016 REMEDIAL INVESTIGATION					
SB37-2.5	SB37	2.5	Historic Fill	Investigate AOC 1 and AOC 2	TCL +30 VOCs+TICs
SB37-2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB37-22		22	Native Soil		TCL +30 VOCs+TICs
SB37-21-23		21 to 23			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB38-2.5	SB38	2.5	Historic Fill	Investigate AOC 1, AOC 3, and AOC 4	TCL +30 VOCs+TICs
SB38-2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB38-16		16	Native Soil		TCL +30 VOCs+TICs
SB38-15-17		15 to 17			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB39-5	SB39	5	Historic Fill	Investigate AOC 1 and AOC 4	TCL +30 VOCs+TICs
SB39-4-6		4 to 6			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB39-21		21	Native Soil		TCL +30 VOCs+TICs
SB39-20-22		20 to 22			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB40_5	SB40	5	Historic Fill	Investigate AOC 1	TCL +30 VOCs+TICs
SB40_4-6		4 to 6			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB40_15		15	Native Soil		TCL +30 VOCs+TICs
SB40_14-16		14 to 16			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB41_2.5	SB41	2.5	Historic Fill	Investigate AOC 1	TCL +30 VOCs+TICs
SB41_2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB41_15		15	Native Soil		TCL +30 VOCs+TICs
SB41_14-16		14 to 16			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB42_1.5	SB42	1.5	Historic Fill	Investigate AOC 1	TCL +30 VOCs+TICs
SB42_2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB42_17		17	Native Soil		TCL +30 VOCs+TICs
SB42_16-18		16 to 18			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB43_7	SB43	7	Historic Fill	Investigate AOC 1	TCL +30 VOCs+TICs
SB43_7-8		7 to 8			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB43_17		17	Native Soil		TCL +30 VOCs+TICs
SB43_16-18		16 to 18			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB44_1-2	SB44	1 to 2	Historic Fill	Investigate for potentially hazardous lead	Total and TCLP lead
SB44_11-12		11 to 12			
SB45_3	SB45	3	Historic Fill	Investigate for potentially hazardous lead/AOC 2	TCL +30 VOCs+TICs
SB45_2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals, Total and TCLP lead
SB45_15		15	Native Soil		TCL +30 VOCs+TICs
SB45_15-17		15 to 17			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals, Total and TCLP lead
SB46_2	SB46	2	Historic Fill	Investigate AOC 4	TCL +30 VOCs+TICs
SB46_2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
SB46_16.5		16.5	Native Soil		TCL +30 VOCs+TICs
SB46_15-17		15 to 17			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP10_2.5	TP10	2.5	Historic Fill	Investigate AOC 3	TCL +30 VOCs+TICs
TP10_2-3		2 to 3			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP10_6.5		6.5	Historic Fill		TCL +30 VOCs+TICs
TP10_6-7		6 to 7			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP11_3.5	TP11	3.5	Historic Fill	Investigate AOC 2	TCL +30 VOCs+TICs
TP11_3-4		3 to 4			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP11_5.5		5.5	Native Soil		TCL +30 VOCs+TICs
TP11_5-6		5 to 6			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP14_5	TP14	5	Historic Fill		TCL +30 VOCs+TICs
TP14_4.5-5.5		4.5 to 5.5			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP14_6		6	Native Soil		TCL +30 VOCs+TICs
TP14_5-6		5 to 6			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP15_2	TP15	2	Historic Fill		TCL +30 VOCs+TICs
TP15_1.5-2.5		1.5 to 2.5			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP15_7.5		7.5	Native Soil		TCL +30 VOCs+TICs
TP15_7-8		7 to 8			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP16_2	TP16	2	Historic Fill	Investigate AOC 3	TCL +30 VOCs+TICs
TP16_1-2		1 to 2			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
TP16_6		6	Native Soil		TCL +30 VOCs+TICs
TP16_5-6		5 to 6			TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
DUP01_021216	SB41	15	Native Soil	QA/QC	TCL +30 VOCs+TICs
DUP02_021216		14 to 16		QA/QC	TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
DUP03_021716	TP16	1 to 2	Historic Fill	QA/QC	TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
DUP04_021716		2		QA/QC	TCL +30 VOCs+TICs
MSMSD01_021716	TP16	5 to 6	Native Soil	QA/QC	TCL SVOCs+TICs, PCBs, Pesticides and TAL Metals
MSMSD02_021716		6		QA/QC	TCL +30 VOCs+TICs
SBFB01_021716	N/A	N/A	Field Blank	QA/QC	TCL +30 VOCs, SVOCs, PCBs, Pesticides and TAL Metals
SBTB01_021716	N/A	N/A	Trip Blank	QA/QC	TCL +30 VOCs+TICs
SOIL - APRIL 2016 SUPPLEMENTAL INVESTIGATION					
SB47_18-20	SB47	18 to 20	Native Soil	Investigation of anomalously high concentrations of SVOCs identified in the native soil layer in SB7	HOLD
SB47_20-22		20 to 22			Select benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene and lead
SB47_22-24		22 to 24			HOLD
SB48_20-22	SB48	22 to 24	Native Soil		Select benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene and lead
SB49_20-22	SB49	22 to 24	Native Soil		
SB50_20-22	SB50	22 to 24	Native Soil		
SB51_20-22	SB51	22 to 24	Native Soil		
SB52_14-16	SB52	14 to 16	Native Soil	Investigation of anomalously high concentrations of metals identified in the native soil layer SB43	HOLD
SB52_16-18		16 to 18			Cadmium, lead, and zinc
SB52_18-20		18 to 20			HOLD
SB53_16-18	SB53	16 to 18	Native Soil		Cadmium, lead, and zinc
SB54_16-18	SB54	16 to 18	Native Soil		
SB55_16-18	SB55	16 to 18	Native Soil		
SB56_16-18	SB56	16 to 18	Native Soil		

Notes:

1. Soil samples analyzed for VOCs were collected using Terra Core sampler kits.
2. VOCs- = Volatile Organic Compounds
3. SVOCs = Semivolatile Organic Compounds
4. PCBs = Polychlorinated Biphenyls
5. AOC = Area of Concern
6. TCL = Target Compound list
7. TAL = Target Analyte List
8. TICs = Tentitively Identified Compounds
9. QA/QC = Quality Assurance/Quality Control
10. NA = Not Applicable
11. bgs = below grade surface

Table 1
2016 Remedial Investigation Sample Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample Name	Sample Location	Sample Depth (feet bgs)	Sample Media	Rationale	Analysis
GROUNDWATER - FEBRUARY 2016 REMEDIAL INVESTIGATION					
MW08_022616	MW08	19 to 29	Groundwater	Delineate vertical and areal extent of potential groundwater conatmination/Investigate AOC 1	TCL +30 VOCs and SVOC, PCBs, Pesticides and TAL Metals (filtered + unfiltered)
MW33_022516	MW33	13 to 23	Groundwater		
MW37_022616	MW37	18 to 28	Groundwater	Investigate AOC 1 and AOC 2	
MW38_022616	MW38	18 to 28	Groundwater	Investigate AOC 1, AOC 3, and AOC 4	
MW39_022616	MW39	18 to 28	Groundwater	Investigate AOC 1 and AOC 4	
MW42_022516	MW42	18 to 28	Groundwater	Investigate AOC 1	
MW46_022616	MW46	18 to 28	Groundwater	Investigate AOC 4	
GWDUP01_022516	MW42	18 to 28	Groundwater	QA/QC	
MW33_MS_022516	MW33	13 to 23	Groundwater	QA/QC	
MW33_MSD_022516	MW33	13 to 23	Groundwater	QA/QC	
GWFB01_022516	N/A	N/A	Field Blank	QA/QC	
GWTB01_022516	N/A	N/A	Trip Blank	QA/QC	TCL +30 VOCs
SOIL VAPOR - FEBRUARY 2016 REMEDIAL INVESTIGATION					
SV05_022516	SV05	14.5 to 15	Soil Vapor	Investigate AOC 1 and AOC 2	TO-15 VOCs
SV06_021816	SV06	14.5 to 15	Soil Vapor	Investigate AOC 1 and AOC 4	
SV07_021816	SV07	14.5 to 15	Soil Vapor	Investigate AOC 1	
SV08_021816	SV08	14.5 to 15	Soil Vapor		
SV09_021816	SV09	14.5 to 15	Soil Vapor	Investigate AOC 4	
SV10_021816	SV10	14.5 to 15	Soil Vapor	Investigate AOC 3	
SVDUP01_021816	SV08	14.5 to 15	Soil Vapor	QA/QC	
AA_021816	AA	Surface	Ambient Air		

Notes:

1. Soil samples analyzed for VOCs were collected using Terra Core sampler kits.
2. VOCs- = Volatile Organic Compounds
3. SVOCs = Semivolatile Organic Compounds
4. PCBs = Polychlorinated Biphenyls
5. AOC = Area of Concern
6. TCL = Target Compound list
7. TAL = Target Analyte List
8. TICs = Tentitively Identified Compounds
9. QA/QC = Quality Assurance/Quality Control
10. NA = Not Applicable
11. bgs = below grade surface

Table 2
Monitoring Well Construction Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Well Type	Well ID	Installation Date		Well Diameter (inches)	Screen Length (feet)	Screened Interval (feet bgs)	Depth of Boring (feet bgs)	Borehole Diameter (inches)	Annular Material			Driller
		Start	End						Seal	Backfill	Filter Pack	
Groundwater Monitoring Well	MW8	1/22/2015	1/22/2015	2	10	19 to 29	30	3	Bentonite	No. 2 Sand	No. 2 Sand	AARCO
	MW33	1/22/2015	1/22/2015	2	10	13 to 23	25	3		No. 2 Sand		
	MW37	2/12/2016	2/12/2016	2	10	18 to 28	28	4		Soil Cuttings		
	MW38	2/11/2016	2/11/2016	2	10	18 to 28	28	4		Soil Cuttings		
	MW39	2/16/2016	2/16/2016	2	10	18 to 28	28	4		Soil Cuttings		
	MW41	2/12/2016	2/12/2016	2	10	18 to 28	28	4		Soil Cuttings		
	MW42	2/10/2016	2/10/2016	2	10	18 to 28	28	4		Soil Cuttings		
	MW46	2/10/2016	2/10/2016	2	10	18 to 28	28	4		Soil Cuttings		

Notes:
1. The data presented above is detailed in the monitoring well construction logs, which are included in Appendix G.
2. bgs = below grade surface

Table 3
Groundwater Elevation Data Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Well ID	Date of Gauging	Top of Casing Elevation (NAVD88)	Depth to Groundwater (feet bgs)	Groundwater Elevation (NAVD88)
MW8	2/26/2016	31.90	22.4	9.50
MW33	2/25/2016	26.19	17.01	9.18
MW37	2/26/2016	31.56	22.55	9.01
MW38	2/26/2016	28.47	19.7	8.77
MW39	2/26/2016	32.09	23.45	8.64
MW41	2/26/2016	33.53	24.07	9.46
MW42	2/25/2016	26.91	17.35	9.56
MW46	2/26/2016	29.63	20.85	8.78

Notes:
1. NAVD88 = North American Vertical Datum of 1988
2. bgs = below grade surface
3. The top of casing elevations were based on survey data collected by Langan in March 2016

Table 4A
Soil Sample Analytical Results Summary (VOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB37_2.5 16B0462-11 2/12/2016 2.5	SB37_22 16B0462-07 2/12/2016 22	SB38_2.5 16B0410-01 2/11/2016 2.5	SB38_16 16B0410-02 2/11/2016 16	SB39_5 16B0508-03 2/16/2016 5	SB39_21 16B0508-01 2/16/2016 21	SB40_5 16B0462-13 2/12/2016 5	SB40_15 16B0462-05 2/12/2016 15	SB41_2.5 16B0462-09 2/12/2016 2.5
Volatile Organic Compounds (mg/kg)											
Acetone	0.05	100	0.0051 U	0.0058 U	0.0053 U	0.0056 U	0.0086 J	0.0063 J	0.0100 J	0.0053 U	0.0058 U
Methylene chloride	0.05	100	0.0055 J	0.0058 U	0.0057 J	0.0081 J	0.0065 U	0.0063 U	0.0070 U	0.0053 U	0.0058 U
p-Isopropyltoluene	~	~	0.0025 U	0.0029 U	0.0027 U	0.0028 U	0.0032 U	0.0031 U	0.0035 U	0.0026 U	0.0029 U
Volatile Organic Compounds - TICs (mg/kg)											
Benzeneacetic acid isomer	~	~			NT	NT	NT	NT			
Benzeneethanamine isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzoic acid isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopentane isomer	~	~	NT	0.0078 JN	NT	NT	NT	NT	NT	0.0089 JN	NT
Cyclotrisiloxane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Ethanedioic acid isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Naphthalene	12	100	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tentatively Identified Compounds	~	~	ND	NT	ND	ND	NT	ND	ND	NT	ND
Trimethylsilyloxy phenyl isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Unknonw aliphatic hydrocarbon isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT
Unknown siloxane isomer	~	~	NT	NT	NT	NT	ND	NT	NT	NT	NT
General Chemistry (mg/kg)											
Total Solids	~	~	94.40	96.60	91.20	93.40	88.70	80.70	87.80	94.50	92.80

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents
10. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
11. JN = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value
12. ND = Analyte was not detected in the sample.
13. NT = Analyte was not a target for the sample.
14. DUP01_021216 is a duplicate sample of SB41_15 and DUP04_021716 is a duplicate sample of TP16_2.
15. bgs = below grade surface

Table 4A
Soil Sample Analytical Results Summary (VOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB41_15 16B0462-03 2/12/2016 15	DUP01_021216 16B0462-01 2/12/2016 15	SB42_1.5 16B0345-01 2/10/2016 1.5	SB42_17 16B0345-03 2/10/2016 17	SB43_7 16B0345-05 2/10/2016 7	SB43_17 16B0345-07 2/10/2016 17	SB44_1-2 16B0462-16 2/12/2016 1-2	SB45_3 16B0410-11 2/11/2016 3	SB45_15 16B0410-09 2/11/2016 15	SB46_2 16B0410-03 2/11/2016 2	SB46_16.5 16B0410-07 2/11/2016 16.5
Volatile Organic Compounds (mg/kg)													
Acetone	0.05	100	0.0081 J	0.0065 U	0.0054 U	0.0051 U	0.0054 U	0.0054 U	NT	0.0042 U	0.0054 U	0.0055 U	0.0056 U
Methylene chloride	0.05	100	0.0059 J	0.0065 U	0.0054 U	0.0051 U	0.0054 U	0.0054 U	NT	0.0042 U	0.0060 J	0.0055 U	0.0065 J
p-Isopropyltoluene	~	~	0.0028 U	0.0032 U	0.0027 U	0.0025 U	0.0027 U	0.0027 U	NT	0.0021 U	0.0027 U	0.0027 U	0.0028 U
Volatile Organic Compounds - TICs (mg/kg)													
Benzeneacetic acid isomer	~	~								NT	NT	NT	NT
Benzeneethanamine isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzoic acid isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopentane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclotrisiloxane isomer	~	~	NT	0.066 JN	NT	NT	NT	NT	NT	NT	NT	NT	NT
Ethanedioic acid isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	0.0061 JN	NT	NT
Naphthalene	12	100	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tentatively Identified Compounds	~	~	ND	NT	NT	ND	ND	ND	NT	ND	NT	NT	ND
Trimethylsilyloxy phenyl isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.035 JN	NT
Unknonw aliphatic hydrocarbon isomer	~	~	NT	NT	0.028 JN	NT	NT	NT	NT	NT	NT	NT	NT
Unknown siloxane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
General Chemistry (mg/kg)													
Total Solids	~	~	95.70	95.60	96.80	95.60	94.40	95.00	87.40	91.10	97.30	89.80	95.90

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents its estimated concentration.
10. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
11. JN = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
12. ND = Analyte was not detected in the sample.
13. NT = Analyte was not a target for the sample.
14. DUP01_021216 is a duplicate sample of SB41_15 and DUP04_021716 is a duplicate sample of TP16_2.
15. bgs = below grade surface

Table 4A
Soil Sample Analytical Results Summary (VOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	TP10_2.5 16B0560-08 2/17/2016 2.5	TP10_6.5 16B0560-06 2/17/2016 6.5	TP11_3.5 16B0560-16 2/17/2016 3.5	TP11_5.5 16B0560-18 2/17/2016 5.5	TP14_5 16B0560-14 2/17/2016 5	TP14_6 16B0560-12 2/17/2016 6	TP15_2 16B0560-22 2/17/2016 2	TP15_7.5 16B0560-20 2/17/2016 7.5	TP16_2 16B0560-10 2/17/2016 2	DUP04_021716 16B0560-04 2/17/2016 2	TP16_6 16B0560-02 2/17/2016 6
Volatile Organic Compounds (mg/kg)													
Acetone	0.05	100	0.0060 U	0.0140 U	0.0120 U	0.0100 U	0.0093 U	0.0130 U	0.0051 U	0.0055 U	0.0140 U	0.0110 U	0.0059 U
Methylene chloride	0.05	100	0.0120 U	0.0069 U	0.0120 U	0.0100 U	0.0046 U	0.0130 U	0.0051 U	0.0110 U	0.0140 U	0.0053 U	0.0059 U
p-Isopropyltoluene	~	~	0.0030 U	0.0180	0.0030 U	0.0026 U	0.0023 U	0.0032 U	0.0026 U	0.0027 U	0.0034 U	0.0026 U	0.0030 U
Volatile Organic Compounds - TICs (mg/kg)													
Benzeneacetic acid isomer	~	~	NT	NT	NT	NT	NT	0.064 JN	NT	NT	NT	NT	NT
Benzeneethanamine isomer	~	~	0.0074 JN	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzoic acid isomer	~	~	NT	NT	NT	NT	NT	0.013 JN	NT	NT	NT	NT	NT
Cyclopentane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclotrisiloxane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Ethanedioic acid isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Naphthalene	12	100	NT	0.034 JN	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tentatively Identified Compounds	~	~	NT	NT	ND	ND	ND	NT	ND	ND	ND	ND	ND
Trimethylsilyloxy phenyl isomer	~	~	0.018 JN	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Unknonw aliphatic hydrocarbon isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Unknown siloxane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
General Chemistry (mg/kg)													
Total Solids	~	~	84.00	85.50	87.70	94.80	94.10	96.80	90.20	96.10	91.00	90.80	93.80

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents its estimated concentration.
10. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
11. JN = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
12. ND = Analyte was not detected in the sample.
13. NT = Analyte was not a target for the sample.
14. DUP01_021216 is a duplicate sample of SB41_15 and DUP04_021716 is a duplicate sample of TP16_2.
15. bgs = below grade surface

Table 4B
Soil Sample Analytical Results Summary (SVOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB37_2-3 16B0462-12 2/12/2016 2-3		SB37_21-23 16B0462-08 2/12/2016 21-23		SB38_2-3 16B0410-04 2/11/2016 2-3		SB38_15-17 16B0410-05 2/11/2016 15-17		SB39_4-6 16B0508-04 2/16/2016 4-6		SB39_20-22 16B0508-02 2/16/2016 20-22		SB40_4-6 16B0462-14 2/12/2016 4-6		SB40_14-16 16B0462-06 2/12/2016 14-16		SB41_2-3 16B0462-10 2/12/2016 2-3	
Semivolatile Organic Compounds (mg/kg)																				
1,1'-Biphenyl	~	~	0.0447	U	0.0444	U	0.114	D	0.0443	U	0.0594	JD	0.0519	U	0.187	D	0.0464	U	0.045	U
2-Methylnaphthalene	~	~	0.102	D	0.0444	U	0.946	D	0.0443	U	0.207	D	0.0519	U	0.738	D	0.0464	U	0.045	U
Acenaphthene	20	100	0.37	J	0.0444	UJ	1.85	D	0.159	J	0.817	D	0.0519	UJ	2.06	J	0.0464	UJ	0.045	UJ
Acenaphthylene	100	100	0.0447	U	0.0444	U	0.0467	U	0.0443	U	0.0503	U	0.0519	U	0.0568	JD	0.0464	U	0.0509	JD
Acetophenone	~	~	0.0447	U	0.0444	U	0.0467	U	0.0443	U	0.0642	JD	0.0519	U	0.0468	U	0.0464	U	0.045	U
Anthracene	100	100	0.638	D	0.0444	U	1.65	D	0.315	D	0.909	D	0.0519	U	1.98	D	0.0464	U	0.118	D
Benzo(a)anthracene	1	1	**1.33**	J	0.0444	UJ	**5.55**	D	0.555	J	**1.5**	J	0.0519	UJ	**6.12**	J	0.0464	UJ	0.654	J
Benzo(a)pyrene	1	1	0.882	D	0.0444	U	**2.59**	D	0.516	D	0.781	D	0.0519	U	**2.5**	D	0.0464	U	0.62	D
Benzo(b)fluoranthene	1	1	0.675	D	0.0444	U	**2.52**	D	0.35	D	0.918	D	0.0519	UJ	**2.96**	D	0.0464	U	0.496	D
Benzo(g,h,i)perylene	100	100	0.37	D	0.0444	U	0.896	D	0.276	D	0.316	D	0.0519	U	0.907	D	0.0464	U	0.352	D
Benzo(k)fluoranthene	0.8	3.9	**0.971**	D	0.0444	U	**1.3**	D	0.409	D	**0.9**	J	0.0519	U	**1.91**	D	0.0464	U	0.575	D
Benzyl butyl phthalate	~	~	0.0447	U	0.0444	U	0.0467	U	0.0443	U	0.0503	U	0.0519	U	0.0468	U	0.0464	U	0.045	U
Bis(2-ethylhexyl)phthalate	~	~	0.0447	UJ	0.0444	UJ	0.0467	U	0.0443	UJ	0.0503	U	0.0519	U	0.0468	UJ	0.0464	UJ	0.045	UJ
Carbazole	~	~	0.295	D	0.0444	U	0.0738	JD	0.163	D	0.761	D	0.0519	U	2.05	D	0.0464	U	0.0524	JD
Chrysene	1	3.9	**1.33**	D	0.0444	U	**6.26**	D	0.554	D	**1.43**	D	0.0519	U	**5.85**	D	0.0464	U	0.717	D
Dibenzo(a,h)anthracene	0.33	0.33	0.215	D	0.0444	U	**0.609**	D	0.138	D	0.235	D	0.0519	U	**0.711**	D	0.0464	U	0.169	D
Dibenzofuran	7	59	0.184	D	0.0444	U	0.214	D	0.102	D	0.531	D	0.0519	U	1.32	D	0.0464	U	0.045	U
Dimethyl phthalate	~	~	0.0447	U	0.0444	U	0.0467	U	0.0443	U	0.0503	U	0.0519	U	0.0468	U	0.0464	U	0.045	U
Fluoranthene	100	100	2.47	D	0.0444	U	4.25	D	1.34	D	2.87	D	0.0519	U	11.3	D	0.0464	U	1.16	D
Fluorene	30	100	0.302	D	0.0444	U	1.33	D	0.148	D	0.724	D	0.0519	U	1.99	D	0.0464	U	0.045	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.37	D	0.0444	U	**0.786**	D	0.265	D	0.368	D	0.0519	U	**1.08**	D	0.0464	U	0.316	D
Naphthalene	12	100	0.17	D	0.0444	U	1.03	D	0.0443	U	0.424	D	0.0519	U	1.36	D	0.0464	U	0.045	U
Phenanthrene	100	100	2.54	D	0.0444	U	13	D	1.24	D	2.9	D	0.0519	U	10.4	D	0.0464	U	0.703	D
Pyrene	100	100	2.39	D	0.0444	U	12	D	0.979	D	2.26	D	0.0519	U	9.05	D	0.0464	U	1.24	D
Semivolatile Organic Compounds - TICs (mg/kg)																				
Benz (a) anthracene dione isomer	~	~	NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benz[de]anthracen isomer	~	~	NT		NT		0.969	JD	NT		NT		NT		NT		NT		NT	
Benz[e]acephenanthrylene isomer	~	~	NT		NT		NT		NT		NT		NT		1.64	JD	NT		NT	
Benzo [e] pyrene isomer	~	~	NT		NT		NT		NT		NT		NT		NT		NT		NT	
Benzo[a] fluorene isomer	~	~	NT		NT		1.79	JD	NT		0.803	JD	NT		1.27	JD	NT		NT	
Benzo[ghi]fluoranthene isomer	~	~	NT		NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopenta[def[]phenanthrene isomer	~	~	0.856	JD	NT		NT		NT		NT		NT		NT		NT		NT	
Cyclopenta phenanthrene isomer	~	~	NT		NT		NT		NT		NT		NT		1.05	JD	NT		NT	
Hentriacontane isomer	~	~	NT		NT		NT		NT		NT		NT		NT		NT		NT	
Hydroxy hexadecanoic isomer	~	~	1.78	JD	2.34	JD	NT		1.84	JD	NT		NT		NT		2.15	JD	4.09	JD
Hydroxy octadecanoic isomer	~	~	NT		0.991	JD	NT		0.919	JD	NT		NT		NT		0.888	JD	1.58	JD
Methyl Biphenyl isomer	~	~	NT		NT		1.19	JD	NT		NT		NT		NT		NT		NT	
Methyl Chrysene isomer	~	~	NT		NT		1.04	JD	NT		NT		NT		NT		NT		NT	
Methyl fluoranthene isomer	~	~	NT		NT		NT		NT		NT		NT		1.2	JD	NT		NT	
Methyl Phenanthrene isomer	~	~	NT		NT		1.12	JD	NT		NT		NT		NT		NT		NT	
Methyl Pyrene isomer	~	~	NT		NT		1.49	JD	NT		NT		NT		1.05	JD	NT		NT	
Methylheptyl acetate isomer	~	~	NT		NT		NT		NT		NT		NT		NT		NT		NT	
Napthacenedione isomer	~	~	NT		NT		NT		NT		NT		NT		1.05	JD	NT		NT	
Perylene isomer	~	~	0.998	JD	NT		3.8	JD	NT		NT		NT		3.36	JD	NT		NT	
Tentatively Identified Compounds	~	~	NT		NT		NT		NT		ND		ND		NT		NT		NT	
General Chemistry (mg/kg)																				
Total Solids	~	~	93.50		94.10		89.50		94.40		83.10		80.60		89.20		90.10		92.90	

Notes and Qualifiers:

1. Grab 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 (SCOs).

3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents its estimated concentration.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. UJ = The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
13. ND = Analyte was not detected in the sample.
14. NT = Analyte was not a target for the sample.
15. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
16. bgs = below grade surface

Table 4B
Soil Sample Analytical Results Summary (SVOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB41_14-16 16B0462-04 2/12/2016 14-16	DUP02_021216 16B0462-02 2/12/2016 14-16	SB42_2-3 16B0345-02 2/10/2016 2-3	SB42_16-18 16B0345-04 2/10/2016 16-18	SB43_7-8 16B0345-06 2/10/2016 7-8	SB43_16-18 16B0345-08 2/10/2016 16-18	SB45_2-3 16B0410-12 2/11/2016 2-3	SB45_15-17 16B0410-10 2/11/2016 15-17	SB46_2-3 16B0410-06 2/11/2016 2-3	SB46_15-17 16B0410-08 2/11/2016 15-17
Semivolatile Organic Compounds (mg/kg)												
1,1'-Biphenyl	~	~	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.0437 U	0.0488 U	0.0445 U
2-Methylnaphthalene	~	~	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.0606 JD	0.0488 U	0.0445 U
Acenaphthene	20	100	0.0434 UJ	0.0431 UJ	0.0425 U	0.122 D	0.044 U	0.0562 JD	0.062 J	0.0502 J	0.0614 J	0.0445 UJ
Acenaphthylene	100	100	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.0437 U	0.0488 U	0.0445 U
Acetophenone	~	~	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.0437 U	0.0488 U	0.0445 U
Anthracene	100	100	0.0434 U	0.0431 U	0.0425 U	0.338 D	0.044 U	0.109 D	0.174 D	0.102 D	0.18 D	0.0445 U
Benzo(a)anthracene	1	1	0.0434 UJ	0.0431 UJ	0.0425 U	0.818 J	0.044 U	0.227 D	0.495 J	0.108 J	0.785 J	0.0995 J
Benzo(a)pyrene	1	1	0.0434 U	0.0431 U	0.0425 U	0.174 J	0.044 U	0.165 D	0.398 D	0.0829 JD	0.685 D	0.0824 JD
Benzo(b)fluoranthene	1	1	0.0434 U	0.0431 U	0.0425 U	0.174 J	0.044 U	0.144 D	0.349 D	0.0669 JD	0.603 D	0.0696 JD
Benzo(g,h,i)perylene	100	100	0.0434 U	0.0431 U	0.0425 U	0.0465 UJ	0.044 U	0.0956 J	0.19 D	0.0437 U	0.33 D	0.0512 JD
Benzo(k)fluoranthene	0.8	3.9	0.0434 U	0.0431 U	0.0425 U	0.231 J	0.044 U	0.172 D	0.42 D	0.0822 JD	0.526 D	0.0732 JD
Benzyl butyl phthalate	~	~	0.0434 U	0.0431 U	0.0425 U	0.0465 UJ	0.044 U	0.0457 U	0.0463 U	0.0437 U	0.0488 U	0.0445 U
Bis(2-ethylhexyl)phthalate	~	~	0.0434 UJ	0.0431 UJ	0.0425 UJ	0.0465 UJ	0.044 UJ	0.0457 UJ	0.0463 UJ	0.0437 UJ	0.0488 UJ	0.0445 UJ
Carbazole	~	~	0.0434 U	0.0431 U	0.0425 U	0.125 D	0.044 U	0.0457 U	0.0761 JD	0.0606 JD	0.0568 JD	0.0445 U
Chrysene	1	3.9	0.0434 U	0.0431 U	0.0425 U	0.9 J	0.044 U	0.22 D	0.516 D	0.109 D	0.795 D	0.108 D
Dibenzo(a,h)anthracene	0.33	0.33	0.0434 U	0.0431 U	0.0425 U	0.0465 UJ	0.044 U	0.0457 U	0.0805 JD	0.0437 U	0.183 D	0.0445 U
Dibenzofuran	7	59	0.0434 U	0.0431 U	0.0425 U	0.072 JD	0.044 U	0.0457 U	0.0463 U	0.0627 JD	0.0488 U	0.0445 U
Dimethyl phthalate	~	~	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.0437 U	0.0488 U	0.0445 U
Fluoranthene	100	100	0.0434 U	0.0431 U	0.0425 U	1.77 D	0.0611 JD	0.506 D	1.11 D	0.321 D	1.39 D	0.207 D
Fluorene	30	100	0.0434 U	0.0431 U	0.0425 U	0.104 D	0.044 U	0.0457 U	0.065 JD	0.0906 D	0.0488 U	0.0445 U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.0434 U	0.0431 U	0.0425 U	0.0465 UJ	0.044 U	0.0649 J	0.188 D	0.0437 U	0.32 D	0.0445 U
Naphthalene	12	100	0.0434 U	0.0431 U	0.0425 U	0.0465 U	0.044 U	0.0457 U	0.0463 U	0.144 D	0.0488 U	0.0445 U
Phenanthrene	100	100	0.0434 U	0.0431 U	0.0425 U	1.65 D	0.0505 JD	0.374 D	0.835 D	0.422 D	0.809 D	0.145 D
Pyrene	100	100	0.0434 U	0.0431 U	0.0425 U	2.76 J	0.0519 JD	0.484 D	0.917 D	0.231 D	1.3 D	0.201 D
Semivolatile Organic Compounds - TICs (mg/kg)												
Benz (a) anthracene dione isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benz[de]anthracen isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benz[e]acephenanthrylene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo [e] pyrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo[a] fluorene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo[ghi]fluoranthene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopenta[def[]phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopenta phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Hentriacontane isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Hydroxy hexadecanoic isomer	~	~	2.63 JD	0.893 JD	NT	NT	NT	NT	1.62 JD	1.25 JD	2.33 JD	1.71 JD
Hydroxy octadecanoic isomer	~	~	1.18 JD	0.893 JD	NT	NT	NT	NT	NT	NT	NT	0.924 JD
Methyl Biphenyl isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Chrysene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl fluoranthene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Pyrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methylheptyl acetate isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	2.56 JD
Napthacenedione isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Perylene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tentatively Identified Compounds	~	~	NT	NT	ND	ND	ND	ND	NT	NT	NT	NT
General Chemistry (mg/kg)												
Total Solids	~	~	96.30	97.10	98.30	89.90	95.00	91.40	90.30	95.70	85.70	93.80

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents its estimated concentration.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. UJ = The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
13. ND = Analyte was not detected in the sample.
14. NT = Analyte was not a target for the sample.
15. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
16. bgs = below grade surface

Table 4B
Soil Sample Analytical Results Summary (SVOCs)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	TP10_2-3 16B0560-07 2/17/2016 2-3	TP10_6-7 16B0560-05 2/17/2016 6-7	TP11_3-4 16B0560-15 2/17/2016 3-4	TP11_5-6 16B0560-17 2/17/2016 5-6	TP14_4.5-5.5 16B0560-13 2/17/2016 4.5-5.5	TP14_5.5-6 16B0560-11 2/17/2016 5.5-6	TP15_1.5-2.5 16B0560-21 2/17/2016 1.5-2.5	TP15_7-8 16B0560-19 2/17/2016 7-8	TP16_1-2 16B0560-09 2/17/2016 1-2	DUP03_021716 16B0560-03 2/17/2016 1-2	TP16_5-6 16B0560-01 2/17/2016 5-6
Semivolatile Organic Compounds (mg/kg)													
1,1'-Biphenyl	~	~	0.0491 U	0.301 D	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0458 U	0.0443 U
2-Methylnaphthalene	~	~	0.0491 U	1.2 D	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0621 JD	0.0443 U
Acenaphthene	20	100	0.105 J	5.33 J	0.114 J	0.0439 UJ	0.0439 UJ	0.0429 UJ	0.0466 UJ	0.0437 UJ	0.0463 UJ	0.105 J	0.0443 UJ
Acenaphthylene	100	100	0.0491 U	0.0721 JD	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0458 U	0.0443 U
Acetophenone	~	~	0.0491 U	0.0486 U	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0458 U	0.0443 U
Anthracene	100	100	0.156 D	6.22 D	0.198 D	0.0439 U	0.0439 U	0.0429 U	0.0698 JD	0.0437 U	0.0665 J	0.309 J	0.0443 U
Benzo(a)anthracene	1	1	0.456 J	**10.9** J	0.739 J	0.0916 J	0.0439 UJ	0.0429 UJ	0.21 J	0.0437 UJ	0.178 J	0.533 J	0.0443 UJ
Benzo(a)pyrene	1	1	0.408 D	**8.8** D	0.486 D	0.0888 D	0.0439 U	0.0429 U	0.178 D	0.0437 U	0.172 J	0.427 J	0.0443 U
Benzo(b)fluoranthene	1	1	0.389 D	**7.45** D	0.491 D	0.0776 JD	0.0439 U	0.0429 U	0.151 D	0.0437 U	0.135 D	0.295 J	0.0443 U
Benzo(g,h,i)perylene	100	100	0.228 D	1.51 D	0.194 D	0.0595 JD	0.0439 U	0.0429 U	0.106 D	0.0437 U	0.111 D	0.213 D	0.0443 U
Benzo(k)fluoranthene	0.8	3.9	0.363 D	**10.4** D	0.448 D	0.0755 JD	0.0439 U	0.0429 U	0.17 D	0.0437 U	0.163 J	0.468 D	0.0443 U
Benzyl butyl phthalate	~	~	0.0491 U	0.624 D	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0458 U	0.0443 U
Bis(2-ethylhexyl)phthalate	~	~	0.0634 J	1.02 J	0.0466 UJ	0.0439 UJ	0.0439 UJ	0.0429 UJ	0.0466 UJ	0.0437 UJ	0.0463 UJ	0.0621 J	0.0443 UJ
Carbazole	~	~	0.113 D	3 D	0.109 D	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.174 D	0.0443 U
Chrysene	1	3.9	0.496 D	**10.7** D	0.821 D	0.0986 D	0.0439 U	0.0429 U	0.235 D	0.0437 U	0.2 J	0.549 J	0.0443 U
Dibenzo(a,h)anthracene	0.33	0.33	0.121 D	**1.21** D	0.11 D	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.107 D	0.0443 U
Dibenzofuran	7	59	0.0491 U	2.03 D	0.0564 JD	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.121 D	0.0443 U
Dimethyl phthalate	~	~	0.0491 U	0.0922 JD	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.0458 U	0.0443 U
Fluoranthene	100	100	0.987 D	22.7 D	1.62 D	0.235 D	0.0439 U	0.0429 U	0.469 D	0.0437 U	0.406 J	1.16 J	0.0443 U
Fluorene	30	100	0.09 JD	2.95 D	0.0958 D	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.178 D	0.0443 U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.214 D	**1.78** D	0.203 D	0.0518 JD	0.0439 U	0.0429 U	0.0861 JD	0.0437 U	0.0835 JD	0.192 D	0.0443 U
Naphthalene	12	100	0.0491 U	1.84 D	0.0466 U	0.0439 U	0.0439 U	0.0429 U	0.0466 U	0.0437 U	0.0463 U	0.12 D	0.0443 U
Phenanthrene	100	100	0.707 D	19.5 D	1.21 D	0.151 D	0.0439 U	0.0429 U	0.333 D	0.0437 U	0.309 J	1.16 J	0.0443 U
Pyrene	100	100	0.776 D	15.9 D	1.36 D	0.192 D	0.0439 U	0.0429 U	0.431 D	0.0437 U	0.366 J	0.975 J	0.0443 U
Semivolatile Organic Compounds - TICs (mg/kg)													
Benz (a) anthracene dione isomer	~	~	NT	3.02 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benz[de]anthracen isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benz[e]acephenanthrylene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo [e] pyrene isomer	~	~	NT	2.25 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo[a] fluorene isomer	~	~	NT	2.01 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Benzo[ghi]fluoranthene isomer	~	~	NT	1.86 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopenta[def[]phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Cyclopenta phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Hentriacontane isomer	~	~	0.861 JD	NT	NT	NT	NT	NT	0.743 JD	NT	2.37 JD	NT	NT
Hydroxy hexadecanoic isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Hydroxy octadecanoic isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Biphenyl isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Chrysene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl fluoranthene isomer	~	~	NT	2.01 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Phenanthrene isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Pyrene isomer	~	~	NT	2.25 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Methylheptyl acetate isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Napthacenedione isomer	~	~	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Perylene isomer	~	~	NT	5.19 JD	NT	NT	NT	NT	NT	NT	NT	NT	NT
Tentatively Identified Compounds	~	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
General Chemistry (mg/kg)													
Total Solids	~	~	85.20	86.00	89.80	95.30	95.30	97.40	89.80	95.70	90.20	91.20	94.40

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. N = Tentatively Identified Compound (TIC) reported indicates the presence of a possible analyte or class of analyte that has been "tentatively identified" and the associated numeral value represents its estimated concentration.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. UJ = The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
13. ND = Analyte was not detected in the sample.
14. NT = Analyte was not a target for the sample.
15. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
16. bgs = below grade surface

Table 4C
Soil Sample Analytical Results Summary (Metals, PCBs, Pesticides)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB37_2-3 16B0462-12 2/12/2016 2-3	SB37_21-23 16B0462-08 2/12/2016 21-23	SB38_2-3 16B0410-04 2/11/2016 2-3	SB38_15-17 16B0410-05 2/11/2016 15-17	SB39_4-6 16B0508-04 2/16/2016 4-6	SB39_20-22 16B0508-02 2/16/2016 20-22	SB40_4-6 16B0462-14 2/12/2016 4-6	SB40_14-16 16B0462-06 2/12/2016 14-16	SB41_2-3 16B0462-10 2/12/2016 2-3	SB41_14-16 16B0462-04 2/12/2016 14-16	DUP02_021216 16B0462-02 2/12/2016 14-16
Pesticides (mg/kg)													
4,4'-DDT	0.0033	7.9	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00205 U	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
alpha-Chlordane	0.094	4.2	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00205 U	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
beta-BHC	0.036	0.36	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00318 D	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
delta-BHC	0.04	100	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00513 D	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
Endosulfan sulfate	2.4	24	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00252 D	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
Endrin aldehyde	~	~	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00447 D	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
gamma-Chlordane	~	~	0.00176 U	0.00175 U	0.00184 U	0.00175 U	0.00199 U	0.00205 U	0.00185 U	0.00183 U	0.00178 U	0.00171 U	0.0017 U
Polychlorinated Biphenyls (mg/kg)													
Aroclor 1248	~	~	0.0178 U	0.0177 U	0.0186 U	0.0177 U	0.0201 U	0.0207 U	0.0491	0.0185 U	0.0179 U	0.0173 U	0.0172 U
Aroclor 1254	~	~	0.0178 U	0.0177 U	0.0186 U	0.0177 U	0.0526	0.0207 U	0.0515	0.0185 U	0.0179 U	0.0173 U	0.0172 U
Total PCBs	0.1	1	0.0178 U	0.0177 U	0.0186 U	0.0177 U	0.0526	0.0207 U	**0.101**	0.0185 U	0.0179 U	0.0173 U	0.0172 U
TCLP Metals (µg/l)													
Lead	63		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Metals (mg/kg)													
Aluminum	~	~	8830	5650	8890	5440	10600	7820	8130	5780	6780	6650	7130
Arsenic	13	16	3.39	1.06 U	3.21	2.28	6.68	1.24 U	4.33	1.11 U	4.97	1.04 U	1.2
Barium	350	400	68.7	42.3	64.9	56.4	127	46.8	75.8	39.7	61.1	30.2	32.4
Beryllium	7.2	72	0.107 U	0.106 U	0.112 U	0.106 U	0.123	0.124 U	0.112 U	0.111 U	0.108 U	0.104 U	0.103 U
Cadmium	2.5	4.3	0.321 U	0.319 U	0.335 U	0.318 U	0.361 U	0.372 U	0.366	0.333 U	1.01	0.311 U	0.309 U
Calcium	~	~	10500	12700	3530	6610	47700	2550	41700	1640	2490	980	1040
Chromium	~	~	21.7	15.1	19.5	12.4	14.2	18.7	12	16.2	15.2	14.3	15.2
Cobalt	~	~	8.55	6.69	8.34	5.97	4.12	8.89	3.37	7.52	6.75	6.46	7.04
Copper	50	270	27.6	13	25.1	19.5	10.5	14.9	16.2	13.7	48.3	11.8	12.6
Iron	~	~	21900	11100	25800	10300	10600	15200	6950	11900	14300	10500	11700
Lead	63	400	**65.4**	3.49	62.3	41.4	**163**	3.57	**92**	3.12	**139**	2.77	3.12
Magnesium	~	~	3450	8220	2450	4750	3810	4740	5570	3410	2390	3810	4230
Manganese	1600	2000	407	241	479	337	223	265	253	314	208	232	250
Mercury	0.18	0.81	**0.201**	0.0319 U	0.138	0.0318 U	0.0697	0.0372 U	0.109	0.0333 U	**0.224**	0.0311 U	0.0309 U
Nickel	30	310	16.8	13.2	16.1	10.9	9.16	16.1	8.34	14.4	18.2	13.8	14.7
Potassium	~	~	1640	1250	1150	883	1540	2250	954	2020	665	1160	1210
Selenium	3.9	180	2.32	1.06 U	**4.47**	2.48	1.2 U	2.31	1.12 U	1.3	2.03	1.24	1.26
Sodium	~	~	178	332	129	382	1250	322	782	153	116	161	185
Vanadium	~	~	28.8	18	29.8	16.4	21.2	24.5	20.7	18.7	19.2	17.2	18.4
Zinc	109	10000	73.3	27.9	87.3	42.7	89.4	42.4	107	30.6	**340**	31.6	32.2
General Chemistry (mg/kg)													
Total Solids	~	~	93.50	94.10	89.50	94.40	83.10	80.60	89.20	90.10	92.90	96.30	97.10

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. B = Analyte found in the analysis batch blank.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. NT = Analyte was not a target for the sample.
13. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
14. bgs = below grade surface

Table 4C
Soil Sample Analytical Results Summary (Metals, PCBs, Pesticides)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	SB42_2-3 16B0345-02 2/10/2016 2-3	SB42_16-18 16B0345-04 2/10/2016 16-18	SB43_7-8 16B0345-06 2/10/2016 7-8	SB43_16-18 16B0345-08 2/10/2016 16-18	SB44_1-2 16B0462-16 2/12/2016 1-2	SB44_11-12 16B0462-15 2/12/2106 11-12	SB45_2-3 16B0410-12 2/11/2016 2-3	SB45_15-17 16B0410-10 2/11/2016 15-17	SB46_2-3 16B0410-06 2/11/2016 2-3	SB46_15-17 16B0410-08 2/11/2016 15-17	TP10_2-3 16B0560-07 2/17/2016 2-3
Pesticides (mg/kg)													
4,4'-DDT	0.0033	7.9	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	**0.0049** D	0.00172 U	0.00192 U	0.00176 U	**0.00795** D
alpha-Chlordane	0.094	4.2	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00285 D	0.00172 U	0.00192 U	0.00176 U	0.00194 U
beta-BHC	0.036	0.36	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00183 U	0.00172 U	0.00192 U	0.00176 U	0.00194 U
delta-BHC	0.04	100	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00183 U	0.00465 D	0.00192 U	0.00176 U	0.00194 U
Endosulfan sulfate	2.4	24	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00183 U	0.00172 U	0.00192 U	0.00176 U	0.00194 U
Endrin aldehyde	~	~	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00183 U	0.00172 U	0.00192 U	0.00176 U	0.00194 U
gamma-Chlordane	~	~	0.00168 U	0.00184 U	0.00174 U	0.00181 U	NT	NT	0.00338 D	0.00172 U	0.00192 U	0.00176 U	0.00194 U
Polychlorinated Biphenyls (mg/kg)													
Aroclor 1248	~	~	0.017 U	0.0185 U	0.0175 U	0.0182 U	NT	NT	0.0185 U	0.0174 U	0.0194 U	0.0178 U	0.0196 U
Aroclor 1254	~	~	0.017 U	0.0185 U	0.0175 U	0.0182 U	NT	NT	0.0185 U	0.0174 U	0.0194 U	0.0178 U	0.0371
Total PCBs	0.1	1	0.017 U	0.0185 U	0.0175 U	0.0182 U	NT	NT	0.0185 U	0.0174 U	0.0194 U	0.0178 U	0.0371
TCLP Metals (µg/l)													
Lead	63		NT	NT	NT	NT	0.0422	0.00333 U	0.0168	NT	NT	NT	NT
Metals (mg/kg)													
Aluminum	~	~	3620	3420	3810	7140	NT	NT	7830	4890	7400	5970	7660
Arsenic	13	16	1.06	1.11 U	1.05 U	2.8	NT	NT	2.54	1.06	2.05	1.07 U	3.6
Barium	350	400	29.8	35.6	20.6	85.1	NT	NT	61.3	29	73.6	35.2	122
Beryllium	7.2	72	0.102 U	0.111 U	0.105 U	0.109 U	NT	NT	0.111 U	0.105 U	0.117 U	0.107 U	0.117 U
Cadmium	2.5	4.3	0.305 U	0.334 U	0.316 U	**11.7**	NT	NT	0.332 U	0.314 U	0.35 U	0.32 U	0.352 U
Calcium	~	~	18400 B	19800 B	1170 B	40800 B	NT	NT	12300	1740	2010	977	18700
Chromium	~	~	9.52	11.6	8.45	14.9	NT	NT	16.7	14.7	19.1	14.2	15.8
Cobalt	~	~	5.39	5.03	3.31	4.26	NT	NT	7.84	7.49	7.11	6.54	6.36
Copper	50	270	11.9	11.9	13.1	30	NT	NT	22.8	12.1	18.4	13.8	27
Iron	~	~	8470	8520	7530	11100	NT	NT	18000	11400	14800	11100	15000
Lead	63	400	2.87	54.4	6.34	**123**	**204**	12.6	**75.2**	2.64	**63.7**	4.31	**188**
Magnesium	~	~	10100	9550	2150	7550	NT	NT	2810	2990	3730	3050	3940
Manganese	1600	2000	187	178	66.3	194	NT	NT	375	242	227	248	299
Mercury	0.18	0.81	0.0305 U	0.0334 U	0.0316 U	0.0328 U	NT	NT	**0.279**	0.0314 U	0.0719	0.032 U	**0.466**
Nickel	30	310	9.82	9.74	7.21	11.2	NT	NT	13.8	13	14.3	12.6	13.2
Potassium	~	~	1120 B	1010 B	711 B	914 B	NT	NT	1290	777	1280	994	1150
Selenium	3.9	180	1.02 U	1.11 U	1.16	1.09 U	NT	NT	2.69	1.72	1.5	1.12	1.17 U
Sodium	~	~	147	211	87.9	519	NT	NT	211	466	206	148	189
Vanadium	~	~	13.4	14.7	10.4	19.3	NT	NT	24.2	17.4	24.1	16.9	23.7
Zinc	109	10000	22.9	28.2	62.5	**3500** D	NT	NT	63.6	31.1	70.5	36.9	**150**
General Chemistry (mg/kg)													
Total Solids	~	~	98.30	89.90	95.00	91.40	87.4	89.2	90.30	95.70	85.70	93.80	85.20

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. B = Analyte found in the analysis batch blank.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. NT = Analyte was not a target for the sample.
13. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
14. bgs = below grade surface

Table 4C
Soil Sample Analytical Results Summary (Metals, PCBs, Pesticides)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	TP10_6-7 16B0560-05 2/17/2016 6-7	TP11_3-4 16B0560-15 2/17/2016 3-4	TP11_5-6 16B0560-17 2/17/2016 5-6	TP14_4.5-5.5 16B0560-13 2/17/2016 4.5-5.5	TP14_5.5-6 16B0560-11 2/17/2016 5.5-6	TP15_1.5-2.5 16B0560-21 2/17/2016 1.5-2.5	TP15_7-8 16B0560-19 2/17/2016 7-8	TP16_1-2 16B0560-09 2/17/2016 1-2	DUP03_021716 16B0560-03 2/17/2016 1-2	TP16_5-6 16B0560-01 2/17/2016 5-6
Pesticides (mg/kg)												
4,4'-DDT	0.0033	7.9	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 UJ	**0.00374** J	0.00175 U
alpha-Chlordane	0.094	4.2	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
beta-BHC	0.036	0.36	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
delta-BHC	0.04	100	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
Endosulfan sulfate	2.4	24	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
Endrin aldehyde	~	~	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
gamma-Chlordane	~	~	0.00192 U	0.00184 U	0.00173 U	0.00173 U	0.00169 U	0.00184 U	0.00172 U	0.00183 U	0.00181 U	0.00175 U
Polychlorinated Biphenyls (mg/kg)												
Aroclor 1248	~	~	0.0194 U	0.0186 U	0.0175 U	0.0175 U	0.0171 U	0.0186 U	0.0174 U	0.0185 U	0.0183 U	0.0176 U
Aroclor 1254	~	~	0.15	0.0186 U	0.0175 U	0.0175 U	0.0171 U	0.0186 U	0.0174 U	0.0822 J	0.0183 UJ	0.0176 U
Total PCBs	0.1	1	**0.15**	0.0186 U	0.0175 U	0.0175 U	0.0171 U	0.0186 U	0.0174 U	0.0822	0.0183 U	0.0176 U
TCLP Metals (µg/l)												
Lead	63		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Metals (mg/kg)												
Aluminum	~	~	7530	5870	5530	6170	5510	9260	4640	10000	9600	5260
Arsenic	13	16	6.07	6.44	1.05 U	1.28	1.03 U	3	1.04 U	3.36	2.62	1.06 U
Barium	350	400	313	116	39	30.7	27.5	81.4	23.3	77.2	64.4	21
Beryllium	7.2	72	0.116 U	0.111 U	0.105 U	0.105 U	0.103 U	0.111 U	0.104 U	0.111 U	0.11 U	0.106 U
Cadmium	2.5	4.3	0.354	0.889	0.315 U	0.315 U	0.308 U	0.334 U	0.313 U	0.333 U	0.329 U	0.318 U
Calcium	~	~	45300	10500	1530	1190	869	8240	792	7080	5270	915
Chromium	~	~	13.8	12.4	13.3	12.6	13.9	18.1	10.5	18.8	17	12
Cobalt	~	~	4.97	5.74	5.52	6.09	5.97	8.05	4.52	8.12	8.25	5.34
Copper	50	270	22.6	**89.7**	12.2	13.1	12.3	24.5	9.69	25.5	23.9	11.1
Iron	~	~	13400	14400	10400	10300	10400	20400	8040	20600	19500	9360
Lead	63	400	**582**	**518**	13.6	16.2	3.16	**66.9**	2.77	**86.4**	**81**	3.31
Magnesium	~	~	4590	2820	2540	2090	2590	2770	2350	2740	2480	1940
Manganese	1600	2000	235	227	221	343	263	593	200	428	438	169
Mercury	0.18	0.81	**0.195**	**0.282**	0.0315 U	0.0954	0.0308 U	**0.373**	0.0313 U	**0.193**	0.169	0.0318 U
Nickel	30	310	12.1	14.7	10	10	10.4	14.4	7.71	14.3	13.4	8.96
Potassium	~	~	1410	849	894 B	712 B	1230 B	1640 B	1130 B	1370 B	1390 B	741 B
Selenium	3.9	180	1.16 U	1.51	1.05 U	1.05 U	1.03 U	1.54	1.04 U	1.27	1.11	1.06 U
Sodium	~	~	657	208	223	38	211	152	126	42.3	38.4	21.1 J
Vanadium	~	~	28.4	22	16.3	17	15.6	28.2	12.1	27.8	30	14.4
Zinc	109	10000	**231**	**388**	30.3	41.2	24.1	93.3	25.8	81.4	92.3	22.6
General Chemistry (mg/kg)												
Total Solids	~	~	86.00	89.80	95.30	95.30	97.40	89.80	95.70	90.20	91.20	94.40

Notes and Qualifiers:

1. Grab 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 (SCOs).
2. Only compounds with detections are shown in the table.
3. Concentrations above the NYSDEC Part 375 Unrectricted Use SCOs are bolded.
4. Concentrations above the NYSDEC Part 375 Restricted-Residential SCOs are bolded and shaded.
5. Reporting Limits (RL) above the NYSDEC Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCO standards are italicized.
6. mg/kg = milligrams per kilogram
7. ~ = Criterion does not exist.
8. J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
9. D = Result is from an analysis that required a dilution.
10. B = Analyte found in the analysis batch blank.
11. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL ; the value shown in the table is the RL.
12. NT = Analyte was not a target for the sample.
13. DUP02_021216 is a duplicate sample of SB41_14-16 and DUP03_021716 is a duplicate sample of TP16_1-2.
14. bgs = below grade surface

Table 4D
Soil Sample Analytical Results Summary (Supplemental Soil Investigation)
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID Laboratory Sample ID Sampling Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	SB47_20-22 16D0096-02 4/4/2016 20 to 22		SB48_20-22 16D0096-04 4/4/2016 20 to 22		SB49_20-22 16D0096-05 4/4/2016 20 to 22		SB50_20-22 16D0096-06 4/4/2016 20 to 22		SB51_20-22 16D0096-07 4/4/2016 20 to 22		SB52_16-18 16D0095-03 4/4/2016 16 to 18		SB53_16-18 16D0095-04 4/4/2016 16 to 18		SB54_16-18 16D0095-05 4/4/2016 16 to 18		SB55_16-18 16D0095-06 4/4/2016 16 to 18		SB56_16-18 16D0095-07 4/4/2016 16 to 18	
Semivolatile Organic Compounds (mg/kg)																					
Benzo(a)anthracene	1	0.054	UJ	0.052	UJ	0.053	UJ	0.051	UJ	0.051	UJ	NT		NT		NT		NT		NT	
Benzo(a)pyrene	1	0.054	UJ	0.052	UJ	0.053	UJ	0.051	UJ	0.051	UJ	NT		NT		NT		NT		NT	
Benzo(b)fluoranthene	1	0.054	U	0.052	U	0.053	U	0.051	UJ	0.051	U	NT		NT		NT		NT		NT	
Chrysene	1	0.054	U	0.052	U	0.053	U	0.051	UJ	0.051	U	NT		NT		NT		NT		NT	
Dibenzo(a,h)anthracene	0.33	0.054	UJ	0.052	UJ	0.053	UJ	0.051	UJ	0.051	UJ	NT		NT		NT		NT		NT	
Indeno(1,2,3-cd)pyrene	0.5	0.054	UJ	0.052	UJ	0.053	UJ	0.051	UJ	0.051	UJ	NT		NT		NT		NT		NT	
Metals (mg/kg)																					
Cadmium	2.5	NT		NT		NT		NT		NT		0.35	UJ	0.36	UJ	0.38	UJ	0.37	UJ	0.34	UJ
Lead	63	3.43		3.42		3.82		2.84		2.81		2.25	J	2.12	J	2.18	J	1.94	J	1.92	J
Zinc	109	NT		NT		NT		NT		NT		41.50	J	29.50	J	33.90	J	60.40	J	55.90	J

Notes and Qualifiers:

1. Grab 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 Soil Cleanup Objectives (SCOs).
2. mg/kg = milligrams per kilogram
3. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the Reporting Limit (RL); the value shown in the table is the RL.
4. NT = Analyte was not a target for the sample.
5. bgs = below grade surface

Table 5
Groundwater Sample Analytical Results Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID York ID Sampling Date	NYSDEC TOGS Standards and Guidance Values - GA	MW8_022616 16B0917-02 2/26/2016		MW33_022516 16B0851-02 2/25/2016		MW37_022616 16B0917-03 2/26/2016		MW38_022616 16B0917-05 2/26/2016		MW39_022616 16B0917-01 2/26/2016		MW42_022516 16B0851-04 2/25/2016		GWDUP01_022516 16B0851-03 2/25/2016		MW46_022616 16B0917-04 2/26/2016	
Volatile Organic Compounds (µg/l)																	
Acetone	50	1	U	1	U	1	U	1	U	1	U	1	J	1	U	1	U
Bromodichloromethane	50	1.60		0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Chloroform	7	**17.00**		0.20	U	3.40		0.20	U	3.80		0.46	J	0.45	J	1.30	
tert-Butyl alcohol (TBA)	~	1.10	J	0.80	U	0.20	U	1.00	J	0.85	J	0.80	U	0.80	U	0.20	U
Tetrachloroethylene	5	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.26	J
Volatile Organic Compounds (µg/l)																	
Tentatively Identified Compounds	~	NT		ND		NT		NT		NT		ND		ND		NT	
Semivolatile Organic Compounds (µg/l)																	
1,1'-Biphenyl	~	2.63	U	2.78		2.50	U	2.56	U	2.70	U	2.56	U	2.70	U	2.56	U
Bis(2-ethylhexyl)phthalate	5	0.56		0.56	U	0.50	U	0.51	U	0.54	U	0.51	U	0.54	U	0.51	U
Fluoranthene	50	0.095		0.056	U	0.050	U	0.051	U	0.054	U	0.051	U	0.054	U	0.051	U
Phenanthrene	50	0.074		0.056	U	0.050	U	0.051	U	0.054	U	0.051	U	0.054	U	0.051	U
Pyrene	50	0.053	U	0.056	U	0.050	U	0.051	U	0.054	U	0.051	U	0.065		0.051	U
Pesticides (µg/l)																	
Total Pesticides	~	ND		ND		ND		ND		ND		ND		ND		ND	
Polychlorinated Biphenyls (µg/l)																	
Total PCBs	0.09	ND		ND		ND		ND		ND		ND		ND		ND	
Metals (µg/l)																	
Aluminum	~	72		56	U	3,010		907		363		233		224		1,470	
Antimony	3	**9**		*6*	U	**6**		*6*	U	*6*	U	*6*	U	*6*	U	**7**	
Barium	1000	52		64		102		170		68		129		128		82	
Calcium	~	85,800		45,400		157,000		125,000		79,400		81,700		80,700		196,000	
Chromium	50	20		6	U	**70**		22		6		6	U	6	U	**59**	
Cobalt	~	6	U	6	U	12		6	U	6	U	6	U	6	U	7	
Copper	200	8		6	J	20		14		8		8		8		16	
Iron	~	191		39		5,600		1,920		508		323		283		2,830	
Lead	25	4		3	U	5		6		4		5		3	U	4	
Magnesium	35000	12,600		13,600		**40,100**		23,500		18,300		22,000		21,700		**55,300**	
Manganese	300	10		33		**702**		**594**		13		265		263		278	
Nickel	100	6	U	6	U	36		17		6	U	6	U	6	U	13	
Potassium	~	17,500		2,400		4,390		6,540		1,910		6,130		6,000		6,110	
Sodium	20000	**200,000**		**218,000**	B	**334,000**		**254,000**		**183,000**		**273,000**	B	**267,000**	B	**340,000**	
Vanadium	~	11	U	11	U	11		11	U	11	U	11	U	11	U	11	U
Zinc	2000	20		19		44		23		29		19		21		33	
Dissolved Metals (µg/l)																	
Barium	1000	54		75		76		138		75		136		138		73	
Calcium	~	92,100		52,300		155,000		121,000		81,500		80,800		80,500		187,000	
Chromium	50	20		6	U	39		6	U	6		6	U	6	U	44	
Copper	200	7		12	J	9		9		8		11		11		11	
Iron	~	36		86	J	83		63		22	U	41		50		43	
Magnesium	35000	13,100		15,000		**36,400**		20,300		17,200		20,900		20,900		**51,100**	
Manganese	300	6	U	30		81		280		6	U	240		238		66	
Nickel	100	6	U	6	U	9		6		6	U	6	U	6	U	9	
Potassium	~	17,400		2,660		3,720		6,200		1,670		5,570		5,590		5,690	
Sodium	20000	**174,000**		**221,000**		**290,000**		**216,000**		**153,000**		**249,000**		**258,000**		**282,000**	
Zinc	2000	25		32		21		28		22		20		25		24	

Notes and Qualifiers:

1. Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values for Class GA - Drinking Water.
2. Only detected compounds are shown in the table.
3. Concentrations exceeding the NYSDEC TOGS AWQS criteria are shaded and bolded.
4. Reporting Limits (RL) above the NYSDEC TOGS AWQS criteria standards are italicized.
5. µg/L = micrograms per liter
6. ~ = Criterion doesn't exist.
7. GWDUP01_022516 is a duplicate sample of MW42_022516.
8. ND = Analyte was not detected in the sample
9. NT = Analyte was not a target for the sample
10. B = Analyte found in the analysis batch blank
11. J = Analyte detected at or above the method detection limit but below the RL; therefore data is estimated.
12. U = Analyte was analyzed for, but was not detected at a level greater than or equal to the RL.

Table 6
Soil Vapor and Ambient Air Sample Analytical Results Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID York ID Sampling Date	NYSDOH Decision Matrices	SV05_022516 16B0851-01 2/25/2016		SV6_021816 16B0603-01 2/18/2016		SV7_021816 16B0603-02 2/18/2016		SV8_021816 16B0603-03 2/18/2016		DUP01_021816 16B0603-06 2/18/2016		SV9_021816 16B0603-04 2/18/2016		SV10_021816 16B0603-05 2/18/2016		AA_021816 16B0603-07 2/18/2016	
Volatile Organic Compounds (µg/m^3)																	
1,2,4-Trimethylbenzene	~	9.8	U	9.34	D	2.46	D	17.20	D	12.78	D	6.39	D	4.23	D	0.49	U
1,2-Dichloroethane	~	8.1	U	0.77	U	0.73	U	0.73	U	0.73	U	2.27	D	0.73	U	0.40	U
1,3,5-Trimethylbenzene	~	13	D	2.75	D	0.88	U	4.62	D	3.59	D	1.57	D	1.13	D	0.49	U
2-Butanone	~	13	D	1.71	D	1.18	D	0.74	D	0.91	D	2.39	D	1.39	D	2.21	
Acetone	~	280	D	28.5	D	22.57	D	5.70	D	4.75	D	23.75	D	12.59	D	5.46	
Benzene	~	6.40	U	0.86	D	0.57	D	0.73	D	0.99	D	2.11	D	0.57	U	0.70	
Carbon disulfide	~	6.20	U	0.59	U	0.56	U	0.93	D	1.03	D	0.59	U	0.56	U	0.31	U
Chloroform	~	9.70	U	0.93	U	0.88	U	1.22	D	1.32	D	20.01	D	0.88	U	0.49	U
Chloromethane	~	4.10	U	0.39	U	0.37	U	0.37	U	0.37	U	0.39	U	0.37	U	1.03	
Cyclohexane	~	6.90	U	0.65	U	0.62	U	0.62	U	0.62	U	0.83	D	0.62	U	0.34	U
Dichlorodifluoromethane	~	9.90	U	2.13	D	1.53	D	1.83	D	1.98	D	1.88	D	1.88	D	1.93	
Ethyl Benzene	~	10	D	9.12	D	3.60	D	5.64	D	7.38	D	6.08	D	6.94	D	0.43	U
Methylene chloride	~	14	U	1.35	U	2.81	D	1.22	U	1.25	U	1.32	U	1.25	U	1.81	
n-Heptane	~	8.20	U	1.52	D	0.74	U	0.74	U	0.98	D	1.39	D	0.74	U	0.41	U
n-Hexane	~	7.00	U	0.67	U	0.63	U	0.63	U	0.63	U	1.80	D	1.13	D	0.35	U
o-Xylene	~	9.50	D	11.72	D	3.91	D	10.42	D	11.29	D	6.08	D	7.81	D	0.43	U
p- & m- Xylenes	~	36	D	33	D	13.46	D	26.04	D	29.08	D	20.40	D	22.14	D	0.87	
p-Ethyltoluene	~	11	D	11.79	D	3.64	D	17.20	D	14.25	D	6.39	D	5.41	D	0.49	U
Propylene	~	3.40	U	0.33	U	0.31	U	1.62	D	1.72	D	0.33	U	0.31	U	0.17	U
Styrene	~	8.50	U	4.68	D	1.36	D	3.62	J	0.77	UJ	2.73	D	0.77	U	0.43	U
Tetrachloroethylene	100	3.40	U	20.34	D	5.02	D	15.59	D	15.59	D	12.88	D	3.53	D	1.15	
Toluene	~	20	D	15.44	D	6.78	D	7.16	J	11.30	J	22.98	D	15.07	D	2.86	
Trichloroethylene	5	2.70	U	0.26	U	0.24	U	0.24	U	0.24	U	1.40	D	0.24	U	0.13	U
Trichlorofluoromethane (Freon 11)	~	11	U	1.97	D	1.01	D	2.86	D	3.03	D	1.18	D	1.12	D	1.35	

Notes and Qualifiers:

1. Soil vapor sample analytical results are compared to the New York State Department of Health (NYSDOH) Decision Matrices 1 and 2 Minimum Sub-Slab Vapor Concentrations warranting mitigation.
2. There are no reported soil vapor results above the NYSDOH Decision Matrices criteria.
3. Only detected compounds are shown in the table.
4. µg/m^3 = micrograms per cubic meter
5. ~ = criterion doesn't exist
6. AA_021816 is an ambient air sample.
7. D = Result is from an analysis that required a dilution.
8. U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL (Report Limit).
9. DUP01_021816 is a duplicate sample of SV8_021816.

Table 7
QA/QC Sample Analytical Results Summary
Queens Plaza North
Long Island City, New York
Brownfield Cleanup Program No. C241171
Langan Project No. 170316401

Sample ID	SBFB01_021716		SBTB01_021716		GWFB01_022516		GWTB01_022516		TB02_022616	
Laboratory Sample ID	16B0560-23		16B0560-24		16B0851-05		16B0851-06		16B0917-06	
Sampling Date	2/17/2016		2/17/2016		2/25/2016		2/25/2016		2/26/2016	
Volatile Organic Compounds (µg/l)										
1,2,4-Trichlorobenzene	2.30		0.39	J	0.20	U	0.20	U	0.20	U
Acetone	2	J	1	U	1	U	1	U	1	J
Bromomethane	0.34	J	0.20	U	0.20	U	0.20	U	0.20	UJ
Volatile Organic Compounds -TICs (µg/l)										
Tentatively Identified Compounds (TICs)	ND		ND		ND		NT		NT	
Semivolatile Organic Compounds (µg/l)										
Total SVOCs	ND		NT		ND		NT		NT	
Semivolatile Organic Compounds -TICs (µg/l)										
Tentatively Identified Compounds (TICs)	ND		NT		NT		NT		NT	
Pesticides (µg/l)										
Total Pesticides	ND		NT		ND		NT		NT	
Polychlorinated Biphenyls (µg/l)										
Total Polychlorinated Biphenyls	ND		NT		ND		NT		NT	
Metals (µg/l)										
Calcium	56	U	NT		97		NT		NT	
Iron	26		NT		22	U	NT		NT	
Potassium	56	U	NT		70		NT		NT	
Sodium	111	U	NT		832	U	NT		NT	
Zinc	11	U	NT		14		NT		NT	
Dissolved Metals (µg/l)										
Calcium	NT		NT		94		NT		NT	
Copper	NT		NT		5		NT		NT	
Iron	NT		NT		31		NT		NT	
Sodium	NT		NT		480		NT		NT	
Zinc	NT		NT		22		NT		NT	

Notes and Qualifiers:

1. Two field blank samples were collected during the February 2016 remedial investigation sampling; one during soil sampling and the second during groundwater sampling.
2. Three trip blank samples were collected during the February 2016 remedial investigation sampling; one during soil sampling and two during groundwater sampling.
3. QA/QC = quality assurance/quality control
4. Only detected compounds are shown in the table.
5. µg/L = micrograms per liter.
6. ND = Analyte was not detected in the sample.
7. NT = Analyte was not a target for the sample.
8. B = Analyte found in the analysis batch blank.
9. J = Analyte detected at or above the method detection limit but below the Reporting Limit (RL); therefore data is estimated.
10. U = Analyte was analyzed for, but was not detected at a level greater than or equal to the RL.