REMEDIAL ACTION WORK PLAN

for

BEACH 21ST STREET DEVELOPMENT
10-47 Beach 21st Street
Far Rockaway, Queens, New York
Block 15705, Lot 69

Prepared For:

Beach 21st Limited Partnership
c/o The Community Builders, Inc.
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Prepared By:

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June 19, 2019
Langan Project No. 170540601

LANGAN

CERTIFICATION

I, Jason Hayes, PE, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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

Jason Hayes

NYS Professional Engineer #089491 Date Signature

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

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AGV	Air Guideline Values
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
ASTM	ASTM International
BCP	Brownfield Cleanup Program
Bgs	below grade surface
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CEQR	City Environmental Quality Review
COC	Contaminant of Concern
CQAP	Construction Quality Assurance Plan
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DMM	Division of Materials Management
DUSR	Data Usability Summary Report
EDD	Electronic Data Deliverable
El	Elevation
ELAP	Environmental Laboratory Approval Program
En-Zone	Environmental Zone
ESA	Environmental Site Assessment
ESCP	Erosion and Sediment Control Plan
eV	electron volt
FEMA	Federal Emergency Management Agency
FWRIA	Fish and Wildlife Resources Impact Analysis
GPR	Ground-Penetrating Radar
HASP	Health and Safety Plan
L/min	liters per minute
MTBE	Methyl Tertiary Butyl Ether
$\mu g/m^3$	micrograms per cubic meter
NAVD88	North American Vertical Datum of 1988
NYC	New York City

Acronym	Definition
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCDOT	New York City Department of Transportation
NYCRR	New York Codes, Rules, and Regulations
NYCTA	New York City Transit Authority
NYS	New York State
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
OER	Office of Environmental Remediation
OSHA	Occupational Safety and Health Administration
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PFC	Perfluorinated Chemical
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	Photoionization Detector
PPE	Personal Protective Equipment
Ppm	parts per million
Ppt	parts per trillion
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCNY	Rules of the City of New York
RE	Remediation Engineer
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RRU	Restricted Use Restricted-Residential
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SEQRA	State Environmental Quality Review Act

Acronym	Definition
SGV	Standards and Guidance Values
SMMP	Soil/Materials Management Plan
SOE	Support of Excavation
SPDES	State Pollutant Discharge Elimination System
SVOC	Semivolatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) was prepared on behalf of Beach 21st Limited Partnership (the Requestor) for the Beach 21st Street Development at 10-47 Beach 21st Street in Queens, New York (the site). This RAWP is being submitted to the New York State Department of Environmental Conservation (NYSDEC) as part of a Brownfield Cleanup Program (BCP) application. The Requestor proposes to remediate the site for residential and commercial use.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) performed between December 11, 2018 and March 13, 2019. The RI Report (RIR) is being submitted to the NYSDEC as part of the BCP application. This RAWP provides evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have not yet determined if the site poses a significant threat to human health and the environment. The RI did not identify impacts to fish and wildlife resources.

SITE DESCRIPTION/PHYSICAL SETTING/SITE HISTORY

The site is located at 10-47 Beach 21st Street in the Far Rockaway neighborhood of Queens, New York, and is currently identified on the Queens Borough Tax Map as Block 15705, Lot 69 and portion of Lot 59. Following the completion of tax lot apportionment, the proposed site boundaries will correspond to Block 15705, Proposed New Lot 69. The about 42,500-square-foot (±0.96 acre) site is used for a bus stop and a municipal parking lot that contains a temporary bus shelter. All surfaces except for an approximately 2,000-square-foot unpaved area in the southwest corner are covered with asphalt or concrete pavement. The unpaved area is separated from the bus stop area by a New York City (NYC) Department of Transportation (DOT)-controlled parking area. The site is located mid-block, on the city block bound by Mott Avenue to the north, Beach 21st Street to the east, Cornaga Avenue to the south, and Beach 22nd Street to the west.

Historical Sanborn Fire Insurance Maps indicate that a LIRR right of way traversed the western portion of the site from 1886 to 1996. Other site uses included a coal/lumber yard (1890 to 1933), paint shop/storage (1912 to 1951), manufacturing facilities (1912 to 1951), woodworking (1912 to 1962), carpet cleaning (1912), and a tin shop (1951). The 1912 Sanborn map reveals a 100-

gallon underground gasoline tank on the site that is not shown on subsequent maps. Based on aerial photos, the site appears to have been used for parking and a bus stop since 1975.

The site was assigned an E-Designation (E-415) for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation. The NYC Mayor's Office of Environmental Remediation (OER) is aware of the Requestor's plans to redevelop the site under the BCP.

SUMMARY OF THE REMEDIAL INVESTIGATION FINDINGS

The RI findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results.

1. Stratigraphy: Historic fill predominantly consisting of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, roots, glass, clay and brick was encountered across the site from beneath the surface cover to elevations[1] (el) ranging from about el 23.2 to el 14.4 (1.2 to 10.6 feet below grade surface [bgs]). Native soil encountered below historic fill predominantly consisted of fine- to coarse-grained sand with varying amounts of gravel; trace silt and clay were observed at isolated locations. Bedrock was not encountered during the RI or Langan's November 2018 geotechnical evaluation.
2. Hydrogeology: Synoptic groundwater measurements were collected on December 31, 2018. Based on groundwater measurements and observations, an overburden aquifer exists beneath the site and groundwater elevations ranged from el 6.3 to el 5.93 (about 18.43 to 18.7 feet bgs).
3. Historic Fill: Laboratory analytical results indicated that the historic fill material contains semivolatile organic compounds (SVOCs), metals, and pesticides at concentrations above the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) and/or Restricted Use Restricted-Residential (RRU) Soil Cleanup Objectives (SCOs). Hazardous concentrations of lead were reported for two samples in boring EB22 in the central part of the site. Anomalously high SVOC concentrations were reported in borings EB13 and EB18 in the southwest and central parts of the site, respectively. Petroleum-related volatile organic compounds (VOCs) were detected in

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

historic fill samples, but at concentrations below the UU SCOs. No staining, odor or elevated PID readings were observed in the fill.

4. Native Soil: VOC, SVOC, pesticide, herbicide, metal, and polychlorinated biphenyl (PCB) concentrations did not exceed the Part 375 UU SCOs in native soil samples.
5. Groundwater: The chlorinated solvent tetrachloroethene (PCE) was detected in groundwater, but at concentrations below NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGV). Low-level detections of PCE in groundwater may be indicative of a former on-site release and/or off-site sources. Phenol, detected in one groundwater sample marginally above the SGV, may be indicative of a release associated with historical site use or may be a constituent of the historic fill (because groundwater sample was turbid). Total and dissolved metals concentrations detected above the SGVs in groundwater samples are attributable to regional groundwater conditions and are not considered indicative of a release.
6. Soil Vapor: PCE was reported at concentrations up to 160 micrograms per cubic meter ($\mu g/m^3$) in soil vapor. Soil vapor samples contained petroleum-related compounds (benzene, toluene, ethylbenzene, and xylenes [BTEX]) ranging in concentration from 15 to 1,229 $\mu g/m^3$. Total VOC concentrations in soil vapor ranged from 74 $\mu g/m^3$ in SV-1 to 1,545 $\mu g/m^3$ in SV-9. Petroleum-related and other VOCs detected in soil vapor may be indicative of a former on-site release and/or may be related to off-site sources.
7. Sufficient analytical data were gathered during the RI to establish site-specific soil cleanup levels and to develop a remedy for the site. The remedy will be described and evaluated in the RAWP prepared in accordance with New York State BCP guidelines. The remedy will address impacts to soil, groundwater, and soil vapor described in the RIR.

QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

Based on the conceptual site model and review of environmental data, complete on-site exposure pathways appear to be present in current, construction-phase, and future conditions. The complete exposure pathways indicate there is a risk of exposure to humans from site contaminants via exposure to soil, groundwater, and soil vapor if appropriate measures, including institutional and engineering controls as necessary, are not implemented. A qualitative human health exposure assessment was performed to evaluate the exposure pathways, and the following conclusions were developed:

1. Human exposure to site contaminants is limited under current conditions due to the surface cover (mostly pavement, except for an unpaved, partially fenced-off area in the southwest corner). The unpaved area is separated from the bus stop area by a New York City (NYC) Department of Transportation (DOT)-controlled parking area and soil samples collected from the uncapped area did not contain constituents above RRU SCOs. The primary exposure pathways are dermal contact, ingestion, and inhalation of soil, groundwater, or soil vapor by site investigation workers and, to a lesser extent, DOT workers and the nearby public. DOT operations by workers are primarily limited to bus operations on the paved portion of the site. The exposure risks can be avoided or minimized by following the appropriate Health and Safety Plan (HASP) and vapor and dust suppression measures, and by implementing a Community Air Monitoring Plan (CAMP) during investigation and remediation.
2. In the absence of mitigation and controls, there is potential for exposure during 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 implementing CAMP 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: 1) 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, if required, with an impermeable cover or 2 feet of clean soil; 2) regional groundwater is not used as a potable water source in in this part of NYC; and 3) the potential pathway for soil vapor intrusion into the building would be addressed by installation of a waterproofing/vapor barrier, which will mitigate soil vapor intrusion.
4. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors during current and construction-phase. 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, it is anticipated that the site will be remediated to unrestricted use (Track 1). If Track 1 is not achievable, engineering controls and institutional controls will be implemented as necessary, to prevent completion of this pathway.

SUMMARY OF THE REMEDY

The selected Track 1 remedy will include the following:

- Demolition of site improvements and construction of the support of excavation (SOE) system to facilitate the Track 1 remediation
- Excavation, stockpiling, off-site transport, and disposal of about 11,300 cubic yards of historic fill exceeding UU SCOs. The maximum depth at which fill exceeding the UU SCOs was identified is about 10 feet bgs (about el 15) and historic fill was observed to depths of about 10.5 feet bgs. Additional excavation will be completed to 15 feet bgs to reach development grade.
- Decommissioning and removal of any USTs identified during earthwork
- Collection and analysis of bottom confirmation soil samples to confirm UU SCOs are achieved
- Backfilling of remediated areas to development sub-grade and around SOE components with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA)
- Reuse of site soil meeting UU SCOs, if necessary
- Development and implementation of a HASP and CAMP for the protection of on-site workers, the community, and the environment during the remediation phase of development

The remediation will be performed in accordance with this RAWP and the Department-issued Decision Document. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and explained in the Final Engineering Report (FER).

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was prepared on behalf of Beach 21st Limited Partnership (the Requestor) for the Beach 21st Street Development at 10-47 Beach 21st Street in Queens, New York (the site). This RAWP is being submitted to the New York State Department of Environmental Conservation (NYSDEC) as part of a New York State Brownfield Cleanup Program (BCP) application. The Requestor proposes to remediate the site for residential and commercial use in conjunction with redevelopment.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) performed between December 11, 2018 and March 13, 2019. The RI Report (RIR) is being submitted to the NYSDEC as part of the BCP application. This RAWP provides evaluation of a Track 1 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have not yet determined if the site poses a significant threat to human health and the environment. The RI did not identify impacts to fish and wildlife resources.

1.1 Site Location and Description

The site is located at 10-47 Beach 21st Street in the Far Rockaway neighborhood of Queens, New York, and is identified on the Queens Borough Tax Map as Block 15705, Lot 69 and portion of Lot 59. Following the completion of tax lot apportionment, the proposed site boundaries will correspond to Block 15705, Proposed New Lot 69. The about 42,500-square-foot (±0.96 acre) site is used for a bus stop and a municipal parking lot that contains a temporary bus shelter. All surfaces except for an approximately 2,000- square-foot unpaved area in the southwest corner are covered with asphalt or concrete pavement. The unpaved area is separated from the bus stop area by a New York City (NYC) Department of Transportation (DOT)-controlled parking area. The site is located mid-block, on the city block bound by Mott Avenue to the north, Beach 21st Street to the east, Cornaga Avenue to the south, and Beach 22nd Street to the west.

A Site Location Map, which includes a United States Geological Survey (USGS) topographical quadrangle map, is included as Figure 1. The metes and bounds of the site are detailed on the Boundary Survey included in Appendix A.

The site was assigned an E-designation (E-415) for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation. The NYC Mayor's Office of Environmental Remediation (OER) is aware of the Requestor's plans to redevelop the site under the BCP.

1.2 Redevelopment Plan

The remedy proposed in this RAWP is intended to make the site protective of human health and the environment consistent with the contemplated residential and commercial use. The proposed redevelopment plan and end use are described here to provide the basis for this assessment; however, the remedial action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

The proposed redevelopment project consists of a 10-story mixed-use building (commercial and affordable residential) with a cellar level. The cellar will be used for parking, storage, and mechanical rooms. The ground floor will include retail and a daycare center. Upper floors will include residential units and indoor and outdoor communal spaces for residents. An approximately 2,900-square-foot area in the southwest corner of the site will be a grade-level play yard (above the cellar level) associated with the day care. Concrete paving is proposed for the setback area along Beach 21st Street and a landscaped area is proposed around the daycare play yard. Excavation across the site footprint to 15 feet below grade surface (bgs) will be needed to construct the cellar with some deeper excavations for foundation elements. A plan showing the development excavation area is provided as Figure 2.

1.3 Description of Surrounding Property

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

Direction	Adjoining Properties			Surrounding Properties
	Block No.	Lot No.	Description	
North	15705	59	Northern portion of Lot 59 (off-site portion) that includes the remainder of the bus station and parking facility	Auto service facility followed by Mott Avenue
East	15704	26, 30, 36, 53, 57, 60, 66	Mixed-use commercial and residential lots	Beach 21st Street followed by commercial businesses

Direction	Adjoining Properties			Surrounding Properties
	Block No.	Lot No.	Description	
South	15705	81	Land under development	Parking and auto repair shop followed by Cornaga Avenue
West	15705	30 through 37, 140	One- and two-story family residential buildings and multi-family residential building	Mixed-use residential and commercial lots, vacant land, Beach 22nd Street and MTA Mott Avenue – Far Rockaway Subway station

Land use within a half mile of the site is primarily residential and commercial, but also includes industrial uses, public parks, and schools. The New York City Transit Authority (NYCTA) 'A' subway line is about 300 feet to the west across Beach 22nd Street. Motts Basin, which is a section of Jamaica Bay, is about 2,400 feet north-northwest of the site. Sensitive receptors, as defined in NYSDEC DER-10, located within a half mile of the site are listed in the following table.

Number	Name (approximate distance from site)	Address
1	Peninsula Preparatory Academy (1,030 feet southeast)	611 Beach 19th Street Far Rockaway, NY 11691
2	Talmud Torah Siach Yitzchok (1,040 feet northeast)	1513 Central Avenue Far Rockaway, NY 11691
3	Reishis Chochma Preschool (1,040 feet north)	1525 Central Avenue Far Rockaway, NY 11691
4	Challenge Charter Middle School (1,050 feet north)	15-26 Central Avenue Far Rockaway, NY 11691
5	Kid's Time Childcare (1,050 feet west)	10-50 Beach 22nd Street Far Rockaway, NY 11691
6	MS 53 Brian Piccolo Village Academy (1,100 feet east)	Nameoke Street and Cornaga Avenue Far Rockaway, NY 11691
7	Success Academy Far Rockaway (1,100 feet east)	10-45 Nameoke Street, Floor 3 Far Rockaway, NY 11691
8	Tiny Tykes Day Care (1,600 feet west)	1061 Gipson Street Far Rockaway, NY 11691
9	Church of God Christian Academy (1,620 feet northeast)	1332 Central Avenue Far Rockaway, NY 11691
10	Sorrentino Recreation Center (1,800 feet southeast)	18-40 Cornaga Avenue Far Rockaway, NY 11691
11	PS 215 Lucretia Mott (1,810 feet southwest)	535 Briar Place Far Rockaway, NY 11691
12	Wave Preparatory Elementary School (1,820 feet southwest)	535 Briar Place Far Rockaway, NY 11691

Number	Name (approximate distance from site)	Address
13	Lovable Kids Day Care (1,830 feet west)	1070 Dickens Street Far Rockaway, NY 11691
14	Early Bird Family Day Care, Inc. (1,850 feet south)	439 Beach 22nd Street, Apt. 3P Far Rockaway, NY 11691
15	P.S. 253 (2,000 feet north)	1307 Central Avenue Far Rockaway, NY 11691
16	Our Precious Angels (2,060 feet west)	2402 Ocean Crest Boulevard Far Rockaway, NY 11691
17	Little Treasures Daycare (2,110 feet east)	1418 Mott Avenue Far Rockaway, NY 11691
18	Kiddies Care Corner (2,110 feet south)	2117 Elk Drive Far Rockaway, NY 11691
19	Alleluia Day Care (2,115 feet south)	443 Beach 22nd Street Far Rockaway, NY 11691
20	Bowen's Unique Headstart (2,115 feet south)	449 Beach 21st Street Far Rockaway, NY 11691
21	Our Kids Daycare, Inc. (2,115 feet south)	429 Fernside Place Far Rockaway, NY 11691
22	Hebrew Kindergarten and Infants (2,115 feet south)	310 Beach 20th Street Far Rockaway, NY 11691
23	Sunshine Daycare (2,115 feet south)	13-81 McBride Street Far Rockaway, NY 11691
24	Bnos Bais Yaakov/Tichon Meir Moshe (2,500 feet east)	613 Beach 9th Street Far Rockaway, NY 11691
25	Fredrick Douglas Academy VI High School (2,500 feet southwest)	8-21 Bay 25th Street Far Rockaway, NY 11691
26	Yeshiva Darchei Torah (2,500 feet south)	257 Beach 17th Street Far Rockaway, NY 11691
27	Knowledge and Power Preparatory Academy VI (2,500 feet southwest)	8-21 Bat 25th Street Far Rockaway, NY 11691
28	Lovable Kids Daycare (2,500 feet west)	1070 Dickens Street Far Rockaway, NY 11691
29	Queens High School for Information, Research, and Technology (2,530 feet southwest)	8-21 Bay 5th Street Far Rockaway, NY 11691
30	Far Rockaway High School (2,600 feet southwest)	821 Bay 25th Street Far Rockaway, NY 11691

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was completed in accordance with Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375, DER-10, the NYSDEC BCP Regulations, and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates). The RI was completed between December 11, 2018 and March 13, 2019. The Remedial Investigation Report (RIR) and this RAWP are being submitted to NYSDEC as part of the BCP application. The RI was completed to characterize the nature and extent of contamination at the site.

2.1 Remedial Investigation

The RI consisted of the following:

- A geophysical survey
- Advancement of 23 soil borings and collection of 45 grab soil samples (including three duplicate samples)
- Installation of three groundwater monitoring wells and collection of seven groundwater samples (including one duplicate sample) from three new and three existing site wells
- Surveying and synoptic gauging of groundwater monitoring wells to determine local groundwater flow direction
- Installation of ten soil vapor points and collection of ten soil vapor samples

2.1.1 Geophysical Investigation

Prior to initiating intrusive RI subsurface activities, the New York One Call Center was contacted for Code 753 utility mark-outs. On December 12, 2018, a Langan field engineer documented the geophysical survey performed by NOVA Geophysical & Environmental, Inc. (NOVA) of Douglaston, New York. The survey was completed using electromagnetic and utility line locator instruments, a magnetometer, and ground-penetrating radar (GPR) to identify potential subsurface utilities, underground storage tanks (UST), and other buried structures across the site and to clear boring, monitoring well, and soil vapor probe locations.

The geophysical survey identified scattered anomalies resembling potential subsurface utilities (such as electric, telecommunications, and drainage) across the site footprint. The survey was limited by vehicles in the parking lot in the western and southern parts of the site. Large

geophysical anomalies resembling USTs were not identified. Piping from catch basins were not all traced to public sewer discharge points, indicating dry wells may be present.

2.1.2 Soil Investigation

A Langan field engineer documented the advancement of 23 soil borings (EB01 through EB23) by AARCO Environmental Services Corp. (AARCO) of Lindenhurst, New York. Boring locations were selected to investigate the Areas of Concern (AOC) listed in the RIR. Borings were advanced using either direct-push Geoprobe® 7822DT or Powerprobe™ 9580 VTR track-mounted drilling rigs. Boring advancement elevations[1] ranged from el 17 to el -7 (about 8 to 32 feet bgs).

Soil was recovered continuously from the surface to the bottom depth of each boring. Samples were collected into 4-foot or 5-foot long acetate liners, using a 2-inch diameter Macro-Core® 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 organic vapors was performed using a photoionization detector (PID) equipped with a 10.6 electron volt (eV) lamp. Following sample collection, borings were backfilled with soil cuttings that did not display evidence of environmental impacts and patched to match the surrounding surface cover, or borings were converted to groundwater monitoring wells.

2.1.3 Groundwater Investigation

A Langan field engineer documented conversion of three soil borings into groundwater monitoring wells (MW05, MW09, and MW12) by AARCO during the RI and installation of four geotechnical observation wells [B-1(OW), B-3(OW), B-8(OW), and B-12(OW)] by Craig Geotechnical Drilling (Craig) of Mays Landing, New Jersey during the November 2018 geotechnical investigation. One groundwater sample was collected from each of the wells to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs. Geotechnical well B-8(OW) was not sampled because the purged material appeared to contain drilling mud and did not clear up.

MW05, MW09, and MW12 were installed by inserting 15 feet of 2-inch diameter, schedule 40, 0.01-inch slotted polyvinyl chloride (PVC) screen extending from about el -5.56 to el 13.4 (27 to 30 feet bgs) and attached PVC riser to grade. The annulus of each groundwater monitoring well

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

was filled with No. 2 sand to a depth of about 2 feet above the top of the screen followed by an at least 2-foot-thick bentonite seal. The remainder of the annulus was filled with soil cuttings that did not display evidence of environmental impacts and/or No. 2 sand.

Geotechnical observation wells were constructed by inserting 10 feet of 2-inch diameter, schedule 40 PVC slotted screen, and 20 feet of solid riser pipe for a total depth of 30 feet bgs. The annulus of each well was filled with No. 2 sand to a depth of about 2 feet above the top of the screen followed by an at least 2-foot-thick bentonite seal. The remainder of the annulus was filled with soil cuttings that did not display evidence of environmental impacts.

Following installation, the groundwater monitoring wells were developed using a surge block and purged using a submersible pump until the water ran clear. Purged groundwater was containerized in a labeled 55-gallon drum and then transported by AARCO on May 3, 2019 to Dale Transfer Corporation in West Babylon, New York.

A Langan field engineer completed synoptic groundwater gauging on December 31, 2018. The top of casing of each well was surveyed by Langan on January 14, 2019.

2.1.4 Soil Vapor Investigation

A Langan field engineer documented installation of ten temporary soil vapor probes (SV01 through SV05, SV07 through SV09, SV10, and SV12) by AARCO. Soil vapor sample probes were installed using a Geoprobe® 7822DT track-mounted drill rig to a depth of about 10 feet bgs. The probes were installed in accordance with the 2006 NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York and consisted of polyethylene implants (1/2-inch diameter and 1-7/8-inch long) threaded into 3/16-inch-diameter polyethylene tubing. The annulus of each probe was filled with No. 2 sand to a depth of about 4 inches above top of screen followed by a hydrated bentonite seal to surface grade.

Soil boring, monitoring well, and soil vapor probe locations are shown on Figure 3.

2.1.5 Samples Collected

Forty-two soil samples and three duplicate samples were collected for laboratory analysis. During the December 2018 borings, samples were collected from the 0- to 3.5-foot depth interval (i.e., shallow fill) and from the interval below the proposed cellar depth. In boring EB02, a third sample was collected from the bottom of the historic fill layer. Samples collected in March were collected at various depths between 0 and 10 feet bgs within the historic fill material layer.

Seven groundwater samples and one duplicate sample were collected at least one week following well development. Samples were collected in accordance with the United States Environmental Protection Agency's (USEPA) low-flow groundwater sampling procedure ("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) to allow for collection of representative samples.

Ten 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 liters per minute (L/min) over about 120 minutes of sampling.

Groundwater soil samples collected in December 2018 were submitted for laboratory analysis to Chemtech, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Mountainside, New Jersey. Soil samples collected in March 2019 and soil vapor samples were submitted for laboratory analysis to York Analytical Laboratories Inc. (York) located in Richmond Hill, New York, an NYSDOH ELAP-certified laboratory

2.1.6 Chemical Analysis

The laboratory analyses performed on the soil, groundwater, soil vapor, and ambient air samples collected are summarized below by media.

Soil samples were analyzed for the following parameters:

- Part 375-listed volatile organic compounds (VOCs) via USEPA Method 8260C
- Part 375-listed semi-volatile organic compounds (SVOCs) via USEPA Method 8270D
- Polychlorinated biphenyls (PCBs) via USEPA Method 8082A
- Part 375-listed pesticides via USEPA Method 8081B
- Part 375-listed herbicides via USEPA Method 8151A
- Part 375-listed metals including hexavalent and trivalent chromium via USEPA Methods 6010C, 7471B, and 7196A
- Total cyanide via USEPA Method 9010C/9012B

Groundwater samples were analyzed for the following parameters:

- Target Compound List (TCL) VOCs and 1,4-dioxane via USEPA Method 8260C

- TCL SVOCs via USEPA Method 8270D
- PCBs via USEPA Method 8082A
- Pesticides via USEPA Method 8081B
- Target Analyte List (TAL) metals (total and dissolved) via USEPA Methods 6020A and 7470A
- Cyanide
- Perfluorinated chemicals (PFCs) via USEPA Method 537

Soil vapor samples were analyzed for VOCs via USEPA Method TO-15.

2.1.7 Remedial Investigation Findings Summary

The findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results. Soil sample results are summarized on Figure 4, groundwater sample results are summarized on Figure 5, and soil vapor sample results are summarized on Figure 6.

1. Stratigraphy: Historic fill predominantly consisting of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, roots, glass, clay and brick was encountered across the site from beneath the surface cover to elevations[1] (el) ranging from about el 23.2 to el 14.4 (1.2 to 10.6 feet bgs). Native soil encountered below historic fill predominantly consisted of fine- to coarse-grained sand with varying amounts of gravel; trace silt and clay were observed at isolated locations. Bedrock was not encountered during the RI or Langan's November 2018 geotechnical evaluation.
2. Hydrogeology: Synoptic groundwater measurements were collected on December 31, 2018. Based on groundwater measurements and observations, an overburden aquifer exists beneath the site and groundwater elevations ranged from el 6.3 to el 5.93 (about 18.43 to 18.7 feet bgs).
3. Historic Fill: Laboratory analytical results indicated that the historic fill material contains SVOCs, metals, and pesticides at concentrations above the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) and/or Restricted Use Restricted-Residential (RRU) Soil Cleanup Objectives (SCOs). Hazardous concentrations

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

of lead were reported for two samples in boring EB22 in the central part of the site. Anomalously high SVOC concentrations were reported in borings EB13 and EB18 in the southwest and central parts of the site, respectively. Petroleum-related volatile organic compounds (VOCs) were detected in historic fill samples, but at concentrations below the UU SCOs. No staining, odor or elevated PID readings were observed in the fill.

4. Native Soil: VOC, SVOC, pesticide, herbicide, metal, and PCB concentrations did not exceed the Part 375 UU SCOs in native soil samples.

5. Groundwater: The chlorinated solvent tetrachloroethene (PCE) was detected in groundwater, but at concentrations below NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGV). Low-level detections of PCE in groundwater may be indicative of a former on-site release and/or off-site sources. Phenol, detected in one groundwater sample marginally above the SGV, may be indicative of a release associated with historical site use or may be a constituent of the historic fill (because groundwater sample was turbid). Total and dissolved metals concentrations detected above the SGVs in groundwater samples are attributable to regional groundwater conditions and are not considered indicative of a release.

6. Soil Vapor: PCE was reported at concentrations up to 160 micrograms per cubic meter ($\mu g/m^3$) in soil vapor. Soil vapor samples contained petroleum-related compounds (benzene, toluene, ethylbenzene, and xylenes [BTEX]) ranging in concentration from 15 to 1,229 $\mu g/m^3$. Total VOC concentrations in soil vapor ranged from 74 $\mu g/m^3$ in SV-1 to 1,545 $\mu g/m^3$ in SV-9. Petroleum-related and other VOCs detected in soil vapor may be indicative of a former on-site release and/or may be related to off-site sources.

2.2 Significant Threat

The NYSDEC and NYSDOH have not yet determined if the site poses a significant threat to human health and the environment.

2.3 Site History

2.3.1 Past Uses and Ownership

Historical Sanborn Fire Insurance Maps indicate that a LIRR right of way traversed the western portion of the site from 1886 to 1996. Other site uses include a coal/lumber yard (1890 to 1933), paint shop/storage (1912 to 1951), manufacturing facilities (1912 to 1951), woodworking (1912 to 1962), carpet cleaning (1912), and a tin shop (1951). The 1912 Sanborn map reveals a 100-

gallon underground gasoline tank on the site that is not shown on subsequent maps. Based on aerial photos, the site appears to have been used for parking and a bus stop since 1975.

2.3.2 Previous Environmental Reports

In addition to the previously discussed RIR, two previous environmental reports were reviewed as part of this RAWP and are summarized in chronological order below. The environmental reports are included in Appendix B.

June 2016 Phase I Environmental Site Assessment (ESA) for Far Rockaway Municipal Parking Field – Queens, New York, prepared by AKRF, Inc.

AKRF completed a Phase I ESA of the site and adjacent portions of Lot 59 in 2016. The Phase I ESA identified the following recognized environmental conditions (RECs):

- Two USTs – One UST is shown in the western part of the site on the 1912 Sanborn map and the second UST is shown in the portion of Lot 59 north of the site on the 1933 to 1951 maps. The status of the tanks is unknown and additional tanks may have been associated with other historical structures.
- Historical Property uses included a coal and wood yard, a furniture factory, auto repair, paint storage, a tin shop, an upholsterer, a lumber yard, a screen manufacturer, a publishing company, a roofing works, and a sheet metal works.
- A rail spur was historically located along the west part of the site and may have been associated with spills and the use of creosote and/or other oils.
- Historical and current uses of surrounding properties included nearby rail tracks, auto repair shops, filling stations, factories, paint and oil shops, printers, a sign painter, dry cleaners, registered Petroleum Bulk Storage (PBS) facilities, and a vacant lot with an abandoned 55-gallon drum.
- Potential dry wells may be located on-site based on a survey provided by NYC DOT indicating some on-site storm drains may not be connected to the municipal sewer system and may discharge into the subsurface.

The Phase I ESA also identified Spill No. 0408292 (October 2004), regarding two 55-gallon drums that were abandoned on the property, as a de minimis condition. It is not clear if this incident happened within the limits of the site or the larger city-owned area. The spill was closed in December 2004.

A subsurface investigation was recommended prior to redevelopment as well as proper closure of any encountered USTs in accordance with applicable regulations. The report also recommended that suspect demolition debris, possibly containing asbestos containing material (ACM), lead-based paint (LBP) or polychlorinated biphenyl (PCB) containing material, should be handled and disposed of in accordance with applicable regulations.

September 2018 Phase I ESA, for Beach 21st Street Development – Queens, NY, prepared by Langan

The Phase I ESA identified the following RECs:

- Historical uses at the site included: LIRR railroad tracks (1886 to 1996), coal/lumber yard (1890 to 1933), manufacturing facilities (1912 to 1951), woodworking (1912 to 1962), carpet cleaning (1912), tin shop (1951), and painting facilities (1912 to 1951).
- A 1912 Sanborn Map shows an UST on the site. Additional records related to the tank were not available; therefore, it is possible that the tank is still in place.
- Current and historical use of adjoining and surrounding up- and cross-gradient properties included: gasoline filling stations (1933 and 2006), dry cleaners (1951 to 1981), auto repair facilities (1933-present), a manufacturing company (1950 to 1970), and battery service (1934).

The following were identified as business environmental risks (BERs):

- Presence of historic fill material
- Potential dry wells
- E-designation for noise and air quality

2.4 Geology and Hydrogeology

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

2.4.1 Historic Fill Material

Historic fill material was encountered beneath the surface cover and extends to elevations that vary down to a maximum depth of el 14.4 (10.6 feet bgs). The historic fill predominantly consisted of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, roots, glass, clay, and brick.

2.4.2 Native Soil

The historic fill layer was underlain by a sand layer predominantly consisting of fine- to coarse-grained sand with varying amounts of gravel, and pockets of trace silt and clay. A clay layer was observed at depths ranging from 55 to 70.5 feet bgs (about el -30 to -45.5) in geotechnical borings.

2.4.3 Bedrock

Bedrock was not encountered during the RI or during Langan's November 2018 geotechnical borings, but is estimated to be over 900 feet deep.

2.4.4 Hydrogeology

Synoptic groundwater measurements were collected on December 31, 2018 from three environmental groundwater monitoring wells (MW05, MW09, and MW12) installed during the RI, and three geotechnical observation wells (B-1(OW), B-3(OW) and, B-12(OW)) installed in November 2018. Groundwater elevations ranged from el 6.3 to el 5.93 (about 18.43 to 18.7 feet bgs) and groundwater appears to flow north-northwest. Underground utilities and other subsurface structures may locally influence the direction of groundwater flow.

2.5 Contaminant Conditions

2.5.1 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.

<u>Potential Sources of Contamination</u>

Potential sources of contamination include historic fill material, historical site use, suspected on-site petroleum bulk storage, and historical use of adjoining/surrounding properties.

Historic fill material encountered beneath surface cover to elevations ranging from about el 23.2 to el 14.4 (1.2 to 10.6 feet bgs) originated from unidentified source areas and was placed as backfill at an unknown time. SVOCs detected at concentrations above the Part 375 UU and/or RRU SCOs may be related to the nature of historic fill and/or an historical site (e.g., coal yard). Metals were detected at concentrations above the Part 375 UU and RRU SCOs and are considered hazardous for lead in boring EB22. Metal impacts may be related to the nature of the

historic fill and/or historical site uses as a coal yard and tin shop. Pesticides detected above the Part 375 UU SCOs at several locations between 0 and 8 feet bgs may be the result of pesticide applications or storage at the site.

Phenol detected in groundwater may be indicative of a release associated with historical site use or may be a constituent of the historic fill (because the groundwater sample was turbid). PCE detected in groundwater below SGVs and in soil vapor at concentrations of up to 160 µg/m3 may be indicative of an on-site release associated with historical site use (although PCE was not detected in soil samples) or may be related to off-site sources.

Detections of petroleum-related VOCs in soil (that did not exceed SCOs) may be related to a historical on-site petroleum release. Petroleum-related VOCs detected in soil vapor may be indicative of an on-site release and/or off-site sources.

Exposure Media

The impacted media include soil, groundwater, and soil vapor. Analytical data for contaminants of concern (COCs) indicates that SVOCs, metals, and pesticides above UU and/or RRU SCOs are limited to the historic fill layer. Phenol was detected in one groundwater sample marginally above the SGV. Petroleum-related VOCs were detected in soil (below SCOs) and in soil vapor. PCE was detected in groundwater (below SGVs) and in soil vapor at concentrations up to 160 µg/m^3; however, an on-site source of chlorinated VOCs (CVOC) was not identified in soil.

Receptor Populations

The site is improved with a concrete and asphalt cover with no permanent on-site structures. An about 2,000-square-foot uncapped area is located in the southwest corner. The uncapped area is separated from the bus stop area by a NYC DOT-controlled parking area and soil samples collected from the uncapped area did not contain constituents above RRU SCOs. A wooden fence restricts access to the uncapped area. Fencing is located along the southern and western perimeters, otherwise the site is accessible. Current receptor populations include the general public, pedestrians, and visitors to the site associated with pre-development assessment and investigation. 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 residential and commercial use occupants, patrons and employees, and the nearby community, including children.

2.5.2 Description of Areas of Concern (AOC)

Based on site observations, site development history, and the findings of the Phase I ESA, five AOCs were identified. This section discusses the results of the RI with respect to the AOCs. An AOC location map is included as Figure 3.

2.5.2.1 AOC 1: Historic Fill

The historic fill layer ranged in elevation from surface grade to about el 23.2 to el 14.4 (1.2 to 10.6 feet bgs) and predominantly consisted of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, roots, glass, clay, and brick. The bottom of the historic fill layer (about el 23.4 to el 15) was encountered above the groundwater table (el 6.30 to el 5.93). Historic fill material located throughout the site contains SVOCs, metals, and pesticides at concentrations above the Part 375 UU and/or RRU SCOs. In borings EB13 and EB18, SVOCs were reported at concentrations up to an order of magnitude higher than what is typically observed in historic fill material in New York City. Lead detections were higher than typical fill in borings EB21 and EB22 and were reported at hazardous concentrations in two samples from boring EB22.

AOC 1 Conclusions

Historic fill, which is ubiquitous across the site footprint, was encountered beneath surface cover to elevations ranging from about el 23.4 to el 15 (1.6 to 10 feet bgs). SVOCs, metals, and pesticides were detected at concentrations above the Part 375 UU and/or RRU SCOs in samples of historic fill, with the deepest exceedance found between about el 13 and 15 (8 -10 feet bgs). Anomalously high concentrations of SVOCs and lead may be related to the quality of fill material at the site and/or historic site uses. Pesticides may be a constituent of the historic fill and/or the result of former pesticide applications or storage at the site. The analytical data indicate that contaminants associated with historic fill have not impacted soil vapor beneath the site.

2.5.2.2 AOC 2: Historical Site Use

From 1890 to 1951, the site operated with the following uses: a coal/lumber yard, paint shop/storage, manufacturing facilities, woodworking, carpet cleaning, and a tin shop. COCs associated with historical site use include petroleum-related VOCs, CVOCs, SVOCs, metals, and pesticides in soil, and CVOCs and petroleum-related VOCs in groundwater and soil vapor.

SVOCs were detected in 12 soil samples exceeding RRU SCOs, including two locations (EB13 and EB18) with anomalously high concentrations. Metals, including arsenic, barium, copper,

hexavalent chromium, lead, mercury, nickel, and zinc, were detected above UU SCOs and/or RRU SCOs in samples of historic fill collected from across the site footprint. Lead detections were higher than typical fill in borings EB21 and EB22 and were reported at hazardous concentrations in two samples from boring EB22. CVOCs and petroleum-related VOCs were detected in soil samples, but at concentrations below SCOs.

Phenol was detected in one groundwater sample marginally above the SGV. Phenol was detected in soil samples collected from every boring, but at concentrations below UU SCOs. PCE was detected in groundwater in two wells [B-1(OW) and B-12(OW)], but at concentrations below SGVs. PCE was detected at concentrations of up to 160 µg/m3 in soil vapor.

AOC 2 Conclusions

SVOCs and metals detected in historic fill may be related to the historical site uses and/or quality of the fill material. Phenol detected in groundwater may be indicative of a release associated with historical site use or may be a constituent of the historic fill (because the groundwater sample was turbid). PCE detected in groundwater (at levels below the standard) and in soil vapor may be indicative of a release associated with historical site use (although PCE was not detected in soil samples) or may be related to an off-site source.

2.5.2.3 AOC 3: On-Site Petroleum Bulk Storage

The 1912 Sanborn Map shows a UST on the site. Though no geophysical anomalies resembling USTs were identified during the December 2018 geophysical survey, a tank may still be present at the site. COCs associated with AOC 3 include petroleum-related VOCs and lead.

A PID headspace reading of 45.8 ppm was recorded beneath the cap of observation well B-1(OW). Petroleum-like odors were noted in geotechnical boring B8, but not in adjacent RI borings (EB7, EB15, EB19, and EB20). Petroleum-related VOCs were detected in soil, but at concentrations below the UU SCOs. Lead was detected in soil samples above the SCOs and at hazardous concentrations within EB22. Total BTEX compounds were detected in soil vapor at a maximum concentration of 1,229 µg/m^3.

AOC 3 Conclusions

Detections of petroleum-related VOCs in soil below the SCOs may indicate a historic gasoline release on site. Lead concentrations in soil, including two hazardous concentrations, may be related to historic fill and/or an on-site release. Petroleum-related VOCs detected in soil vapor

may be indicative of an on-site release (although these compounds were not detected above applicable criteria in soil or groundwater samples) or may be related to an off-site source.

2.5.2.4 AOC 4: Historical Use of Adjoining and Surrounding Properties

Historical uses of the adjoining and surrounding properties include gasoline filling stations, dry cleaners, auto repair facilities, a manufacturing company, and battery service. COCs for the Subject Property associated with AOC 4 include petroleum and chlorinated VOCs.

Petroleum-related VOCs were detected in soil but at concentrations below the UU SCOs. PCE was detected in groundwater in two wells [B-1(OW) and B-12(OW)], but at concentrations below SGVs. PCE was detected at concentrations of up to 160 µg/m^3 in soil vapor. Total VOCs were detected in soil vapor at a maximum concentration of 1,545 µg/m^3. Total BTEX compounds were detected in soil vapor at a maximum concentration of 1,229 µg/m^3.

AOC 4 Conclusions

PCE and petroleum-related VOC concentrations in soil vapor may be indicative of a release associated with historical site use (although these compounds were not detected above applicable criteria in soil or groundwater samples) or may be related to an off-site source.

2.5.3 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 detailed in the RIR. Soil sample results are summarized on Figure 4, groundwater sample results are summarized on Figure 5, and soil vapor sample results are summarized on Figure 6.

2.5.3.1 Soil Contamination

Historic fill predominantly consisting of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, roots, glass, clay, and brick was encountered across the site beneath surface cover to elevations ranging from about el 23.2 to el 14.4 (1.2 to 10.6 feet bgs). No staining, odor or elevated PID readings were observed in the fill. Historic fill sample analytical results included the following:

- SVOCs were detected at concentrations above the Part 375 UU and/or RRU SCOs, including atypical concentrations in borings EB13 and EB18. The SVOCs may be related to the nature of historic fill and/or historical site use as a coal yard.
- Four pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and Beta Bhc (Hexachlorocyclohexane)) were detected at concentrations above the UU SCO in samples of historic fill collected at various depths between 0 and 8 feet bgs. Pesticides in historic fill material may be the result of historical pesticide applications or storage on site.
- Metals were detected at concentrations above the Part 375 UU SCOs and RU SCOs in samples of historic fill throughout the site. Hazardous concentrations of lead were reported for two samples in boring EB22. The reported metal concentrations may be related to the nature of historic fill and/or to historical site uses as a coal yard and a tin shop.
- Low level detections of petroleum-related VOCs in soil (that did not exceed SCOs) may be related to a historical on-site petroleum release.

2.5.3.2 Groundwater Contamination

A PID headspace reading of 45.8 ppm was recorded beneath the cap of observation well B-1(OW). PCE was detected in groundwater, but at a concentration below the SGVs. Low-level detections of PCE in groundwater may be indicative of a former on-site release (although not detected in soil samples) and/or may be related to off-site sources. Concentrations of total and dissolved metals identified in groundwater samples are attributable to regional groundwater conditions and are not considered indicative of a release.

2.5.3.3 Soil Vapor Contamination

VOCs were identified in soil vapor samples collected from across the site footprint. PCE was reported at concentrations up to 160 µg/m^3. PCE was also detected in groundwater and may be indicative of a former on-site release (although not detected in soil samples) and/or may be related to off-site sources. Soil vapor samples contained petroleum-related BTEX compounds ranging in concentration from about 15 to 1,229 µg/m^3. Total VOC concentrations in soil vapor ranged from 74 µg/m^3 in SV-1 to 1,545 µg/m^3 in SV-9. Petroleum-related and other VOCs detected in soil vapor may be indicative of a former on-site release and/or may be related to off-site sources.

2.6 Qualitative Human Exposure Assessment

Human health exposure risk was evaluated for both current and future site and off-site conditions, in accordance with 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, 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. The same qualitative human health exposure assessment for the site is also presented in the RIR.

2.6.1 Potential Exposure Pathways – On-Site

Current Conditions

The site is covered by an impervious surface (concrete and asphalt), except for an about 2,000-square-foot area in the southwest corner that is restricted by wooden fencing. Soil samples collected from the uncapped area did not contain constituents above RRU SCOs. Human exposure to contaminated soil through dermal absorption, inhalation, and ingestion is minimal and controlled through the presence of the impervious surface and restricted to a lesser extent by a fence restricting access to the unpaved area in the southwest corner. The unpaved area is separated from the bus stop area by a NYC DOT-controlled parking area and soil samples collected from the uncapped area did not contain constituents above RRU SCOs. There is a potential exposure pathway through dermal absorption, inhalation, and ingestion during soil sampling associated with site investigation, but it is controlled through implementation of the Health and Safety Plan (HASP).

As groundwater in this area of NYC is not used as a potable water source, a complete exposure pathway to groundwater under current site conditions is unlikely. 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. Contaminated soil vapor may be emanating from contaminated groundwater; however, there are no current buildings for it to infiltrate.

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 also controlled through implementation of the HASP.

Construction/Remediation Condition

Construction and remediation may result in potential exposures to site contaminants in the absence of a HASP and a Community Air Monitoring Plan (CAMP). Construction and remedial activities include demolition of surface covers and the temporary bus shelter, the excavation and off-site disposal of impacted soil, and construction of foundation components. In the absence of a HASP and CAMP, this scenario presents the potential for exposure of soil COCs to construction and remediation workers via dermal absorption, ingestion, and inhalation of vapors and particulate matter. This exposure pathway will be marginalized through the implementation of the HASP, CAMP, and vapor and dust suppression techniques.

Groundwater may be encountered during excavation by workers, and there is potential for exposure to groundwater COCs, in the absence of a HASP, to construction workers via dermal absorption or ingestion. This exposure pathway will be marginalized through the implementation of the HASP.

During site development, construction and remediation workers and the surrounding community could be exposed to soil vapor COCs and contaminated soil via inhalation. Exposure to soil vapor and dust will be limited through the implementation of a HASP, CAMP, and dust and vapor suppression techniques.

Proposed Future Conditions

The proposed development is anticipated to include a 10-story mixed-use building (commercial and low-income residential) with a cellar level. The building would be set back 8 to 15 feet from Beach 21st Street. Upon completion of the new development, the site will be covered by a concrete building slab, with a continuous waterproofing/vapor barrier under the slab and along all subsurface foundation walls. The foundation and cellar slab with waterproofing/vapor barrier will prevent direct human exposure to residual impacted media that may be left in place or may migrate to the site from an off-site location. In addition, the potential for soil vapor intrusion will be evaluated, with additional mitigation measure installed as necessary. As such, there is no complete exposure pathway for future users. There is no pathway for 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.

2.6.2 Potential Exposure Pathways – Off-Site

In the absence of a 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 a potential exposure pathway to the public adjacent to the site. Groundwater that is removed during construction will be pre-treated (as necessary) and discharged to the NYC sewer system, per NYC Department of Environmental Protection (DEP) permit requirements, or containerized in a temporary storage tank pending disposal at a permitted off-site facility. Therefore, the potential for public exposure to groundwater on adjacent sites will be minimalized. During construction, soil vapor will primarily migrate vertically through the subsurface and will 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 is mostly covered with continuous impervious surface material and the non-paved area is partially fenced off.
- During site excavation, foundation construction, and remediation the following protective measures will be implemented:
    - Air monitoring will be conducted for particulates (dust) and VOCs during ground-intrusive work 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 building will include a waterproofing/vapor barrier to be installed beneath the cellar slab and along the sidewalls to sidewalk grade. A continuous impervious surface covering comprised of the proposed building basement slab will span the site footprint.
- Groundwater in New York City is not used as a potable water source and the nearest ecological receptor, the Motts Basin, is located about 2,400 feet north, northwest of the site.

2.6.3 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 mitigation and 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, groundwater, and soil vapor if remediation is 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.

2.6.3.1 Current Conditions

Contaminant sources include historic fill with varying concentrations of SVOCs, pesticides, and metals; groundwater with varying concentrations of SVOCs and metals; and soil vapor with concentrations of VOCs ranging from 74 to 1,545 µg/m^3.

Contaminant release and transport mechanisms include potential release and transport during penetration of the site cover for soil, groundwater, and soil vapor sampling. The potential receptor is the on-site sampling personnel and the nearby public. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The site footprint is primarily covered by concrete and asphalt, which limits direct contact with soil, groundwater, and soil vapor. The unpaved area in the southwest corner is partially fenced off to restrict access and is not used for parking, and soil samples collected from the uncapped area did not contain constituents above RRU SCOs.
- Sampling activities are completed in accordance with a HASP and CAMP that is designed to monitor and prevent exposure to soil, groundwater, and soil vapor contaminants.
- Groundwater at the site is not a potable water source.

2.6.3.2 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 groundwater, and inhalation of dust originating 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).

A HASP, a RAWP, and a CAMP include 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 potential migration pathways for soil, groundwater, and soil vapor.

2.6.3.3 Proposed Future Conditions

For the proposed future conditions, residual contaminants may remain on-site, if a Track 1 remedy is not achieved, and would, to a lesser extent, include those listed under current conditions. If residual impacts exist and controls are not implemented, points of exposure could include potential cracks in the foundation of the proposed development, exposure during any future ground-intrusive work, or inhalation of vapors entering the building. The receptor population includes residential and commercial use occupants, patrons, and employees, and the nearby community, including children. The possible routes of exposure can be avoided or mitigated by removal of contaminated soil or construction and maintenance of a site capping system (e.g., concrete building slab or at least 2 feet of clean soil), installation of a waterproofing/vapor barrier or other potentially required mitigation measures, and implementation of a Site Management Plan (SMP), if necessary depending on the remedy.

Human Health Exposure Assessment Conclusions

1. Human exposure to site contaminants is limited under current conditions due to the surface cover (mostly pavement, except for an unpaved, partially fenced-off area in the southwest corner). The unpaved area is separated from the bus stop area by a NYC DOT-controlled parking area and soil samples collected from the uncapped area did not contain constituents above RRU SCOs. The primary exposure pathways are dermal contact, ingestion, and inhalation of soil, groundwater, or soil vapor by site investigation workers and, to a lesser extent, DOT workers and the nearby public. DOT operations by workers are primarily limited to bus operations on the paved portion of the site. The exposure risks

can be avoided or minimized by following the appropriate HASP and vapor and dust suppression measures, and by implementing a CAMP during investigation and remediation.

2. In the absence of mitigation and controls, there is potential for 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 implementing CAMP and by following the appropriate HASP, vapor and dust suppression, site security measures, and following a NYSDEC-approved RAWP.

3. The existence of a complete exposure pathway for site contaminants to human receptors during proposed future conditions is unlikely, as: 1) 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, if required, with an impermeable cover or 2 feet of clean soil; 2) regional groundwater is not used as a potable water source in in this part of NYC; and 3) the potential pathway for soil vapor intrusion into the building would be addressed by installation of a waterproofing/vapor barrier, which will mitigate soil vapor intrusion.

4. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors during current, construction-phase, and 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, in the event Track 1 is not achieved, engineering controls (EC) and institutional controls (IC) will be implemented, as necessary, to prevent completion of this pathway.

2.7 Remedial Action Objectives

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this site.

2.7.1 Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil
- Prevent inhalation of or exposure from contaminants volatilizing from contaminated soil or contaminated soil in particulate form

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination

2.7.2 Groundwater

RAOs for Public Health Protection:

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

RAOs for Environmental Protection:

- Restore the groundwater aquifer, to the extent practicable, to pre-disposal/pre-release conditions
- Remove the source of ground or surface water contamination

2.7.3 Soil Vapor

RAOs for Public Health Protection:

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into building(s) at the site

3.0 SUMMARY OF REMEDIAL ACTION

This Section presents an analysis of two remedial actions that can potentially be achieved under the BCP. The proposed SCOs will be the Track 1 Part 375 UU SCOs for Alternative I and Track 2 RRU SCOs for Alternative II.

3.1 Alternative I – Technical Description

Alternative I, a Track 1 remedy, will include the following tasks:

- Demolition of site improvements and construction of the support of excavation (SOE) system to facilitate the Track 1 remediation
- Excavation, stockpiling, off-site transport, and disposal of about 11,300 cubic yards of historic fill exceeding UU SCOs. The maximum depth at which fill exceeding the UU SCOs was identified is about 10 feet bgs (about el 15) and historic fill was observed to depths of about 10.5 feet bgs. Additional excavation will be completed to 15 feet bgs to reach development grade.
- Decommissioning and removal of any USTs identified during earthwork
- Collection and analysis of bottom confirmation soil samples to confirm UU SCOs are achieved
- Dewatering is not anticipated, but may be necessary at isolated locations
- Installation of a vapor barrier/waterproofing membrane
- Backfilling of remediated areas to development sub-grade and around SOE components with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA)
- Reuse of site soil meeting UU SCOs, if necessary
- Development and implementation of a HASP and CAMP for the protection of on-site workers, the community, and the environment during the remediation phase of development

The Alternative I remediation extent is shown on Figure 7 and is based on data presented in the RIR. The requirements for each of the Alternative I tasks are described below.

Fill and Soil Removal

SVOCs, pesticides, and metals were detected in historic fill at concentrations that exceed the UU and/or RRU SCOs at depths of up to 10 feet bgs and historic fill material was observed at depths to 10.5 feet bgs. To achieve Track 1, fill removal and disposal will extend from surface grade to about el 21 to el 14.5 (about 4 to 10.5 feet bgs). The estimated volume of material requiring removal and off-site disposal for a Track 1 cleanup is about 11,300 cubic yards. This estimate is based on vertical excavation limits derived from the laboratory analytical results presented in the RI. Additional excavation across the site footprint to 15 feet bgs would be needed to construct the cellar with some deeper excavations for foundation elements. The development depth excavation plan is provided as Figure 2. Excavation is not expected to extend into groundwater.

Tank Removal

The 1912 Sanborn Map shows a UST on the site. Though no geophysical anomalies resembling USTs were identified during the December 2018 geophysical survey, a tank may still be present at the site (several vehicles were parked onsite that may have interfered with the geophysical survey). Any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) will be decommissioned and disposed of off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP)-51, and other applicable NYSDEC UST closure requirements. Any impacted soil, if encountered, will be excavated, stockpiled separately, characterized, and disposed of off-site at a permitted facility. If required per Article 12 of the Navigation Law and consultation with NYSDEC, a spill will be reported to NYSDEC. Following removal of any UST and associated grossly-impacted soil, if encountered, confirmation soil samples will be collected from the base and sidewalls of the excavation in accordance with DER-10. If the excavation is enlarged horizontally beyond the dimensions of the tank, additional confirmation soil samples will be collected as required. Following removal of any encountered USTs, the NYSDEC PBS registration will be updated. Closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the Final Engineering Report (FER).

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples will be collected from the excavation base at a frequency of one per 900 square feet. Sidewall samples will not be collected from the site perimeter because excavation will extend across the site footprint and SOE measures (e.g., sheeting and lagging) will preclude access to soil sidewalls. An estimated 48 confirmation soil

samples, plus quality assurance/quality control (QA/QC) samples, will be collected to confirm remedial performance and analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), and cyanide. A reduced-frequency endpoint sampling plan may be proposed, with supporting rationale, in accordance with DER-10 Section 1.6. Proposed confirmation endpoint sample locations are shown on Figure 8.

Over-excavation will be completed, as practicable, to remove soil that does not comply with the UU SCOs. In areas of over-excavation, additional confirmation samples will be required. Sidewall samples will be collected at a frequency of one sample per 30 linear feet of sidewall (if over excavation is located away from SOE) and bottom samples will be collected from the excavation base at a frequency of one sample per 900 square feet. Off-site excavation is not required.

Excavation Dewatering and Treatment

Dewatering is not anticipated, but if required in isolated areas, dewatered fluids will be managed off-site and not recharged back to the ground surface. The Contractor will be responsible for dewatering in accordance with applicable DEP and NYSDEC regulations. Treatment of dewatering fluids may be required to reduce contaminant concentrations below DEP/NYSDEC effluent limitations prior to discharge. The dewatering and treatment system will be designed by the Contractor's NYS-licensed Professional Engineer. Dewatered fluids may also be containerized and shipped off-site for disposal at a permitted facility.

Vapor Barrier/Waterproofing Membrane

Achieving a Track 1 cleanup will remove all on-site sources of contamination. However, the soil vapor findings from the RI indicate the potential for vapor intrusion resulting from the on-site migration of off-site contamination. Potential exposure pathways for CVOC-impacted soil vapor that may migrate onto the site would be eliminated through the building construction, which includes concrete foundation construction and installation of a vapor barrier/waterproofing membrane between the concrete cellar slab and underlying subgrade layer. The continuous membrane would extend from beneath the cellar slab, along the walls of the cellar structure, to surface grade level. The vapor barrier/waterproofing membrane will have a minimum thickness of 20 mils and will be compatible with CVOC contaminants. The installation of the vapor barrier is a contingency measure and is not considered an engineering control to address on-site contamination.

Excavation Backfill

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

Imported material will consist of clean fill that meets the UU SCOs or other acceptable fill material such as virgin stone from a permitted mine/quarry or RCA. If RCA is imported to the site, it will come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360-361 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 10 sieve). RCA is not acceptable for, and will not be used as, site cover or drainage material. Crushed virgin gravel would also not require chemical testing if the same sieve requirements are met. If excess site soil is demonstrated to meet UU SCOs, it may also be used as backfill.

<u>On-Site Worker, Public Health, and Environmental Protection</u>

A site-specific HASP is appended to this RAWP (Appendix C) and will be the minimum criteria employed during excavation and foundation construction to protect on-site workers from accidents and acute and chronic exposures in relation to the identified contaminated media. Public health and the environmental will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP, and by implementing and enforcing the appropriate soil erosion prevention measures. The CAMP will include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. A field representative will monitor site perimeters for visible dust and odors.

3.2 Alternative II – Technical Description

Alternative II, a Track 2 remedy (with a contingency for Track 4), will include the following tasks:

- Demolition of site improvements and construction of the SOE system to facilitate the Track 2 remediation
- Excavation, stockpiling, off-site transport, and disposal of historic fill and native soil that exceeds RRU SCOs - Excavation across the site footprint to depths ranging from 3 to 11 feet bgs (el 22 to el 14) will be required. Remedial excavation will be conducted in conjunction with construction of the SOE system and foundation components.

- Decommissioning and removal of any USTs identified during earthwork
- Collection and analysis of bottom documentation soil samples to confirm Track 2 SCOs are achieved - If soil is encountered below development cut that does not comply with RRU SCOs, this material will be left in place and the project will be considered a Track 4 remedy.
- Completion of a topographic survey of either the confirmation sample locations or final excavation sub-grade
- Reuse of site soil meeting RRU SCOs
- Installation of a vapor barrier/waterproofing membrane
- Installation of a an engineered composite site cover (only for Track 4 contingency)
- Development and implementation of a HASP and CAMP for the protection of on-site workers, the community, and the environment during the remediation phase of development
- Establishment of an approved Site Management Plan (SMP) to provide for long-term management of institutional controls (IC) engineering controls (EC) and, including the performance of periodic inspections and certification that the controls are performing as they were intended (only for Track 4 contingency)
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the site continue to maintain these controls as required (only for Track 4 contingency)

The Alternative II remediation extent is shown on Figure 9 and is based on data presented in the RIR and the proposed development plans. The requirements for each of the Alternative II tasks are described below.

Fill and Soil Removal

SVOCs, pesticides, and metals were detected in historic fill at concentrations that exceed the UU and/or RRU SCOs. To achieve Track 2, soil removal and disposal will extend from surface grade to about 3 feet bgs (el 22) with hot spot excavations to depths ranging between 4.5 and 11 feet bgs (about el 20.5 to el 14) in hotspots with Track 2 SCO exceedances. The estimated volume of material requiring removal and off-site disposal for a Track 2 cleanup is about 5,200 cubic yards. This estimate is based on vertical excavation limits derived from the laboratory analytical results presented in the RI extrapolated across 20-foot by 20-foot hot spots with RRU

SCO exceedances deeper than 3 feet bgs. Additional excavation across the site footprint to 15 feet bgs would be needed to construct the cellar with some deeper excavations for foundation elements. The development depth excavation extent is shown on Figure 2. Excavation is not expected to extend into groundwater.

Tank Removal

The 1912 Sanborn Map shows a UST on the site. Though no geophysical anomalies resembling USTs were identified during the December 2018 geophysical survey, a tank may still be present at the site (several vehicles were parked onsite that may have interfered with the geophysical survey). Any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) will be decommissioned and disposed of off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP)-51, and other applicable NYSDEC UST closure requirements. Any impacted soil, if encountered, will be excavated, stockpiled separately, characterized, and disposed of off-site at a permitted facility. . If required per Article 12 of the Navigation Law and consultation with NYSDEC, a spill will be reported to NYSDEC. Following removal of any UST and associated grossly-impacted soil, if encountered, confirmation soil samples will be collected from the base and sidewalls of the excavation in accordance with DER-10. If the excavation is enlarged horizontally beyond the dimensions of the tank, additional confirmation soil samples will be collected as required. Following removal of any encountered USTs, the NYSDEC PBS registration will be updated. Closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER.

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples will be collected from the excavation base at a frequency of one per 900 square feet. Sidewall samples will not be collected from the site perimeter, because the excavation will extend across the site footprint and SOE measures (e.g., sheeting and lagging) will preclude access to soil sidewalls. An estimated 48 confirmation soil samples, plus QA/QC samples, will be collected to confirm compliance with Track 2 SCOs and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), and cyanide. A reduced-frequency endpoint sampling plan may be proposed, with supporting rationale, in accordance with section 1.6 of DER-10. The confirmation sample locations will be surveyed by a NYS-licensed surveyor in areas without a demarcation barrier. Soils exceeding UU SCOs may be left in place. Off-site excavation is not required.

Vapor Barrier/Waterproofing Membrane

The soil vapor findings from the RI indicate the potential for vapor intrusion resulting from the on-site migration of off-site contamination. Potential exposure pathways for CVOC-impacted groundwater and soil vapor that may migrate onto the site would be eliminated through the building construction, which includes concrete foundation construction and installation of a vapor barrier/waterproofing membrane between the concrete cellar slab and underlying subgrade layer. The continuous membrane would extend from beneath the cellar slab, along the walls of the cellar structure, to surface grade level. The vapor barrier/waterproofing membrane will have a minimum thickness of 20 mils and will be compatible with CVOC contaminants.

Composite Cover (Track 4 Contingency)

A composite cover system consisting of an about 48-inch-thick concrete building slab will be constructed throughout the site. The cover system will serve as an engineering control for the protection of human health by preventing contact with residual contaminated site soil.

Engineering and Institutional Controls (Track 4 Contingency)

If it is determined that the remedy does not meet the criteria of either a Track 1 or Track 2, an SMP that will provide for long-term management of ICs and ECs will be submitted to the Department for approval. The SMP will include protocols for the performance of periodic inspections and certification that the controls are performing as they were intended. In addition, an EE would be recorded to impose the ICs or ECs that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would restrict the site's use to restricted residential use and would include notice-of-use restrictions of the site's soil. The ECs that would be included in the easement will include maintenance of the vapor barrier/waterproofing membrane previously described in this alternative.

On-Site Worker, Public Health, and Environmental Protection

A site-specific HASP is appended to this RAWP (Appendix C) and will be the minimum criteria employed during excavation and foundation construction to protect on-site workers from accidents and acute and chronic exposures in relation to the identified contaminated media. Public health and the environmental will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP, and by implementing and enforcing the appropriate soil erosion prevention measures. The CAMP will include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and

PIDs capable of recording data and calculating 15-minute averages. A field representative will monitor site perimeters for visible dust and odors.

3.3 Evaluation of Remedial Alternatives

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

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

3.3.1 Protection of Human Health and the Environment

Alternative I – The remedy will mitigate exposure pathways from on-site contaminated media. Remediating the site to Track 1 standards will result in the removal of all on-site soil that exceeds Track 1 UU SCOs. Tanks encountered would be decommissioned, removed, and disposed of off-site. Potential exposure pathways for CVOC-impacted soil vapor that may migrate onto the site would be eliminated through the construction of the building foundation and installation of a vapor barrier/waterproofing membrane. The RAOs for public health and environmental protection will be met through the removal of contaminated media at the site, which will eliminate the possibility for ingestion, inhalation, or dermal contact. Since no engineering or institutional controls will be required for this remedy to maintain the site in the future, this remedy is the most protective of human health and the environment.

Alternative II – The Track 2 remedy will provide similar overall protection to public health and the environment as Alternative I. Remediating the site to Track 2 standards will result in the removal of on-site soil that exceeds RRU SCOs. If a Track 2 remedy is not practical, the soil exceeding RRU SCOs that is left in place will be capped and a Track 4 remedy will be achieved. In addition, groundwater in this part of NYC is not used as a source of drinking water.

Public health and the environmental will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP, and by implementing and enforcing the appropriate soil erosion prevention measures. The environment would be protected by implementing and enforcing soil management controls when needed during site excavation.

3.3.2 Compliance with Standards, Criteria, and Guidance

Each Alternative will be in compliance with all applicable SCGs listed in Section 4.1.1 by removing all or a majority of on-site sources of contamination to achieve the RAOs. While implementing any of the remedies, protection of public health and the environment will be maintained by enforcing a site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-site construction safety will be followed by site contractors performing work. Alternative III requires future site management through an SMP

3.3.3 Short-Term Effectiveness and Impacts

Alternative I – The most significant short-term adverse impacts and risks to the community will be the potential complications and risk involved with designing and constructing SOE for the building and structures adjoining the site. Truck traffic and operational noise levels will be necessary to haul out the impacted material excavated to achieve Track 1 standards and to haul in the backfill required to bring the site to construction grade. The operation is estimated to require 500 25-cubic-yard capacity truck trips to haul soil for export and import. Depending on confirmation sample results, over excavation may be required to meet Track 1 SCOs resulting in additional truck trips. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at site entrances and exits. Waiting times associated with analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time resulting in a potential increase in dust, odors, and/or organic vapor from the excavation and construction-related noise. The effects of these potential adverse impacts to the community, workers, and the environment will be minimized by implementing the respective control plans.

Alternative II

A Track 2 (and Track 4 Contingency) remedial excavation would include the removal of less soil, with about 250 truck trips to haul soil for export and import. Not removing all on-site soil that exceeds Track 1 UU SCOs may reduce the potential exposure to dust, odors, and organic vapor from the excavation and construction-related noise.

Under both remedial alternatives, dust will be controlled by the on-site application of water spray as needed. Engineering controls, such as slowing the pace of work, applying foam suppressant, and/or covering portions of the excavation will be used to minimize vapors and suppress odors when required. Work will be modified or stopped according to the action levels defined in the CAMP. Even though Alternative I has more short term impacts, these impacts can be properly mitigated, and a higher level of remediation can be achieved long term.

3.3.4 Long-Term Effectiveness and Permanence

Alternative I – The Track 1 remedy will remove all soil exceeding UU SCOs. Groundwater in this area of NYC is not used for drinking water. Potential exposure pathways for CVOC-impacted soil vapor that may migrate onto the site would be eliminated through the construction of the building foundation and installation of a vapor barrier/waterproofing membrane. Because an EE and SMP are not required as part of a Track 1 remedy, Article 141 of the NYSDOH code will be relied upon to prevent ingestion of groundwater, which prohibits potable use of groundwater without prior approval. Future site use will be unrestricted; therefore, the long-term effectiveness of this remedy will eliminate environmental risks and satisfy the objectives of this criterion.

Alternative II – The risks associated with leaving contaminated soil in place will be minimized because potential exposure pathways to contaminated soil will be eliminated via the Track 2 remedy. The Track 2 remedy will remove contaminated soil exceeding RRU SCOs. In addition, groundwater in this area of NYC is not used for drinking water. Potential exposure pathways for CVOC-impacted soil vapor that may migrate onto the site would be eliminated through the construction of the building foundation and installation of a vapor barrier/waterproofing membrane. For the Track 4 Contingency, concrete building slabs would prevent contact with site soil, and an EE and SMP would be put in place to prevent exposure to residual impacted soils at the site and, if necessary, ingestion of groundwater, which is also prevented by Article 141 of the NYCDOH code, which prohibits potable use of groundwater without prior approval. The long-term effectiveness of this remedy will mitigate risks and satisfy the objectives of this criterion.

3.3.5 Reduction of Toxicity, Mobility, or Volume of Contaminated Material

Alternative I – The Track 1 remedy will permanently and significantly reduce the toxicity, mobility, and volume of contamination through excavation and off-site disposal of all soil exceeding UU SCOs, and if necessary, dewatering, treatment, and discharge of groundwater to the New York City sewer system. Therefore, this remedy provides the highest level of toxicity, mobility and volume reduction of contaminated material.

Alternative II – The Track 2 remedy will also significantly reduce the toxicity, mobility, and volume of contaminated material by removing the vast majority of the contaminated soil exceeding the UU SCOs and all soil exceeding RRU SCOs, but minor levels of contamination above the UU SCOs may remain. The Track 4 Contingency will reduce the toxicity, mobility, and volume of contaminated material by removing the vast majority of the contaminated soil exceeding the RRU SCOs

3.3.6 Implementability

Alternative I – This remedy will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. While there may be minor schedule extensions and additional costs associated with the excavation of soil above UU SCOs and SOE installation, the cost is marginal compared to the benefit of achieving an unrestricted use remediation and elimination of long-term engineering and institutional controls. This alternative is considered feasible.

Alternative II – The technical feasibility of implementing the Alternative II remedy is similar to Alternative I as excavation is still required to achieve the RRU SCOs or Track 4 Contingency. This alternative will consist mostly of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region.

3.3.7 Cost Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 1 cleanup is approximately $4.2 million. Because the site will be remediated to UU SCOs, there are no long-term operation, maintenance, or monitoring costs associated with the proposed remedy. Table 1 details the individual cost components used to arrive at this cost estimate. Alternative I is the most cost effective alternative.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated remediation cost to achieve a Track 2 cleanup is approximately $2.2 million. Table 2 outlines the individual cost-components used to arrive at this cost estimate. The Track 4 Contingency cost would be similar to Track 2; however, it may be more costly over the long term because of long-term implementation and verification of the institutional and engineering controls (e.g., a vapor barrier, SMP, and EE).

3.3.8 Community Acceptance

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be addressed upon completion of the respective remedies and the site will be remediated to allow for a higher level use. The selected remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation Plan (CPP), included as Appendix D. Any substantive public comments received will be addressed before the remedy is approved.

3.3.9 Land Use

The current, intended, and reasonably anticipated future mixed residential and commercial land use of the site and its surroundings are compatible with both remedial alternatives. The proposed development will include construction of a mixed-use commercial and affordable residential building with a cellar level. The site borders mixed use commercial and residential buildings, and vacant land. Mid-rise, mixed-use commercial/residential and multiple-story commercial and institutional buildings are located farther east, south, and west of the site.

3.4 Selection of the Preferred Remedy

Both alternatives will be protective of human health and the environment and meet the remedy selection criteria. Alternative I achieves all of the remedial action goals established for the redevelopment project, and is effective in the short-term. Alternative I effectively reduces contaminant mobility and toxicity and is a superior alternative in the reduction of contaminant toxicity and volume. Alternative I is more effective in the long-term because it achieves unrestricted land use that is free of long-term site management, engineering controls, an EE, and associated future costs that would be required under the Alternative II Track 4 contingency cleanup.

Alternative I is preferred over Alternative II if it can be feasibly and practically implemented while providing greater overall protection to human health and the environment. Therefore, Alternative I is the recommended remedial alternative for this site. However, if this Alternative is not

achievable, Alternative II is similarly protective of human health and the environment. If institutional and engineering controls are required, these controls should be easily implementable long term pursuant to an EE.

Figure 7 depicts the Alternative I cleanup plan.

3.4.1 Zoning

The current site use conforms to applicable zoning laws and maps, as does the reasonably anticipated future mixed commercial and residential use of the site.

3.4.2 Applicable Comprehensive Community Master Plans or Land Use Plans

The proposed redevelopment is a City-sponsored project implemented by the City of New York, acting through the NYC Economic Development Corporation (EDC), the NYC Department of Housing Preservation and Development (HPD), and the NYC Department of Citywide Administrative Services (DCAS), collectively "the City." The City proposed a series of land use actions (C170243(A) ZMQ, N170244(A) ZRQ, N170245 HGQ, C170246 HUQ, C170247 HDQ, and C170248 PPQ), including zoning map amendments, zoning text amendments, disposition and acquisition of property, and the designation and approval of an Urban Renewal Area and Plan to implement recommendations of a comprehensive plan to redevelop and revitalize an approximately 23-block area of the Downtown Far Rockaway neighborhood of Queens, Community District 14. The site is within the bounds of the Special Downtown Far Rockaway District and the proposed development, including affordable housing and day care, is consistent with the goals of the plan.

3.4.3 Surrounding Property Uses

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with the selected remedy. The reasonably anticipated future use of the site and the use of its surroundings have been documented by the Requestor. The construction of a mixed-use commercial/residential development conforms to recent development patterns in the area.

3.4.4 Citizen Participation

The CPP is discussed in Section 4.1.9.

3.4.5 Environmental Justice Concerns

Per the "Potential Environmental Justice Areas in Southern Queens County, New York" map, the site is located in a potential environmental justice area.

3.4.6 Land Use Designations

There are no federal or state land use designations.

3.4.7 Population Growth Patterns

The population growth patterns and projections support the current and reasonably anticipated future land use.

3.4.8 Accessibility to Existing Infrastructure

The site is accessible to existing infrastructure.

3.4.9 Proximity to Cultural Resources

The site is proximate to the following two New York City registered landmarks:

- FDNY Engine 264/Engine 328/Ladder 134, located at 16-15 Central Avenue, is located approximately 800 feet northeast of the site.
- The 101st Precinct Police Station, located at 16-12 Mott Avenue, is located approximately 1,100 feet east of the site.

3.4.10 Proximity to Natural Resources

With the exception of the Motts Basin, about 2,400 feet north-northwest of the site, the site is not located in close proximity to important federal, state, or local natural resources including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species.

3.4.11 Off-Site Groundwater Impacts

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

3.4.12 Proximity to Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) effective November 16, 1983 and revised September 5, 2007, (Map Number 3604970382F) and the Preliminary FIRM dated January 30, 2015 (Map Number 3604970382G), the site is located within an area of minimal flood hazard.

3.4.13 Geography and Geology of the Site

The site geology is described in Section 2.4.

3.4.14 Current Institutional Controls

The site was assigned an E-Designation (E-415) for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation.

3.5 Summary of the Selected Remedial Action

The selected remedy will include the following:

- Demolition of site improvements and construction of the SOE system to facilitate the Track 1 remediation
- Excavation stockpiling, off-site transport, and disposal of about 11,300 cubic yards of historic fill exceeding UU SCOs. The maximum depth at which soil exceeding the UU SCOs was identified is about 10 feet bgs (about el 15) and historic fill was observed to depths of about 10.5 feet bgs. Additional excavation will be completed to 15 feet bgs to reach development grade.
- Decommissioning and removal of any USTs identified during earthwork
- Collection and analysis of bottom confirmation soil samples to confirm UU SCOs are achieved
- Dewatering is not anticipated, but may be necessary at isolated locations
- Installation of a vapor barrier/waterproofing membrane
- Backfilling of remediated areas to development sub-grade and around SOE components with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA)
- Reuse of site soil meeting UU SCOs, if necessary

- Development and implementation of a HASP and CAMP for the protection of on-site workers, the community, and the environment during the remediation phase of development

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

4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

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

4.1.1 Standards, Criteria and Guidance

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

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

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

4.1.2 Site-Specific Health & Safety Plan

The Remedial Engineer (RE) prepared a site-specific HASP (Appendix C). The HASP will apply to all remedial and construction-related work on site. The HASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE requirements in relation to the contaminants identified at the site during implementation of the remedy. The HASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65, respectively). The HASP includes, but is not limited to, the following components:

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

The Requestor and associated parties preparing the remedial documents submitted to the State and those performing the construction work are responsible for the preparation of a HASP and for performance of the work according to the HASP and applicable laws. Their HASP will, at a minimum, include the site-specific HASP requirements

The HASP and requirements defined in this RAWP pertain to remedial and ground-intrusive work performed at the site until the issuance of a Certificate of Completion. The Site Safety Coordinator will be William Bohrer, a resume for whom is included in Appendix E. If required, confined space entry will comply with OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 Quality Assurance Project Plan

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

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

4.1.4 Construction Quality Assurance Plan

The RE prepared a Construction Quality Assurance Plan (CQAP) that describes the quality control components employed so that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with the design specifications. Because the remedy is being accomplished through building construction, the Contractor and Construction Manager will have the primary responsibility to provide construction quality. The CQAP procedures are discussed below in Section 4.2.1.

4.1.5 Soil/Materials Management Plan

The RE prepared a Soil/Materials Management Plan (SMMP) that includes detailed plans for managing soils/materials that are disturbed at the site, including excavation, handling, storage,

transport and disposal. The SMMP also includes controls that will be applied to these efforts to facilitate effective, nuisance-free performance in compliance with applicable federal, state and local laws and regulations (see Section 5.4).

4.1.6 Stormwater Pollution Prevention Plan

Erosion and sediment controls will be implemented as necessary in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Best management practices for soil erosion and sediment control will be selected to minimize erosion and sedimentation off-site from the onset of remediation to the completion of development. Stormwater pollution prevention will be implemented as described below in Section 5.4.10. A Stormwater Pollution Prevention Plan (SWPPP) is not necessary because the project will disturb less than one acre, and stormwater discharge will be to a combined sewer in accordance with the New York City generic stormwater pollution discharge elimination system (SPDES) permit.

4.1.7 Community Air Monitoring Program

A CAMP was prepared for the site as part of the HASP (Appendix C of this RAWP). The CAMP is detailed in Section 5.4.12 below.

4.1.8 Contractors Site Operations Plan

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

4.1.9 Citizen Participation Plan

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

No changes will be made to the approved Fact Sheets authorized for release by the NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing. The approved CPP for this project is included in Appendix D.

A document repository was established at the following location and contains the applicable project documents:

Queens Community Board 14
Attn: Johnathan Gaska, Chair
1931 Mott Ave # 311
Far Rockaway, NY 11691
Phone: (718) 471-7300

Queens Library at Averne
Attn: Jakea Williamson, Branch Manager
312 Beach 54th Street
Arverne, NY 11692
Hours: Mon: 12 pm to 8 pm, Tues: 1 pm to 6 pm, Wed: 10 am – 6 pm, Thurs: 12 pm – 6 pm, Fri: 10 am – 6 pm, Sat: 10 am – 5:00 pm, Sun: Closed

4.2 General Remedial Construction Information

4.2.1 Project Organization

This section presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in RAWP management. The following project personnel are anticipated for oversight of the RAWP implementation. Project personnel resumes are provided in Appendix E.

Remediation Engineer (RE):	Jason J. Hayes, PE
Project Manager:	Jennifer Armstrong, CHMM
Langan Health & Safety Manager:	Tony Moffa, CHMM
Health & Safety Officer	William Bohrer
Qualified Environmental Professional	Ryan Manderbach, CHMM
Field Team Leader	Sherief Saleh
Quality Assurance Officer	Gerald Nicholls, PE, CHMM

A Langan field representative under the direct supervision of the Qualified Environmental Professional (QEP) and the RE will be on-site during implementation of the RAWP to monitor particulates, odor and organic vapor in accordance with the CAMP. CAMP results that exceed specified action levels will be reported to the NYSDEC and NYSDOH in daily reports.

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

A field representative will screen excavations with a PID during ground-intrusive work. PID readings, including specifically elevated readings, will be recorded in the project field book (or on separate logs) and reported to the NYSDEC and NYSDOH in the daily reports. A field representative under the direct supervision of the QEP will collect confirmation samples from the base of excavation in accordance with this RAWP.

The project field book will be used to document sampling activities and how they correspond to this RAWP. Field observations and laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, and/or photographs. A photo log will be kept to document construction activities during remediation. The photo log may also be used to document those activities recorded in the daily reports.

The Field Team Leader will maintain the current field book and original field paperwork during performance of the remedy. Remedial activities will be documented in the monthly BCP progress reports. The Project Manager will maintain the field paperwork after completion and will maintain submittal document files.

4.2.2 Remediation Engineer (RE)

The RE for this project will be Jason J. Hayes, PE. The RE is a registered professional engineer licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program at the site. The RE will certify in the FER that the remedial activities were observed by Langan personnel under his supervision and that the remediation requirements set forth in this RAWP and any other relevant provisions of ECL 27-1419 have been achieved in accordance with the RAWP.

The RE will document the work of other contractors and subcontractors involved in aspects of the remedial construction, including soil excavation, stockpiling, confirmation sample collection, air monitoring, emergency spill response services, import of backfill, and management of waste transport and disposal. The RE will be responsible for appropriate communication with the NYSDEC and NYSDOH.

The RE will review the pre-remedial plans submitted by contractors and subcontractors for compliance with this RAWP and will certify compliance in the FER. The RE will provide the certifications listed below in Section 8.1.

4.2.3 Remedial Action Construction Schedule

The remedial action construction schedule is discussed below in Section 9.0 and included in Appendix G. The NYSDEC will be promptly notified of proposed changes, delays, and/or deviations to the schedule.

4.2.4 Work Hours

The hours for operation of remedial construction will either conform to the requirements of the NYC Department of Buildings (DOB) construction code or to a site-specific variance issued by the DOB. The NYSDEC will be notified by the Requestor of any variances issued by the DOB. The NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The site perimeter will be secured with gated, signed, plywood fencing with restricted points of entry in accordance with the DOB and DOT permits and requirements. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along Beach 21st Street. Access points will be continuously monitored and if necessary, a flagging system will be used to protect workers, pedestrians, and authorized guests. Traffic will also adhere to applicable local, state, and federal laws.

4.2.7 Contingency Plan

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

Discovery of Additional Contaminated Soil

During remediation and construction, soil will be continuously monitored by the RE's field representatives using visual, olfactory, and instrumental field screening techniques (e.g., a PID) to identify additional soil that may not be suitable for disposal at the NYSDEC-approved disposal facility. If such soil is identified, the suspected impacts will be confirmed by collecting and analyzing samples in accordance with the NYSDEC-approved facility's requirements. If the previously approved facility is not permitted to receive the impacted soil, the soil will be excavated to the extent practicable and disposed of off-site at a permitted facility that can receive the material based on the characterization data.

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

Discovery of USTs

If USTs are encountered during remediation and construction, they will be decommissioned in accordance with 6 NYCRR Parts 612.2 and 613.9, and DER-10 Section 5.5. Once the tank, its contents, and associated piping are removed, post-excavation soil samples will be collected per DER-10 requirements. If encountered, petroleum-impacted soils will be excavated, stockpiled separately, and disposed of off-site at a permitted facility in accordance with applicable regulations. UST closure documentation, including contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be included as appendices to the FER (see Section 8.0). PBS registration requirements will be complied with as necessary based on the type, number, and capacity of the discovered USTs.

If other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone, etc.). Chemical analyses will be limited to CP-51 VOCs and SVOCs, and other waste characterization parameters required for disposal approval. Analyses will not be otherwise limited without NYSDEC approval.

If USTs are encountered during ground-intrusive site work, the findings will be promptly communicated by phone to the NYSDEC Project Manager, as well as, detailed in the appropriate daily report. These findings will also be included in the monthly BCP progress reports.

4.2.8 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the site-specific HASP, which is included in Appendix C.

4.2.9 Agency Approvals

The applicant has or will address all State Environmental Quality Review Act (SEQRA) requirements for this site. Permits or government approvals required for remedial construction will be obtained prior to the start of remedial construction. The planned end use for the site conforms to current zoning for the property as determined by NYC Department of City Planning. A Certificate of Completion will not be issued for the project unless conformance with the zoning designation is demonstrated. The site is E-Designated for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation (E-415). OER protocols and approvals must be satisfied prior to redevelopment and new building occupancy.

4.2.10 NYSDEC BCP Signage

If required by NYSDEC, a project sign will be erected at the main entrance to the site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State BCP. The sign will meet the detailed specifications provided by the NYSDEC Project Manager and contained in Appendix H.

4.2.11 Pre-Construction Meeting with the NYSDEC

Prior to the start of remedial construction, a meeting will be held between the NYSDEC, RE, Requestor, Construction Manager, and remediation contractor to discuss project roles, responsibilities, and expectations associated with this RAWP.

4.2.12 Emergency Contact Information

An emergency contact sheet that defines the specific project contacts (with names and phone numbers) for use by NYSDEC and NYSDOH in the case of an emergency (day or night) is included in the HASP (Appendix C).

4.2.13 Remedial Action Costs

The total estimated cost of the Track 1 Remedial Action is $4.3 million. An itemized and detailed summary of estimated costs for the remedy is provided in Table 1.

4.3 Site Preparation

4.3.1 Mobilization

Prior to commencing remedial construction, the remediation contractor will mobilize to the site and prepare for remedial activities. Mobilization and site preparation activities may include the following:

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

4.3.2 Monitoring Well Decommissioning

Existing groundwater monitoring wells will be properly decommissioned, in accordance with NYSDEC CP-43, when no longer required. The only exception to this is if the full length of the well is to be excavated during remediation and development. If required, well decommissioning will be performed by an experienced driller and logged by the driller and a Langan field representative. Decommissioning documentation will be provided in the FER.

4.3.3 Erosion and Sedimentation Controls

Since the planned earthwork activities will be below the adjacent sidewalk grade, full-time erosion and sedimentation measures are not anticipated. Best management practices for soil erosion will be selected and implemented, as needed, to minimize erosion and sedimentation off site.

4.3.4 Temporary Stabilized Construction Entrance(s)

Temporary stabilized construction entrances will be installed within the existing curb cuts along Beach 21st Street. The entrances will be covered with gravel or RCA and graded so that runoff water will be directed on site. Vehicles exiting construction areas will be cleaned using clean water or dry brushing, as needed, to remove site soil from the tires and undercarriages. The Contractor will protect and maintain the existing sidewalks and roadways at both site access points.

4.3.5 Utility Marker and Easements Layout

The Requestor and its contractors are solely responsible for the identification of utilities and/or easements that might be affected by work under this RAWP and implementation of the required, appropriate, or necessary health and safety measures during performance of the work under this RAWP. The Requestor and its contractors are solely responsible for safe execution of the work performed under this RAWP. The Requestor and its contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Approval of this RAWP by the NYSDEC does not constitute satisfaction of these requirements.

4.3.6 Sheeting and Shoring

Appropriate management of the structural stability of on-site or off-site structures during site activities is the sole responsibility of the Requestor and its contractors. The Requestor and its contractors are solely responsible for the safe execution of the work performed under this RAWP. The Requestor and its contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Additionally, the Requestor and its contractors are solely responsible for the implementation of the required, appropriate, or necessary health and safety measures during performance of work conducted under this RAWP.

4.3.7 Equipment and Material Staging

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

4.3.8 Decontamination Area

The Contractor will construct equipment decontamination pads to collect wastewater for off-site disposal or treatment and discharge, if generated during decontamination activities. The design will consider adequate space to decontaminate equipment, and sloping and liners to facilitate collection of wastewater. Collected decontamination wastewater will be either discharged in accordance with the Contractor's DEP permit, if obtained, or tested and transported to an off-site disposal facility that is permitted to accept the waste in accordance with applicable city, state, and federal regulations. The location of decontamination pads may change periodically to accommodate the Contractor's sequencing of work.

If the Contractor uses high pressure washing methods, the Contractor shall provide splash protection around the vehicle decontamination facility. Splash protection shall minimize potential contamination from splatter and mist movement off site during the vehicle decontamination process. Splash protection shall be temporary and stable and capable of being dismantled in the event of high winds.

Accumulated truck rinsate and decontamination materials will be collected and commingled with other waste streams for discharge or disposal, as appropriate. The contractor will maintain the decontamination pad(s) throughout the duration of the remediation. Prior to demobilization, the contractor will deconstruct the pads and dispose of materials as required.

4.3.9 Site Fencing

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

4.3.10 Demobilization

After remediation and construction is completed, the Contractor will be responsible for demobilizing labor, equipment, and materials not designated for off-site disposal. The RE will

document that the Contractor performs follow-up coordination and maintenance for the following activities:

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

4.4 Reporting

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

4.4.1 Daily Reports

Daily reports will be submitted to the NYSDEC and NYSDOH Project Managers by the end of each week, or at a frequency acceptable to them, following the reporting period and will include:

- An update of progress made during the reporting day including a photograph log
- Locations of work and quantities of material imported and exported from the site
- References to an alpha-numeric map for site activities
- A summary of complaints with relevant details (names, phone numbers)
- A summary of CAMP findings, including exceedances
- An explanation of notable site conditions

Daily reports are not intended to be the primary mode of communication for notifying NYSDEC of emergencies (accident, spill), requests for changes to the RAWP, or other sensitive and/or time critical information. However, such conditions will still be included in the daily reports.

Emergency conditions and changes to the RAWP will be addressed directly to the NYSDEC Project Manager via personal communication.

4.4.2 Monthly Reports

Monthly reports will be submitted to the NYSDEC and NYSDOH Project Managers by the tenth of the month following the reporting period. The monthly reports will include the following information, as well as, any additional information required by the BCA:

- Activities relative to the site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of material exported and imported, etc.)
- Description of approved activity modifications, including changes of work scope and/or schedule
- Sampling results received following internal data review and validation, as applicable
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays

4.4.3 Other Reporting

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

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

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

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

4.4.5 Deviations from the RAWP

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

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

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

5.1 Soil Cleanup Objectives

Unrestricted Use SCOs, which are listed in Table 3, will be attained for this site. Soil and materials management will be conducted in accordance with the SMMP as described below. Soil sample locations and results that exceed the Track 1 SCOs are shown on Figure 4. Tank closures will conform to the criteria defined in NYSDEC DER-10.

5.2 Remedial Performance Evaluation (Confirmation Sampling)

5.2.1 Soil Sampling Frequency

One confirmation soil sample will be collected for every 900 square feet of excavation base in accordance with NYSDEC DER-10, or at an alternative frequency approved by NYSDEC. Sidewall samples will not be collected from the site perimeter because excavation will extend across the site footprint and support of excavation measures (e.g., sheeting, lagging) will preclude collection of sidewall samples. An estimated 48 confirmation soil samples, plus A/QC samples, will be collected to confirm remedial performance.

5.2.2 Methodology

Confirmation soil samples will be collected from the base of the excavation in accordance with NYSDEC DER-10 to confirm remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, cyanide, and metals, including hexavalent and trivalent chromium.

If a confirmation soil sample does not comply with the UU SCOs, over-excavation will be completed and additional confirmation or documentation samples will be collected, at the frequency of one sample per 900 square feet of over-excavation area. No off-site excavation is required.

5.2.3 Quality Assurance/Quality Control

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

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

5.2.4 Data Usability Summary Reports

Data Usability Summary Reports (DUSR) will be prepared by a qualified data validator and the findings will be reported in the FER.

5.2.5 Reporting

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

5.3 Estimated Material Removal Quantities

The estimated fill volume requiring removal and off-site disposal for a Track 1 cleanup is about 11,300 cubic yards. Native soil will also be excavated and removed for cellar construction, but is not included in the Track 1 estimate. Over-excavated areas, if necessary, will require backfill meeting UU SCOs. The estimated quantity of soil to be imported for backfill around SOE components is 1,100 cubic yards.

5.4 Soil/Materials Management Plan

This section presents the approach to management, disposal, and reuse of soil, fill, and materials excavated from the site. This plan is based on the current knowledge of site conditions and will be augmented, as necessary, using additional data collected during remediation. A field representative, under the direction of the RE will monitor and document the handling and transport of contaminated material removed from the site for disposal as a regulated solid waste. A field representative, under the direction of the RE, will assist the remediation contractor in identifying impacted materials during remediation, determining materials suitable for direct load out versus temporary on-site stockpiling, selection of samples for waste characterization, if necessary, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed for the various materials to be excavated or generated, with the intent to most efficiently manage and characterize the materials and to avoid comingling impacted materials with non-impacted soil.

5.4.1 Soil Screening Methods

Visual, olfactory, and instrumental soil screening and assessment will be performed by a field representative under the direction of the RE during remediation and development-related excavations into known or potentially contaminated material. Soil screening will be performed during all excavation and invasive work performed during the remedy and during the development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion.

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

5.4.2 Stockpile Methods

Soil stockpiles will be constructed as necessary to separate and stage excavated material pending loading or characterization sampling. Separate stockpile areas will be constructed to avoid comingling materials of differing waste types. Soil stockpile areas will meet the following minimum requirements:

- Excavated soil will be placed onto a minimum thickness of 6 mil low-permeability liner of sufficient strength and thickness to prevent puncture during use; separate stockpiles will be created where material types are different (e.g., petroleum-impacted material stockpiled in a contaminated soil area). The use of multiple layers of thinner liners is permissible.
- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 6-mil plastic sheeting or tarps which will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity (i.e., about 1,000 cubic yards) until ready for loading. Stockpiles that have not reached their capacity, whether active or inactive, will be covered at the end of each workday.
- Stockpiles will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soils and to mitigate the potential for surface water run-off.

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

5.4.3 Materials Excavation and Load Out

A field representative under the supervision of the RE will monitor ground-intrusive work and the excavation and load-out of excavated material.

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

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

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

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

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

The Requestor and associated parties will ensure that site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP.

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

Mechanical processing of historic fill and contaminated soil on-site is prohibited unless otherwise approved by NYSDEC.

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during site characterization, the RI, and implementation of the remedy will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be included with the FER. If the primary contaminant sources are removed under Track 2 cleanup, the final excavation subgrade will be surveyed. No survey will be required if a Track 1 cleanup is achieved.

5.4.4 Materials Transport Off-Site

Materials transport will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Truck transport routes are shown on Figure 10.

Trucks loaded with site materials will exit the vicinity of the site using approved truck routes. These routes take into account:

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

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

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

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

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

5.4.5 Materials Disposal Off-Site

Disposal facilities will be determined at a later date and will be reported to the NYSDEC Project Manager prior to off-site transport and disposal of excavated material. About 11,300 cubic yards of historic fill that exceeds UU SCOs is expected to be disposed off-site. Soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be disposed in accordance with local, state (including 6NYCRR Part 360) and federal regulations. If disposal of soil/fill from this site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-site management of materials from this site is prohibited without formal NYSDEC approval. Material that does not meet UU SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360 Registration Facility)

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

- A letter from the RE or Requestor to the receiving facility describing the material to be disposed of and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation site located in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of chemical data for the material being transported (including waste characterization and RI data).
- A letter from each receiving facility stating that it is in receipt of the correspondence (above) and acceptance of the material is approved.

These documents will be included in the FER.

Non-hazardous historic fill material and contaminated soil transported off-site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360. Historic fill and contaminated soil excavated

from the site are prohibited from being disposed of at Part 360 Registration Facilities (also known as Soil Recycling Facilities).

Soil that is contaminated but non-hazardous and is removed from the site is considered by the NYSDEC Division of Materials Management (DMM) to be construction and demolition (C&D) materials with contamination not typical of virgin soils. Soil not meeting Unrestricted Use SCOs will be considered a solid waste unless a BUD is processed stating otherwise. This soil may be sent to a permitted Part 360 landfill in New York or other appropriate out-of-state disposal facility permitted to accept contaminated soil from a brownfield site. This soil may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC. This material is prohibited from being sent or redirected to a New York Part 360 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from an NYSDEC DER remediation site, that the material is contaminated, and that the material must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of chemical data for the material being transported.

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

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

Hazardous wastes derived from on-site will be stored, transported, and disposed of in full compliance with applicable local, state, and federal regulations.

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

Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported in the FER. Data available for

excavated material to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.4.6 Materials Reuse On-Site

Soil excavated during the remedy may be reused on-site if the requirements in this section are met. Grossly-impacted soil will not be reused. Reused soil must be non-hazardous and must meet the UU SCOs (refer to Table 3). Soil removed during implementation of the remedy or removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site is prohibited for reuse on-site. Reuse of soil will be coordinated in advance with the NYSDEC Project Manager. Material deemed unfit for reuse will be transported for off-site disposal.

5.4.7 Fluids Management

Liquids to be removed from the site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Liquids discharged into the NYC sewer system will be addressed through approval by DEP. Based on depth-to-groundwater observed during previous investigations, dewatering will likely not be required to facilitate excavation of material that exceeds UU SCOs and construction of foundation components and elevator pits. If necessary, a dewatering and treatment system will be designed by the Remediation Contractor's NYS-licensed Professional Engineer.

Dewatered fluids will not be recharged back to the land surface or subsurface. Dewatering fluids will be managed off-site or will be discharged to the NYC sewer system. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream, and/or river) is prohibited without a SPDES permit.

5.4.8 Backfill from Off-Site Sources

Materials proposed for import onto the site will be approved by the RE and will be in compliance with the provisions in this RAWP prior to receipt at the site. Imported soil for backfill must meet the requirements of 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10, and Appendix 5. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the site. Solid waste will not be imported onto the site.

The FER will include the following certification by the RE: "I certify that all import of soils from off-site, including source evaluation, approval, and sampling, has been performed in a manner that is consistent with the methodology defined in the RAWP".

Backfill material will consist of clean fill (as described in the following paragraph) or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is imported, it will be from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing, unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the site must be derived from recognizable and uncontaminated concrete, with no more than 10% by weight passing through a No. 10 sieve. RCA is not acceptable for and will not be used as cover or drainage material. Crushed virgin stone from a permitted mine or quarry may also be imported without chemical testing is sieve analysis shows no more than 10% by weight passing through a No. 10 sieve.

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

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

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

5.4.9 Stormwater Pollution Prevention

Silt fence or hay bales will be installed around the perimeter of the remedial construction area, as required. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook maintained at the site and available for inspection by the NYSDEC. Necessary repairs to silt fences and/or hay bales will be made immediately. Accumulated sediments will be removed as required to keep the

barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate materials. Manufacturer's recommendations will be followed for replacing silt fence damaged due to weathering. Erosion and sediment control measures identified in the RAWP will be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the sewer system.

5.4.10 Contingency Plan

As discussed in Section 4.2.7, if USTs or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone, etc.). Chemical analyses will be for full scan parameters (Part 375 VOCs, SVOCs, PCBs, pesticides, and metals). Analyses will not be otherwise limited without NYSDEC approval.

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

5.4.11 Community Air Monitoring Plan

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

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

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by a field representative under the supervision of the RE. The work zone is defined as the general area in which machinery is

operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. The site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on total VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work will resume provided that the total VOC level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average
- If the total VOC levels exceed 1 ppm above background for the 15-minute average at the monitoring station near the sensitive receptor, and if given permission by the owner of building, monitoring will occur within the occupied structure
- If the total VOC level is above 25 ppm at the perimeter of the hot zone, work will be shut down.

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

- If the downwind particulate level is 100 µg/m³ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 concentrations do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, total PM10 concentrations at the downwind perimeter of the work zone, are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing

the PM10 concentrations at the sensitive receptor and downwind PM10 concentrations to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

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

5.4.12 Odor, Dust and Nuisance Control Plan

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

Odor Control Plan

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

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

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

Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated water distribution system, on-site water truck for road wetting, or an alternate source with suitable supply and pressure for use in dust control.
- Gravel will be used for on-site roads to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water spraying.

Other Nuisances

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

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

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Residual contaminated soil and groundwater will not exist beneath the development footprint after the Track 1 remedy is complete; therefore, ECs and ICs will not be required to protect human health and the environment. Similarly, if a Track 2 remedy is achieved, ECs and ICs will not be required to manage soil/fill meeting RRU SCOs. The vapor barrier/waterproofing will be considered an EC without and IC. In the event a Track 4 remedy is implemented, ECs will be implemented to protect public health and the environment by appropriately managing residual contamination.

7.0 ENGINEERING CONTROLS

Following completion of the remedy, it is anticipated that the site will meet UU SCOs; therefore, ECs (e.g., remedial cap or vapor mitigation system) will be required as part of the remedial action. In the event that a Track 2 cleanup is achieved, the vapor barrier/waterproofing membrane will be considered and EC without an IC. In the event of the Track 4 Contingency, the following ECs will be required:

7.1 Vapor Barrier/Waterproofing Membrane

In the event a Track 4 remedy is implemented, potential exposure pathways for CVOC-impacted soil vapor that may migrate onto the site would be eliminated through the building construction, which includes concrete foundation construction and installation of a vapor barrier/waterproofing membrane between the concrete cellar slab and underlying subgrade layer. The continuous membrane would extend from beneath the cellar slab, along the walls of the cellar structure, to surface grade level. The vapor barrier/waterproofing membrane will have a minimum thickness of 20 mils and will be compatible with CVOC contaminants.

7.2 Composite Cover System

In the event a Track 4 remedy is implemented, exposure to residual contaminated soils will be prevented by an engineered, composite cover system that will be built on the site. This composite cover system will be comprised of about 48-inch concrete building slabs, pavement, and/or at least two feet of clean fill in landscaped areas.

A Soil Management Plan will be included in the SMP and will outline the procedures to be followed in the event that the composite cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of this composite cover system will be described in the SMP in the FER.

8.0 INSTITUTIONAL CONTROLS

Following completion of the remedy, it is anticipated that the site will meet UU SCOs; therefore, ICs (e.g., EE, Site Management Plan) will be required as part of the remedial action. In the event that a Track 2 cleanup is achieved, the vapor barrier/waterproofing membrane will be considered and EC without an IC. In the event of the Track 4 Contingency, the following ICs will be required:

8.1 Environmental Easement

An EE, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-site after the remedial action is complete. As part of this remedy, an EE approved by NYSDEC will be filed and recorded with the Queens County Office of the New York City Register. The EE will be submitted as part of the FER.

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

The ICs that support ECs are:

- Compliance with the EE by the Grantee and the Grantee's successors, and adherence of all elements of the SMP
- All ECs must be operated and maintained as specified in the SMP
- A soil vapor mitigation system consisting of a vapor barrier/waterproofing membrane under all building structures must be inspected, certified, operated and maintained as required by the SMP
- All ECs on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP
- Data and information pertinent to site management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP

- ECs required for a Track 4 cleanup may not be discontinued without an amendment or extinguishment of the EE – The EE may be extinguished only by release by the Commissioner of the NYSDEC, or the Commissioner's designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

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

- Vegetable gardens, in contact with residual site soil, on the Controlled Property are prohibited
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP
- The Controlled Property may be used for restricted residential use only, provided the long-term EC/ICs included in the SMP are employed
- The Controlled Property may not be used for a higher level of use, such as residential use without an amendment or extinguishment of this EE
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP (Track 4) – NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

8.2 Site Management Plan

Site management is the last phase of remediation when residual contamination is left at the site, and begins with the approval of the FER and issuance of the Certificate of Completion for the remedial action. If necessary for a Track 4 cleanup, the SMP submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent

document. Site management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all site management responsibilities defined in the EE are performed.

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

If needed for a Track 4 cleanup, the SMP will be prepared that includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in DER-10 and the guidelines provided by NYSDEC.

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

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

9.0 FINAL ENGINEERING REPORT

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

- Documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan
- A comprehensive account of the locations and characteristics of material removed from the site including the surveyed map(s) of each source, as necessary
- As-built drawings for constructed elements, certifications, manifests, and bills of lading
- A description of the changes to the remedy from the elements provided in the RAWP and associated design documents, if any
- A tabular summary of performance evaluation sampling results and material characterization results and other sampling and chemical analyses performed as part of the remedy
- Written and photographic documentation of remedial work performed under this remedy
- An itemized tabular description of actual costs incurred during implementation of the remedy
- Sufficient information to show that remaining soil left on-site meets the UU SCOs.
- If necessary, a thorough summary of remaining contamination that exceeds the UU SCOs and an explanation for why the material was not removed as part of the remedy - A table and a map that shows remaining contamination in excess of the UU SCOs will also be included.
- An accounting of the destination of material removed from the site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids - Documentation associated with the disposal of material must also include records and approvals for receipt of the material.
- An accounting of the origin and chemical quality of each material type imported onto the site

Before FER approval and Certificate of Completion issuance, the daily reports and monthly BCP progress reports must be submitted in digital form on electronic media (i.e., PDF).

9.1 Certifications

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

I, _____, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 10-47 Beach 21st Street site (NYSDEC Brownfield Cleanup Agreement Index No. TBD, Site No. TBD).

I certify that the site description presented in this Final Engineering Report is identical to the site descriptions presented in the Brownfield Cleanup Agreement for the 10-47 Beach 21st Street site.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that the export of contaminated soil, fill, water, or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all federal, state, and local laws.

I certify that import of soils from off-site, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that ground-intrusive work during remediation and development-related construction was conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan.

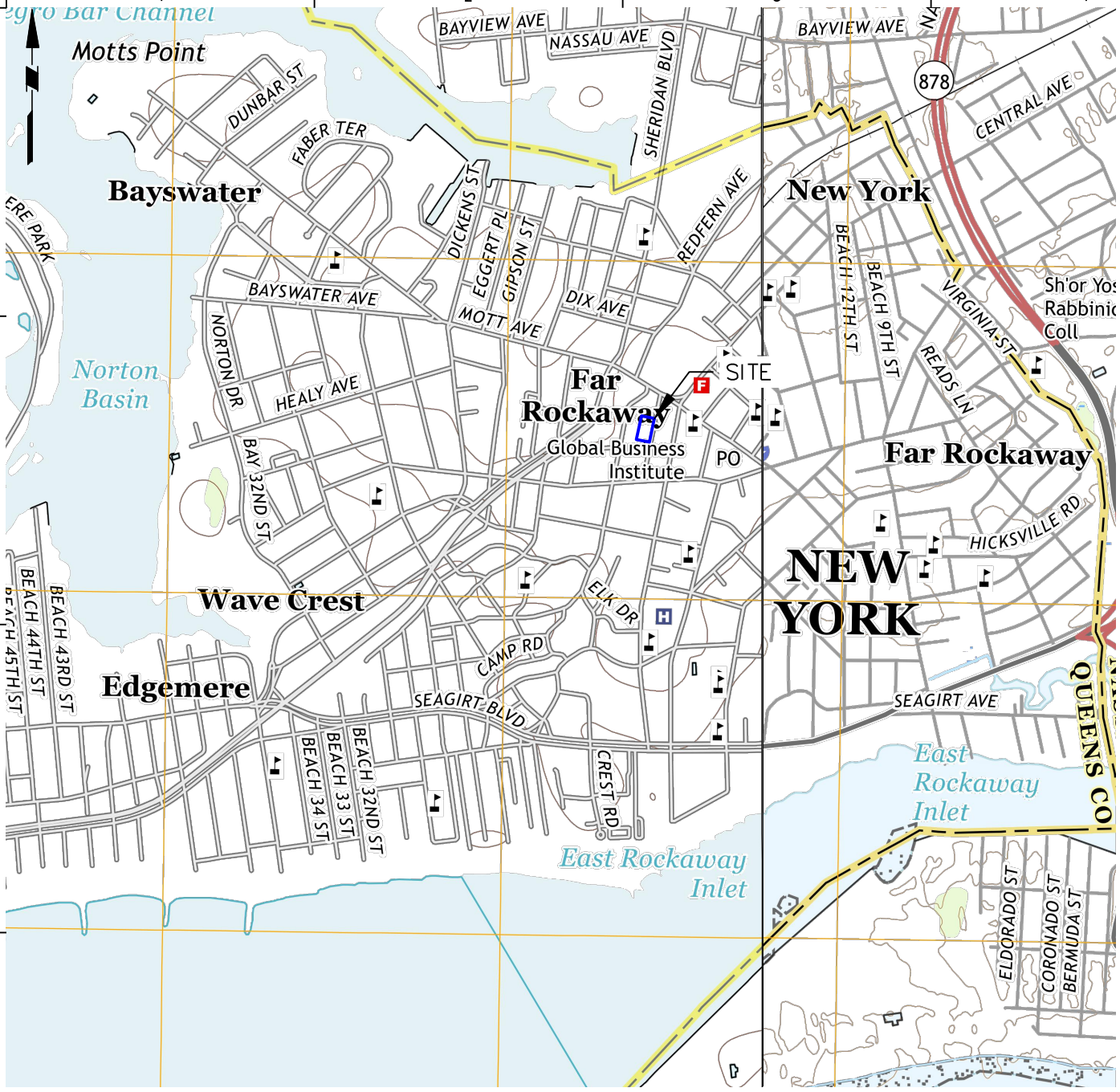
I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

10.0 SCHEDULE

Mobilization for RAWP implementation is expected to take about one to two weeks. Once mobilization is complete, remediation of the site will begin. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take about 5 months to complete. After completion of the remedy, a FER will be submitted to the NYSDEC for review and approval. A detailed project schedule is included in Appendix G.

FIGURES



NOTES:
1. IMAGE FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) FAR ROCKAWAY, NY AND LAWRENCE, NY 7.5–MINUTE QUADRANGLE MAPS
2. FIGURE NOT DRAWN TO SCALE

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

1500 0 300 1500
SCALE IN FEET

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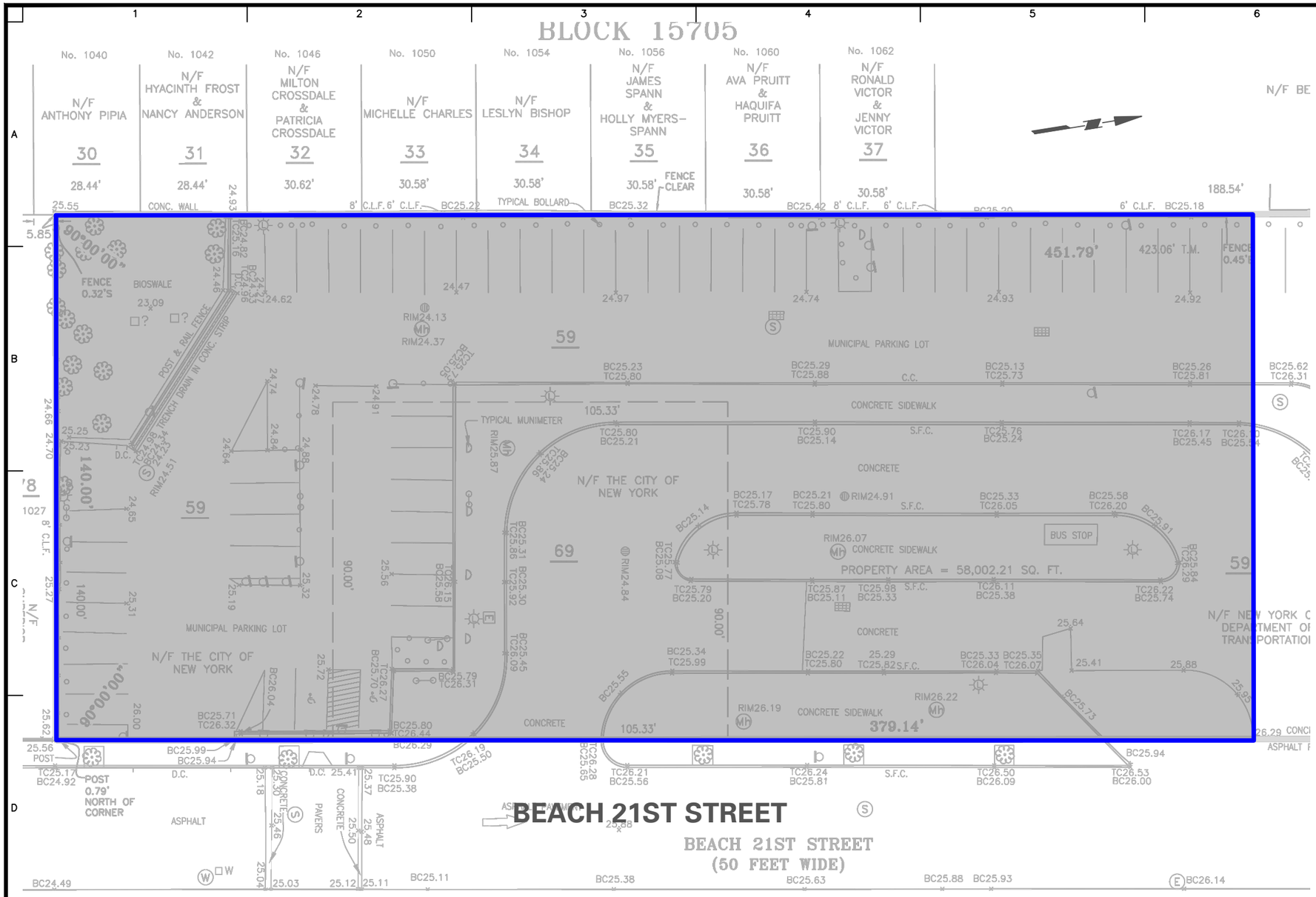
Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
SITE LOCATION MAP

Project No.	170540601
Date	09/07/18
Drawn By	EB
Checked By	JA

Figure No. **1**
Sheet 1 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 1 - Site Location Map.dwg Date: 4/10/2019 Time: 14:19 User: mtan Style Table: Langan.stb Layout: ANSIA-BP



LEGEND:

APPROXIMATE SITE BOUNDARY

PROPOSED EXCAVATION TO ABOUT 15 FEET BELOW GRADE SURFACE (ABOUT EL10 FEET) ACROSS THE SITE.

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED SEPTEMBER 12, 2016.
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. EL = ELEVATION

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

30 0 15 30

SCALE: 1 INCH = 30 FEET

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Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS **NEW YORK**

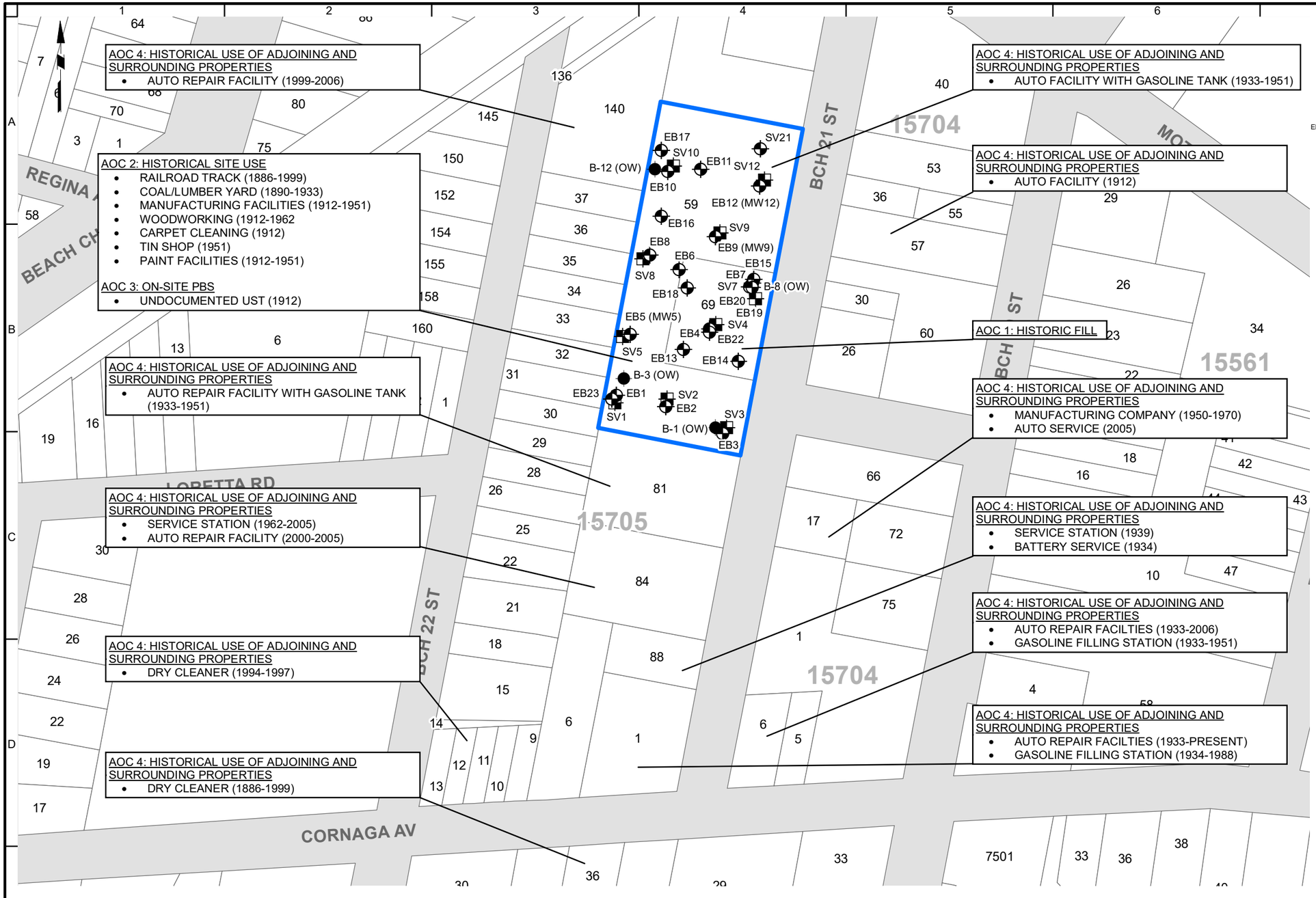
Figure Title
DEVELOPMENT DEPTH EXCAVATION MAP

Project No.	170540601
Date	04/22/2019
Drawn By	MT
Checked By	SS

Figure No. **2**

Sheet 2 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 9 - Development Depth Excavation Map.dwg Date: 5/10/2019 Time: 13:23 User: mtan Style Table: Langan.stb Layout: ANSIB-BL



NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED SEPTEMBER 2016.
2. SAMPLE LOCATIONS ARE BASED ON FIELD MEASUREMENTS.
3. THE REMEDIAL INVESTIGATION WAS COMPLETED BETWEEN DECEMBER 11, 2018 AND FEBRUARY 19, 2019.
4. AOC = AREA OF CONCERN
5. AOC 1 = HISTORIC FILL (SITEWIDE)
6. AOC 2 = HISTORICAL SITE USE (SITEWIDE)
7. AOC 3 = ON-SITE PETROLEUM BULK STORAGE (PBS)
8. AOC 4 = HISTORICAL USE OF ADJOINING AND SURROUNDING PROPERTIES
9. AOCS 1 AND 2 ENCOMPASS THE ENTIRE SITE FOOTPRINT.
10. UST = UNDERGROUND STORAGE TANK

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100 0 100
SCALE IN FEET

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FAR ROCKAWAY
QUEENS NEW YORK

Drawing Title
AOC AND SAMPLE LOCATION PLAN

Project No.	Figure
170540601	3
Date: 5/10/2019	
Scale: 1"=100'	
Drawn By: MG	Sheet 3 of 10

Sample ID Sample Date Depth Range (feet bgs)	EB01_0-2 12/17/2018 0-2	EB01_12-14 12/17/2018 12-14
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	NE	ND
Inorganics (mg/kg)		
Nickel	**35**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB06_1-3 12/14/2018 1-3	EB06_12-14 12/14/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	NE
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**98.7**	NE
Zinc	**163**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB08_1.5-3.5 12/17/2018 1.5-3.5	EB08_12-14 12/17/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Pyrene	**1.2** J	ND
Benzo(b)Fluoranthene	**1.6** J	ND
Indeno(1,2,3-c,d)Pyrene	**0.58** J	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)	NE	NE

Sample ID Sample Date Depth Range (feet bgs)	EB16_0-2 3/13/2019 0-2	EB16_4-6 3/13/2019 4-6
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	ND
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Mercury	**0.226**	ND

Sample ID Sample Date Depth Range (feet bgs)	EB23_0-2 3/13/2019 0-2
VOCs (mg/kg)	ND
SVOCs (mg/kg)	NE
Pesticides (mg/kg)	
Beta Bhc (Beta Hexachlorocyclohexane)	**0.175** D
Herbicides (mg/kg)	ND
PCBs (mg/kg)	ND
Inorganics (mg/kg)	NE

Sample ID Sample Date Depth Range (feet bgs)	EB11_0-2 12/12/2018 0-2	EB11_12-14 12/12/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Chromium, Hexavalent	**1.16**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB13_0-2 3/13/2019 0-2	EB13_6-8 3/13/2019 6-8
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.57** D	**12.3** D
Benzo(a)Pyrene	**1.59** D	**11.1** D
Benzo(b)Fluoranthene	**1.54** D	**8.25** D
Benzo(k)Fluoranthene	**1.41** D	**10.3** D
Chrysene	**1.61** D	**11.7** D
Dibenz(a,h)Anthracene	**0.43** D	**2.84** D
Indeno(1,2,3-c,d)Pyrene	**1.37** D	**7.37** D
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	NE	ND
Inorganics (mg/kg)		
Lead	**71.8**	**72.9**
Mercury	NE	**0.242**

Sample ID Sample Date Depth Range (feet bgs)	EB21_0-2 3/5/2019 0-2	EB21_4-6 3/5/2019 4-6
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.46** D	NE
Benzo(a)Pyrene	**1.48** D	NE
Benzo(b)Fluoranthene	**1.24** D	NE
Benzo(k)Fluoranthene	**0.998** D	NE
Chrysene	**1.22** D	NE
Indeno(1,2,3-c,d)Pyrene	**0.932** D	NE
Pesticides (mg/kg)		
4,4'-DDD	ND	**0.0203** D
4,4'-DDT	**0.00597** D	**0.0144** D
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Arsenic	NE	**15.3**
Barium	**821**	NE
Copper	**102**	**143**
Lead	**1,250**	**411**
Mercury	**0.701**	**0.195**
Zinc	**525**	**273**
TCLP - Inorganics (mg/L)		
Lead	NE	NA

Sample ID Sample Date Depth Range (feet bgs)	EB02_1.5-3.5 12/14/2018 1.5-3.5	EB02_6-8 12/14/2018 6-8	EB02_12-14 12/14/2018 12-14
VOCs (mg/kg)			
Acetone	**0.21**	ND	NE
SVOCs (mg/kg)	NE	NE	NE
Pesticides (mg/kg)	ND	ND	ND
Herbicides (mg/kg)	ND	ND	ND
PCBs (mg/kg)	NE	ND	ND
Inorganics (mg/kg)			
Lead	**119**	NE	NE

Sample ID Sample Date Depth Range (feet bgs)	EB18_0-2 3/5/2019 0-2	EB18_6-8 3/5/2019 6-8	SODUP04_030519 3/5/2019 6-8
VOCs (mg/kg)			
Acetone	NE	NE	**0.051**
SVOCs (mg/kg)			
Benzo(a)Anthracene	**10.5** D	NE	NE
Benzo(a)Pyrene	**10** D	NE	NE
Benzo(b)Fluoranthene	**8.48** D	NE	NE
Benzo(k)Fluoranthene	**6.64** D	NE	NE
Chrysene	**8.75** D	NE	NE
Dibenz(a,h)Anthracene	**1.43** D	NE	NE
Indeno(1,2,3-c,d)Pyrene	**7.1** D	NE	NE
Pesticides (mg/kg)			
4,4'-DDT	**0.0223** D	**0.00359** D	ND
Herbicides (mg/kg)	ND	ND	ND
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)			
Lead	**401**	**109**	**90.3**
Zinc	**392**	**118**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB22_0-2 3/5/2019 0-2	EB22_5-7 3/5/2019 5-7
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	NE	**3.58** D
Benzo(a)Pyrene	NE	**3.46** D
Benzo(b)Fluoranthene	NE	**2.64** D
Benzo(k)Fluoranthene	NE	**2.2** D
Chrysene	NE	**2.44** D
Dibenz(a,h)Anthracene	NE	**0.605** D
Indeno(1,2,3-c,d)Pyrene	**0.618** D	**2.26** D
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Barium	NE	**351**
Lead	**3,570**	**2,420**
Mercury	NE	**0.367**
Zinc	**432**	**626**
TCLP - Inorganics (mg/L)		
Lead	7.27	7.07

Sample ID Sample Date Depth Range (feet bgs)	EB15_0-2 3/5/2019 0-2	EB15_8-10 3/5/2019 8-10
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	NE	**1.28** D
Benzo(a)Pyrene	NE	**1.13** D
Benzo(b)Fluoranthene	NE	**1.07** D
Benzo(k)Fluoranthene	NE	**0.813** D
Chrysene	NE	**1.14** D
Indeno(1,2,3-c,d)Pyrene	**0.534** D	**0.767** D
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Barium	NE	**574**
Copper	NE	**201**
Lead	**94.5**	**611**
Zinc	NE	**298**

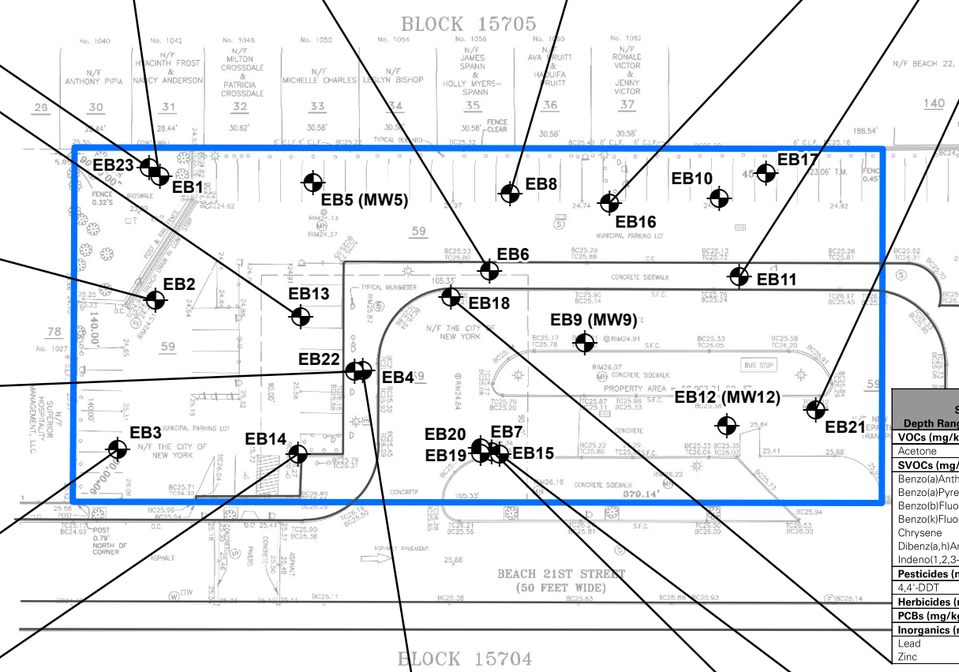
Sample ID Sample Date Depth Range (feet bgs)	EB03_1.5-3.5 12/17/2018 1.5-3.5	EB03_12-14 12/17/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**2.3**	ND
Benzo(a)Pyrene	**2.1**	ND
Benzo(b)Fluoranthene	**2.9** D	ND
Chrysene	**1.9**	ND
Dibenz(a,h)Anthracene	**0.34** J	ND
Indeno(1,2,3-c,d)Pyrene	**1.1**	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	NE
Inorganics (mg/kg)		
Lead	**137**	NE
Zinc	**113**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB14_0-2 3/13/2019 0-2	EB14_6-8 3/13/2019 6-8
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**141**	**864**
Zinc	NE	**237**

Sample ID Sample Date Depth Range (feet bgs)	EB04_0-2 12/11/2018 0-2	EB04_14-16 12/11/2018 14-16
VOCs (mg/kg)	NE	ND
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.1**	ND
Benzo(b)Fluoranthene	**1.4**	ND
Chrysene	**1.1**	ND
Indeno(1,2,3-c,d)Pyrene	**0.71**	ND
Pesticides (mg/kg)		
4,4'-DDE	**0.0076**	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**385** N	NE
Zinc	**310**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB07_1-2 12/11/2018 1-2	EB07_11-12 12/11/2018 11-12
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.4**	ND
Benzo(a)Pyrene	**1.2**	ND
Benzo(b)Fluoranthene	**1.7**	ND
Chrysene	**1.3**	ND
Indeno(1,2,3-c,d)Pyrene	**0.66** J	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**89.3** N	NE
Zinc	**110**	NE

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Maximum Concentration of Contaminants for the Toxicity Characteristic
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	~
Dibenz(a,h)Anthracene	0.33	0.33	~
Indeno(1,2,3-c,d)Pyrene	0.5	0.5	~
Pesticides (mg/kg)			
4,4'-DDD	0.0033	13	~
4,4'-DDE	0.0033	8.9	~
4,4'-DDT	0.0033	7.9	~
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	~
Inorganics (mg/kg)			
Arsenic	13	16	~
Barium	350	400	~
Chromium, Hexavalent	1	110	~
Copper	50	270	~
Lead	63	400	~
Mercury	0.18	0.81	~
Nickel	30	310	~
Zinc	109	10,000	~
TCLP - Inorganics (mg/L)			
Lead	~	~	5



LEGEND:

- EB8 — ENVIRONMENTAL BORING LOCATION
- APPROXIMATE SITE BOUNDARY
- CURB LINE
- NYCTA ELEVATED TRACK LIMITS

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED 12 SEPTEMBER 2016.
2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED - RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO) AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24 - ENVIRONMENTAL PROTECTION AGENCY (EPA) MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC.
3. ONLY CONCENTRATIONS EXCEEDING THE COMPARISON CRITERIA ARE SHOWN.
4. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE UNRESTRICTED USE SCOs ARE BOLDED.
5. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs ARE BOLDED AND SHADED.
6. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC ARE SHADED RED.
7. SAMPLE SODUP01_121218 IS A DUPLICATE SAMPLE OF EB10_12-14, SAMPLE SODUP02_121318 IS A DUPLICATE SAMPLE OF EB12_12-14, AND SAMPLE SODUP04_030519 IS A DUPLICATE SAMPLE OF EB18_6-8.
8. bgs = BELOW GRADE SURFACE
9. mg/kg = MILLIGRAMS PER KILOGRAM
10. mg/L = MILLIGRAMS PER LITER
11. NE = DETECTED AT CONCENTRATION(S) NOT EXCEEDING EITHER SCO
12. ND = NOT DETECTED
13. NA = NOT ANALYZED

QUALIFIERS:

D = THE CONCENTRATION REPORTED IS A RESULT OF A DILUTED SAMPLE.
J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE REPORTING LIMIT (RL); THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
N = THE SPIKED SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS

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SCALE IN FEET

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Project
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Figure Title
SOIL BORING LOCATIONS AND RESULTS MAP

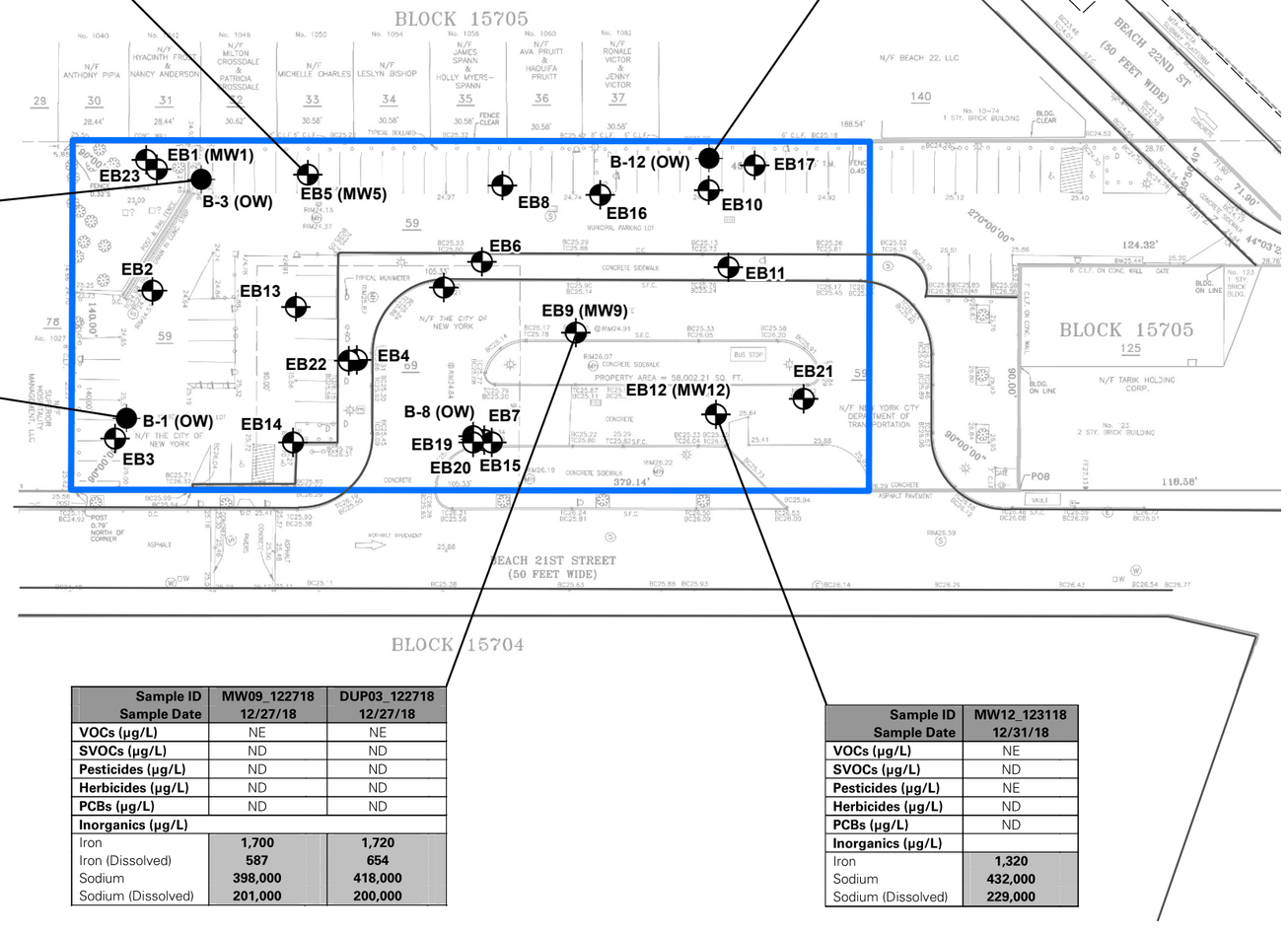
Project No. 170540601
Date 5/10/2019
Scale 1"=60'
Drawn By MG
Figure 4
Sheet 4 of 10

Path: \\langan.com\data\NYC\data6\170540601\Project Data\ArcGIS\MXD\Environmental_Figures\Final\Figure 5 - Soil Boring Locations and Results Map.mxd Date: 5/10/2019 User: mgeorgalas Time: 1:44:48 PM

Sample ID Sample Date	MW05_122818 12/28/18
VOCs (µg/L)	ND
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	**1,760**
Iron (Dissolved)	**783**
Sodium	**132,000**
Sodium (Dissolved)	**70,000**

Sample ID Sample Date	B12_123118 12/31/18
VOCs (µg/L)	NE
SVOCs (µg/L)	
Phenol	**5.5 J**
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	**2,550**
Manganese	**584**
Sodium	**298,000**
Sodium (Dissolved)	**153,000**

Sample ID Sample Date	B3_122818 12/28/18
VOCs (µg/L)	ND
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	**633**



Sample ID Sample Date	B1_123118 12/31/18
VOCs (µg/L)	NE
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	**487**
Manganese	**321**
Sodium	**394,000**
Sodium (Dissolved)	**198,000**

Sample ID Sample Date	MW09_122718 12/27/18	DUP03_122718 12/27/18
VOCs (µg/L)	NE	NE
SVOCs (µg/L)	ND	ND
Pesticides (µg/L)	ND	ND
Herbicides (µg/L)	ND	ND
PCBs (µg/L)	ND	ND
Inorganics (µg/L)		
Iron	**1,700**	**1,720**
Iron (Dissolved)	**587**	**654**
Sodium	**398,000**	**418,000**
Sodium (Dissolved)	**201,000**	**200,000**

Sample ID Sample Date	MW12_123118 12/31/18
VOCs (µg/L)	NE
SVOCs (µg/L)	ND
Pesticides (µg/L)	NE
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	**1,320**
Sodium	**432,000**
Sodium (Dissolved)	**229,000**

LEGEND:

- EB9 (MW9) — ENVIRONMENTAL BORING LOCATION
- B-12 (OW) — GEOTECHNICAL BORING LOCATION W/ OBSERVATION MONITORING WELL
- APPROXIMATE SITE BOUNDARY
- CURB LINE
- NYCTA ELEVATED TRACK LIMITS

Analyte	CAS Number	NYSDEC SGVs
SVOCs (µg/L)		
Phenol	108-95-2	1
Inorganics (µg/L)		
Iron	7439-89-6	300
Manganese	7439-96-5	300
Sodium	7440-23-5	20000

NOTES:
1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED 12 SEPTEMBER 2016.
2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES AND REGULATIONS (NYCRR) PART 703.5 AND THE NYSDEC TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER (NYSDEC SGVs).
3. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE NYSDEC SGVs ARE BOLDED AND SHADED.
4. SAMPLE DUP03_122718 IS A DUPLICATE SAMPLE OF MW09_122718.
5. SEE TABLE 5 FOR THE 20-COMPOUND LIST OF PERFLUORINATED CHEMICALS (PFC) ANALYTICAL RESULTS.
6. ~ = REGULATORY LIMIT FOR THIS ANALYTE DOES NOT EXIST
7. µg/L = MICROGRAMS PER LITER
8. NE = DETECTED AT CONCENTRATION(S) NOT EXCEEDING THE NYSDEC SGVs
9. ND = NOT DETECTED

QUALIFIERS:
J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE REPORTING LIMIT (RL); THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.

60 0 60
SCALE IN FEET

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Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 & P/O 59
FAR ROCKAWAY
QUEENS NEW YORK

Drawing Title
GROUNDWATER SAMPLE RESULTS MAP

Project No. 170540601
Date 5/10/2019
Scale 1"=60'
Drawn By MG
Figure 5
Sheet 5 of 10

Path: \\langan.com\data\NYC\data6\170540601\Project Data\ArcGIS\MXD\Environmental_Figures\Final\Figure 6 - Groundwater Results Map.mxd Date: 5/10/2019 User: mgeorgalas Time: 1:48:11 PM

Sample ID	SV-1_121718	
Sample Date	12/17/18	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	3.4	D
2-Hexanone	4.6	D
4-Ethyltoluene	2.9	D
Acetone	18	D
Benzene	0.53	D
Carbon Tetrachloride	0.35	D
Chloroform	4.9	D
Dichlorodifluoromethane	2.3	D
Ethylbenzene	1.4	D
Isopropanol	2.1	D
M,P-Xylene	5.9	D
Methyl Ethyl Ketone (2-Butanone)	13	D
n-Heptane	1.7	D
n-Hexane	0.54	D
o-Xylene (1,2-Dimethylbenzene)	2.5	D
Propylene	2.3	D
Tetrachloroethene (PCE)	1	D
Toluene	4.8	D
Trichlorofluoromethane	1.9	D

Sample ID	SV-2_121718	
Sample Date	12/17/18	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	2.3	D
2-Hexanone	3.7	D
4-Ethyltoluene	2.7	D
Acetone	18	D
Benzene	1.4	D
Carbon Disulfide	1.7	D
Chloroform	3.1	D
Dichlorodifluoromethane	2.1	D
Ethylbenzene	2.3	D
M,P-Xylene	10	D
Methyl Ethyl Ketone (2-Butanone)	10	D
Methylene Chloride	1	D
n-Heptane	1.9	D
n-Hexane	1.5	D
o-Xylene (1,2-Dimethylbenzene)	2.8	D
Propylene	8.6	D
Tetrachloroethene (PCE)	17	D
Toluene	8	D
Trichlorofluoromethane	1.9	D

Sample ID	SV-3_121718	
Sample Date	12/17/18	
VOCs (µg/m³)		
1,1,1-Trichloroethane	3.3	D
1,2,4-Trimethylbenzene	5.5	D
1,3-Butadiene	57	D
4-Ethyltoluene	25	D
Acetone	140	D
Benzene	21	D
Carbon Disulfide	3.9	D
Carbon Tetrachloride	0.27	D
Chloroform	87	D
Chloromethane	0.83	D
Cyclohexane	3.5	D
Dichlorodifluoromethane	1.8	D
Ethylbenzene	42	D
M,P-Xylene	170	D
Methyl Ethyl Ketone (2-Butanone)	49	D
Methylene Chloride	5.2	D
n-Heptane	23	D
n-Hexane	23	D
o-Xylene (1,2-Dimethylbenzene)	68	D
Propylene	370	D
Tetrachloroethene (PCE)	100	D
Toluene	35	D
Trichloroethene (TCE)	2.1	D
Trichlorofluoromethane	2.7	D

Sample ID	SV-4_121318	
Sample Date	12/13/18	
VOCs (µg/m³)		
1,1,1-Trichloroethane	3.7	D
1,2,4-Trimethylbenzene	1.6	D
1,3,5-Trimethylbenzene (Mesitylene)	0.66	D
2-Hexanone	9.8	D
4-Ethyltoluene	2	D
Acetone	38	D
Benzene	1.3	D
Carbon Disulfide	2.2	D
Chloroform	2.7	D
Cis-1,2-Dichloroethylene	0.53	D
Dichlorodifluoromethane	2.1	D
Ethylbenzene	2	D
Isopropanol	8.4	D
Methyl Ethyl Ketone (2-Butanone)	31	D
n-Heptane	3.2	D
n-Hexane	2.2	D
o-Xylene (1,2-Dimethylbenzene)	2.5	D
Propylene	5.5	D
Tetrachloroethene (PCE)	44	D
Toluene	9.2	D
Trichloroethene (TCE)	1.4	D
Trichlorofluoromethane	2.2	D

Sample ID	SV-5_121718	
Sample Date	12/17/18	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	2.1	D
1,3-Butadiene	1.9	D
2-Hexanone	4.3	D
4-Ethyltoluene	3.1	D
Acetone	50	D
Benzene	4.3	D
Carbon Disulfide	8.7	D
Chloroethane	0.47	D
Chloroform	20	D
Cis-1,2-Dichloroethylene	0.24	D
Cyclohexane	0.82	D
Dichlorodifluoromethane	1.9	D
Ethyl Acetate	1.1	D
Ethylbenzene	4.3	D
Isopropanol	1.1	D
M,P-Xylene	15	D
Methyl Ethyl Ketone (2-Butanone)	14	D
Methylene Chloride	1.4	D
n-Heptane	4.9	D
n-Hexane	5.3	D
o-Xylene (1,2-Dimethylbenzene)	5	D
Propylene	18	D
Styrene	0.76	D
Tetrachloroethene (PCE)	18	D
Toluene	14	D
Trichlorofluoromethane	2.3	D

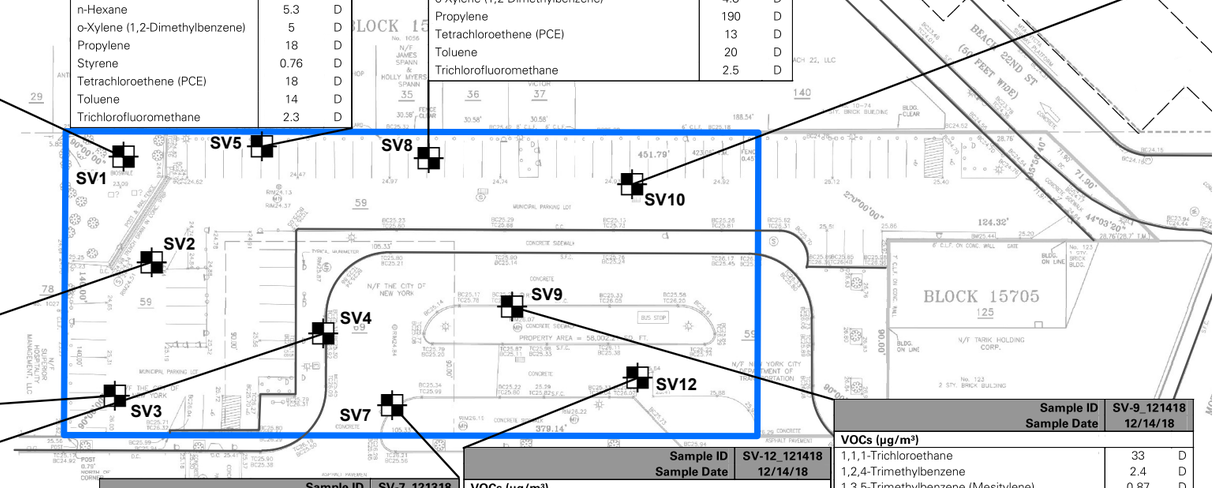
Sample ID	SV-7_121318	
Sample Date	12/13/18	
VOCs (µg/m³)		
1,1,1-Trichloroethane	6.2	D
1,2,4-Trimethylbenzene	1.6	D
1,3,5-Trimethylbenzene (Mesitylene)	0.65	D
2-Hexanone	3.2	D
4-Ethyltoluene	1.7	D
Acetone	99	D
Benzene	1.5	D
Carbon Disulfide	32	D
Chloroform	2.5	D
Cis-1,2-Dichloroethylene	0.57	D
Dichlorodifluoromethane	2.2	D
Ethylbenzene	1.5	D
Isopropanol	2.2	D
M,P-Xylene	5.7	D
Methyl Ethyl Ketone (2-Butanone)	17	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	5.7	D
Methylene Chloride	2	D
n-Hexane	1.2	D
o-Xylene (1,2-Dimethylbenzene)	1.8	D
Propylene	4.5	D
Tetrachloroethene (PCE)	**160**	**D**
Toluene	5.1	D
Trichloroethene (TCE)	1.8	D
Trichlorofluoromethane	4.1	D

Sample ID	SV-8_121718	
Sample Date	12/17/18	
VOCs (µg/m³)		
1,1,1-Trichloroethane	11	D
1,2,4-Trimethylbenzene	3.2	D
1,3-Butadiene	28	D
2-Hexanone	18	D
4-Ethyltoluene	3.1	D
Acetone	160	D
Benzene	12	D
Carbon Disulfide	2.5	D
Chloroform	3.2	D
Chloromethane	0.3	D
Cyclohexane	1.1	D
Dichlorodifluoromethane	2	D
Ethylbenzene	3.7	D
Isopropanol	3.7	D
M,P-Xylene	12	D
Methyl Ethyl Ketone (2-Butanone)	74	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	7.4	D
n-Heptane	10	D
n-Hexane	11	D
o-Xylene (1,2-Dimethylbenzene)	4.8	D
Propylene	190	D
Tetrachloroethene (PCE)	13	D
Toluene	20	D
Trichlorofluoromethane	2.5	D

Sample ID	SV-10_121318	
Sample Date	12/13/18	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	1.4	D
2-Hexanone	2.5	D
4-Ethyltoluene	1.5	D
Acetone	31	D
Benzene	1.6	D
Carbon Disulfide	1.1	D
Carbon Tetrachloride	0.25	D
Chloroform	1.2	D
Cyclohexane	1	D
Dichlorodifluoromethane	2.1	D
Ethylbenzene	2.4	D
M,P-Xylene	8.5	D
Methyl Ethyl Ketone (2-Butanone)	8.2	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	0.7	D
n-Heptane	2.6	D
n-Hexane	2.2	D
o-Xylene (1,2-Dimethylbenzene)	2.5	D
Propylene	7.8	D
Tetrachloroethene (PCE)	18	D
Toluene	4.9	D
Trichlorofluoromethane	1.2	D

Sample ID	SV-12_121418	
Sample Date	12/14/18	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	2.5	D
1,3,5-Trimethylbenzene (Mesitylene)	1.2	D
1,3-Butadiene	2.5	D
2-Hexanone	3	D
4-Ethyltoluene	4.3	D
Acetone	60	D
Acrylonitrile	0.74	D
Benzene	3.2	D
Carbon Disulfide	3.7	D
Chloroform	6.6	D
Dichlorodifluoromethane	2.2	D
Ethylbenzene	6.8	D
Isopropanol	1.8	D
M,P-Xylene	23	D
Methyl Ethyl Ketone (2-Butanone)	10	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	1.5	D
Methylene Chloride	1.9	D
n-Hexane	3.4	D
o-Xylene (1,2-Dimethylbenzene)	9.3	D
Propylene	26	D
Styrene	1.3	D
Tetrachloroethene (PCE)	76	D
Tetrahydrofuran	3	D
Toluene	19	D
Trichloroethene (TCE)	0.51	D
Trichlorofluoromethane	1.7	D

Sample ID	SV-9_121418	
Sample Date	12/14/18	
VOCs (µg/m³)		
1,1,1-Trichloroethane	33	D
1,2,4-Trimethylbenzene	2.4	D
1,3,5-Trimethylbenzene (Mesitylene)	0.87	D
1,3-Butadiene	1.8	D
2-Hexanone	6.5	D
4-Ethyltoluene	3	D
Acetone	100	D
Acrylonitrile	0.62	D
Benzene	2.3	D
Carbon Disulfide	13	D
Chloroform	1.4	D
Cis-1,2-Dichloroethylene	0.38	D
Cyclohexane	8.3	D
Dichlorodifluoromethane	2.3	D
Ethylbenzene	5.3	D
Isopropanol	8.5	D
M,P-Xylene	17	D
Methyl Ethyl Ketone (2-Butanone)	29	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	4.3	D
n-Heptane	11	D
n-Hexane	3.6	D
o-Xylene (1,2-Dimethylbenzene)	5.2	D
Propylene	18	D
Styrene	1.3	D
Tetrachloroethene (PCE)	38	D
Tetrahydrofuran	1.6	D
Toluene	1,200	D
Trichloroethene (TCE)	0.88	D
Trichlorofluoromethane	2.4	D



LEGEND:

- SV12 — SOIL VAPOR SAMPLE
- APPROXIMATE SITE BOUNDARY
- CURB LINE
- NYCTA ELEVATED TRACK LIMITS

Analyte	CAS Number	NYSDOH Decision Matrix Minimum Concentration
Volatile Organic Compounds (µg/m³)		
1,1,1-Trichloroethane	71-55-6	100
Carbon Tetrachloride	56-23-5	6
Cis-1,2-Dichloroethylene	156-59-2	6
Methylene Chloride	75-09-2	100
Tetrachloroethene (PCE)	127-18-4	100
Trichloroethene (TCE)	79-01-6	6

NOTES:
1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED 12 SEPTEMBER 2016.
2. SOIL VAPOR ANALYTICAL RESULTS ARE COMPARED TO THE MINIMUM SOIL VAPOR CONCENTRATIONS RECOMMENDING MITIGATION AS SET FORTH IN THE NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH) OCTOBER 2006 GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN THE STATE OF NEW YORK DECISION MATRICES FOR SUB-SLAB VAPOR AND INDOOR AIR AND SUBSEQUENT UPDATES (2017).
3. ONLY DETECTED ANALYTES ARE SHOWN.
4. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE THE MINIMUM CONCENTRATIONS ARE BOLDED AND SHADED.
5. µg/m³ = MICROGRAMS PER CUBIC METER
6. SV = SOIL VAPOR
7. VOCs = VOLATILE ORGANIC COMPOUNDS

QUALIFIERS:
D = THE CONCENTRATION REPORTED IS A RESULT OF A DILUTED SAMPLE.

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SCALE IN FEET

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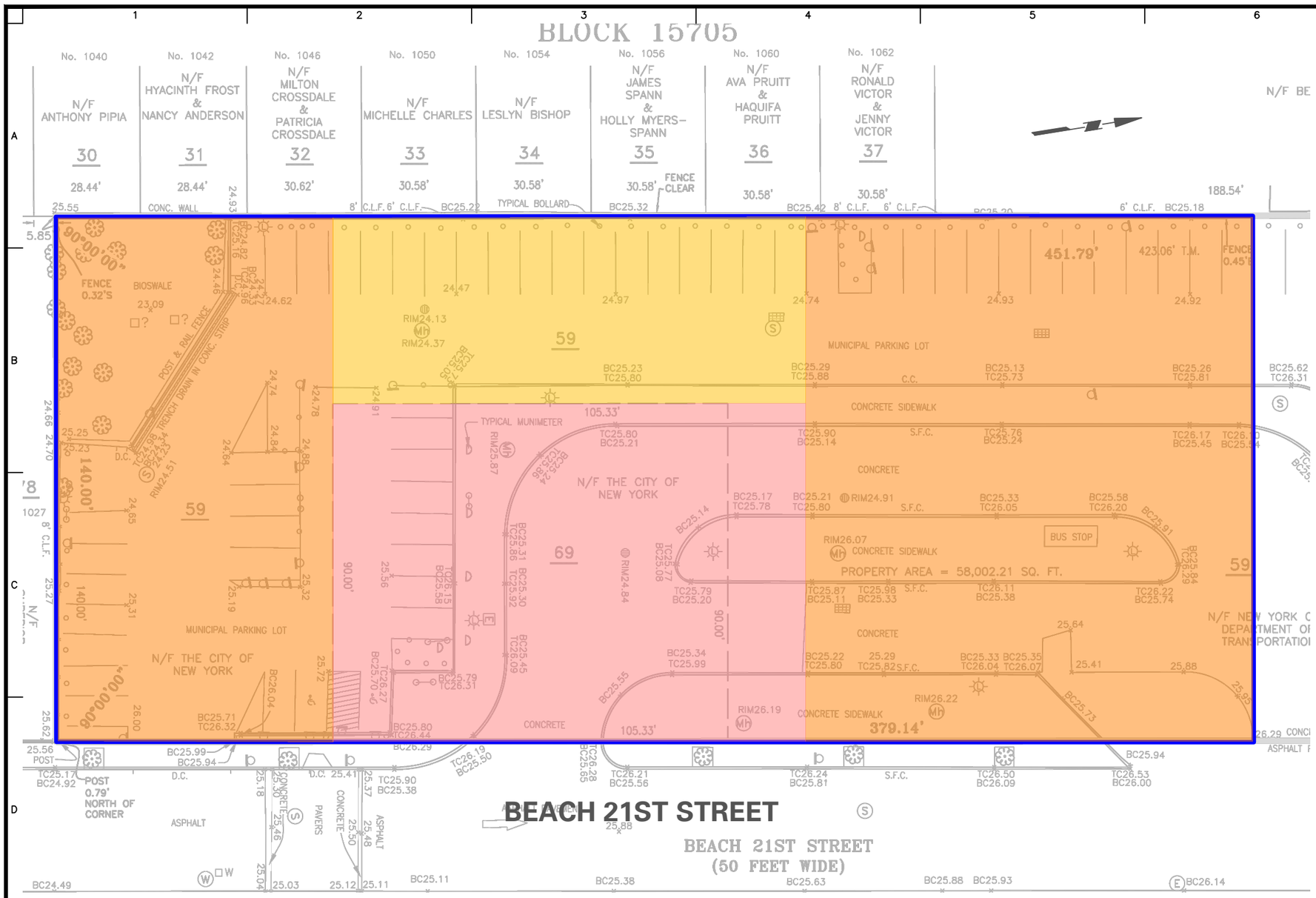
Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 & P/O 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
SOIL VAPOR SAMPLE RESULTS MAP

Project No. 170540601	Figure 6
Date 5/10/2019	
Scale 1"=70'	
Drawn By MG	Sheet 6 of 10

Path: \\langan.com\data\NYC\data6\170540601\Project Data\ArcGIS\MXD\Environmental_Figures\Final\Figure 7 - Soil Vapor Locations and Results Map.mxd Date: 5/10/2019 User: mgeorgalas Time: 1:50:04 PM



LEGEND:

- APPROXIMATE SITE BOUNDARY
- REMEDIAL EXCAVATION TO ABOUT 4 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 6.5 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 10.5 FEET BGS

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED SEPTEMBER 12, 2016.
2. DEPTH AND DIMENSION OF REMEDIAL EXCAVATION AREAS ARE ESTIMATED BASED ON ANALYTICAL RESULTS EXCEEDING TRACK 1 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES OR MAXIMUM DEPTH OF FILL.
3. BGS = BELOW GROUND SURFACE

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30 0 15 30

SCALE: 1 INCH = 30 FEET

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Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS NEW YORK

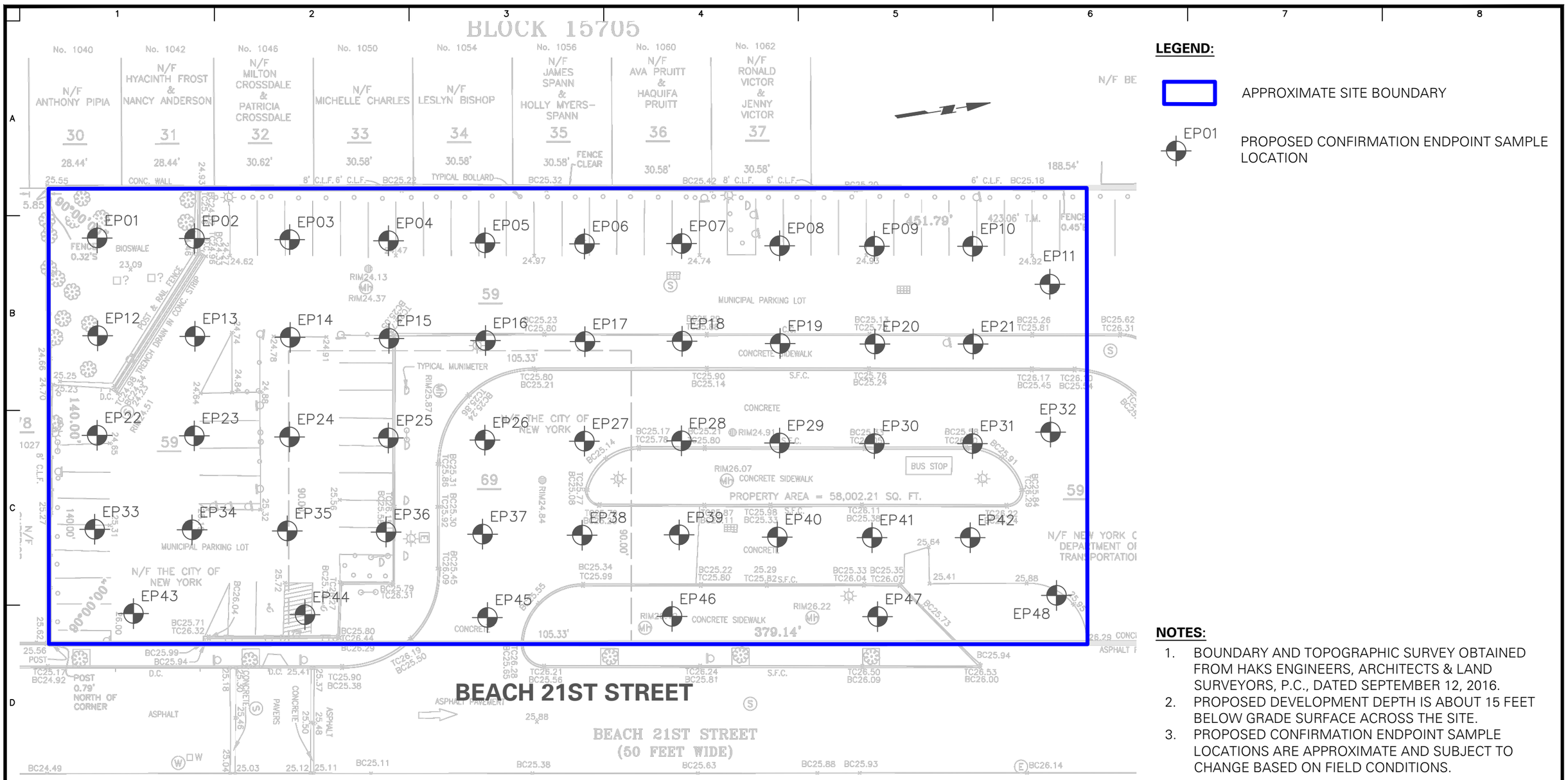
Figure Title
TRACK 1 CLEANUP PLAN

Project No.	170540601
Date	04/22/2019
Drawn By	MT
Checked By	SS

Figure No. 7

Sheet 7 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 7 - Track 1 Cleanup Plan.dwg Date: 5/10/2019 Time: 13:25 User: mtan Style Table: Langan.stb Layout: ANSIB-BL



LEGEND:

APPROXIMATE SITE BOUNDARY

EP01 PROPOSED CONFIRMATION ENDPOINT SAMPLE LOCATION

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED SEPTEMBER 12, 2016.
2. PROPOSED DEVELOPMENT DEPTH IS ABOUT 15 FEET BELOW GRADE SURFACE ACROSS THE SITE.
3. PROPOSED CONFIRMATION ENDPOINT SAMPLE LOCATIONS ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

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30 0 15 30
SCALE: 1 INCH = 30 FEET

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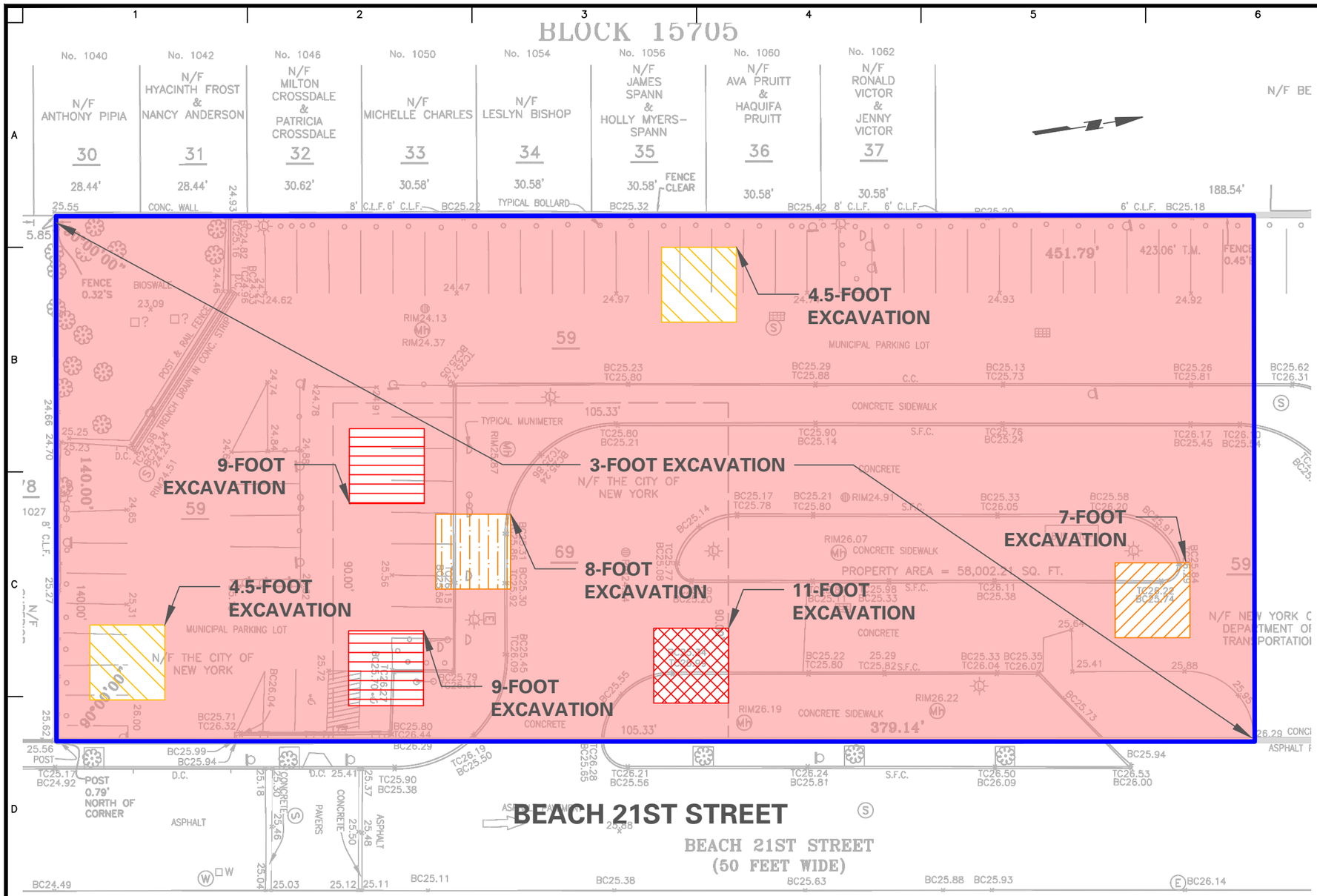
Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
PROPOSED CONFIRMATION ENDPOINT SAMPLE LOCATION PLAN

Project No. 170540601	Figure No. 8
Date 04/10/2019	
Drawn By MT	
Checked By SS	Sheet 8 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 8 - Proposed Confirmation Endpoint Sample Location Plan.dwg Date: 5/10/2019 Time: 13:28 User: mtan Style Table: Langan.stb Layout: ANSIB-BL



LEGEND:

- APPROXIMATE SITE BOUNDARY
- REMEDIAL EXCAVATION TO ABOUT 3 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 4.5 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 7 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 8 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 9 FEET BGS
- REMEDIAL EXCAVATION TO ABOUT 11 FEET BGS

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED SEPTEMBER 12, 2016.
2. DEPTH AND DIMENSION OF REMEDIAL EXCAVATION AREAS ARE ESTIMATED BASED ON ANALYTICAL RESULTS EXCEEDING TRACK 2 RESTRICTED USE RESTRICTED-RESIDENTIAL SOIL CLEANUP OBJECTIVES.
3. BGS = BELOW GROUND SURFACE

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

30 0 15 30
SCALE: 1 INCH = 30 FEET

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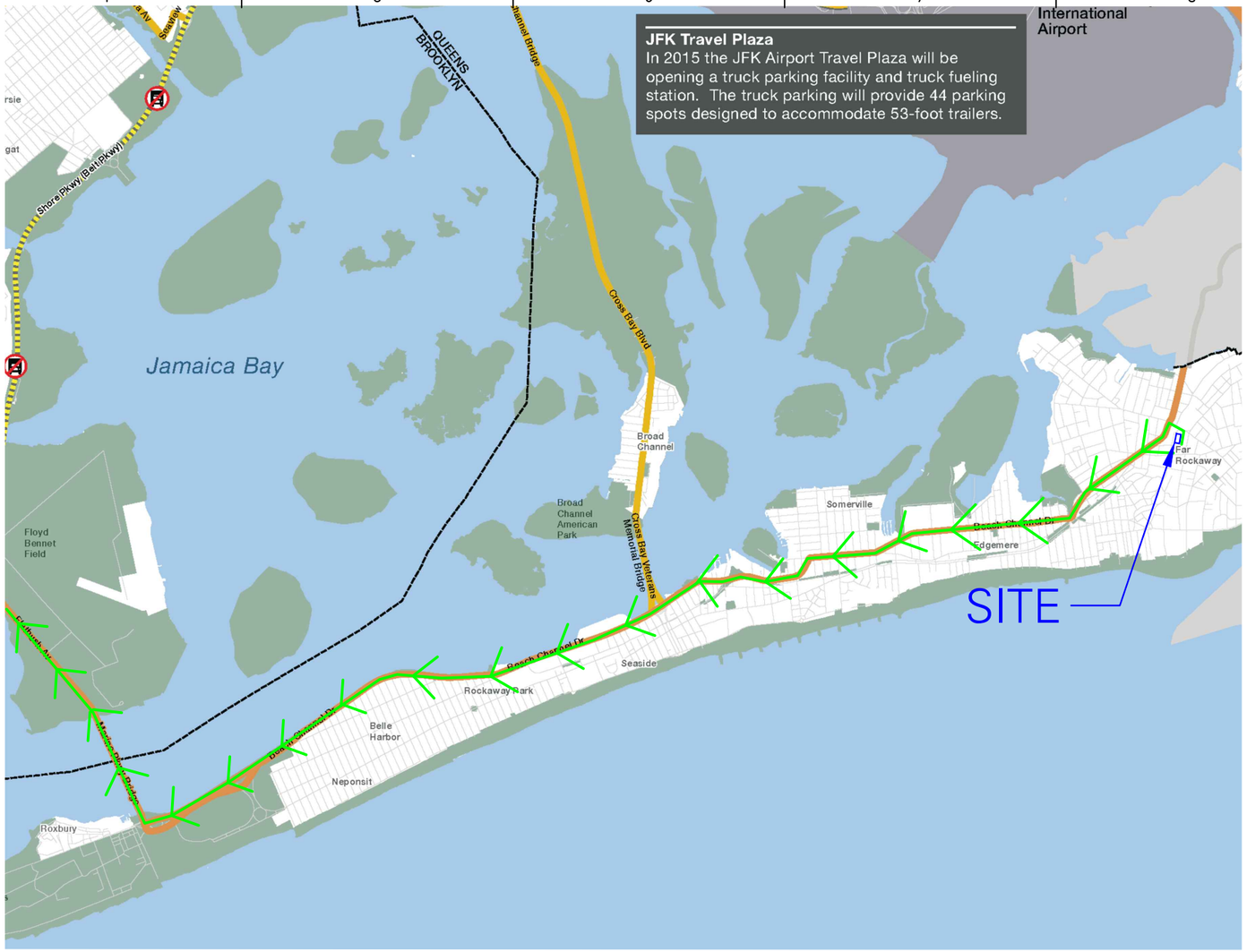
Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
TRACK 2 CLEANUP PLAN

Project No.	170540601
Date	04/22/2019
Drawn By	MT
Checked By	SS

Figure No. **9**
Sheet 9 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 8 - Track 2 Cleanup Plan.dwg Date: 5/10/2019 Time: 13:29 User: mtan Style Table: Langan.stb Layout: ANSIB-BL



LEGEND:

- APPROXIMATE SITE BOUNDARY
- LOCAL TRUCK ROUTE
- PROPOSED TRUCK ROUTE
- COMMERCIAL VEHICLES PROHIBITED
- THROUGH TRUCK ROUTE

NOTES:

1. TRUCK ROUTE MAP AND LEGEND ADAPTED FROM THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION (NYCDOT) 2015 NEW YORK CITY TRUCK ROUTE MAP,
2. AERIAL MAP FROM BINGMAP.COM, IMAGE DATED APRIL 10, 2019.
3. SITE ACCESS GATE LOCATION MAY CHANGE BASED ON CONSTRUCTION LOGISTICS.

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Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
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Figure Title
TRUCK ROUTE MAP

Project No.	170540601
Date	04/10/2019
Drawn By	MT
Checked By	SS
Figure No.	10
Sheet	10 of 10

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\SheetFiles\RAWP\Figure 10 - Truck Route Map.dwg Date: 5/8/2019 Time: 15:57 User: mtan Style Table: Langan.stb Layout: ANSIB-BL

TABLES

TABLE 1: TRACK 1 REMEDIAL COST ESTIMATE
BEACH 21ST STREET DEVELOPMENT
FAR ROCKAWAY, NEW YORK
LANGAN PROJECT NO. 170540601

Item No.	Description of Environmental Item	Quantity		Premium Unit Price		Estimated Premium
REMEDIAL ACTION CONTRACTOR COSTS						
1	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	--		Allowance		$100,000
2	Excavation of Source Material - Accounts for excavation of material containing concentrations exceeding Unrestricted Use Soil Cleanup Objectives and/or to depth of the terminus of excavation.	11,300	CY	$25	per CY	$282,500
3	Transport and Disposal of Historic Fill and Native Soil that Exceeds Unrestricted Use Soil Cleanup Objectives - Includes transport vehicles and disposal of material at a permitted facility.	16,150	Tons	$50	per Ton	$807,500
4	Transport and Disposal of Hazardous Waste - Includes an estimated 5% of historic fill material to be disposed of as hazardous, per RI results indicating the presence of hazardous lead.	850	Tons	$200	per Ton	$170,000
5	Underground Storage Tank (AST/UST) Removal - Cleaning, removal, and disposal of potential on-site USTs.	2	tanks	$10,000	per tank	$20,000
6	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	5	Months	10,000	per Month	$50,000
7	Backfill - Import and placement of clean fill material to bring site to development grade and fill around SOE components. An additional 10% of material is included to account for compaction.	1,100	CY	$35	CY	$39,000
8	Support of Excavation (SOE) - Support of Excavation (SOE) - Accounts for SOE installation along the site perimeters.	--		Allowance		$2,000,000
					REMEDIAL ACTION CONTRACTOR FEES SUBTOTAL	**$3,469,000**
ENGINEERING FEES						
1	Waste Characterization Sampling - To characterize soil for off-site disposal and to delineate hazardous lead.	--		Lump Sum		$75,000
2	Confirmation Sampling (Including QA/QC samples) - To confirm source material removal (assumes analysis for VOCs, SVOCs, PCBs, pesticides, cyanide, and metals including hexavalent and trivalent chromium for each sample).	54	Samples	$1,200	per Sample	$64,800
3	Community Air Monitoring - This fee includes equipment rental fees associated with implementation of CAMP, which will be performed during ground-intrusive work including excavation and backfill.	5	Months	$3,000	per Month	$15,000
4	BCP Engineering Services - Remedial Oversight and Closure Reporting	--		Allowance		$250,000
					ENGINEERING FEES SUBTOTAL	**$405,000**
					Remediation Contingency (10% of Contractor Fee Subtotal)	**$347,000**
					Total Estimated Fee	**$4,221,000**
					ESTIMATED REMEDIATION FEE - ALTERNATIVE I	**$4.2 MM**

General Assumptions and Conditions:

1. The density used for conversion from cubic yards to tons was 1.5 tons per cubic yard.
2. Excavation depths were estimated using Remedial Investigation soil sample results, field observations, and observed fill depths.
3. If contamination to 10 feet bgs could not be delineated vertically based on soil sample results, it was assumed that contamination extended to the terminus of historic fill.
4. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual fee. Utilization of this fee estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
5. A 5 month period is assumed for remediation and soil handling.
6. VOC = volatile organic compound; SVOC = semivolatile organic compound; PCBs = polychlorinated biphenyls, RI = Remedial Investigation

Contractor Cost Assumptions:

RAWP Item No. 2 - The unit rate provided reflects construction labor to be OSHA certified when handling hazardous waste
RAWP Item No. 3 - The unit rate provided reflects average disposal facility fees and may vary depending on time of year and facility.
RAWP Item No. 5 - The fee accounts for decommissioning and removal of two potential USTs, one of which was identified during the Phase I Environmental Site Assessment (ESA) historical records review.
RAWP Item No. 6 -Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment fees.
RAWP Item No. 7 - Backfill placement and compaction assumes soil handling and management fees for the New York City area. Backfill assumes that the site will have to be structurally backfilled to sub-grade (and around SOE components) with material that contains no exceedances of Track 1 Unrestricted Use Soil Cleanup Objectives (6NYCRR-Part 375-6.8(a)). The quantity of soil has been increased by 10% to account for compaction.
RAWP Item No. 8 - SOE is expected to include a conventional soldier piles and timber lagging system with a lateral bracing provided by either tiebacks or steel rakers.

Engineering Fee Assumptions:

Engineering Item No. 2 - The cost assumes collection of 48 samples plus quality assurance/quality control samples. Sample analysis will be for Part 375 VOCs, SVOCs, PCBs, pesticides, cyanide, and metals including hexavalent and trivalent chromium. Fee includes subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory and ASP Category B deliverables.
Engineering Item No. 3 - The assumed duration of the community air monitoring program (CAMP) is 5 months to accommodate the estimated remediation timeline. CAMP fees include full-time equipment rental to facilitate perimeter dust and VOC monitoring.
Engineering Item No. 4- This cost includes oversight during remediation and closure reporting.

TABLE 2: TRACK 2 REMEDIAL COST ESTIMATE
BEACH 21ST STREET DEVELOPMENT
FAR ROCKAWAY, NEW YORK
LANGAN PROJECT NO. 170540601

Item No.	Description of Environmental Item	Quantity		Premium Unit Price		Estimated Premium
REMEDIAL ACTION CONTRACTOR COST						
1	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	–		Allowance		$100,000
2	Excavation of Source Material - Accounts for excavation of material containing concentrations exceeding the Track 2 Soil Cleanup Objectives and/or to depth of the terminus of excavation.	5,200	CY	$25	per CY	$130,000
3	Transport and Disposal of Historic Fill and Native Soil that Exceeds Unrestricted Use Soil Cleanup Objectives - Includes transport vehicles and disposal of material at a permitted facility.	6,950	Tons	$50	per Ton	$347,500
4	Transport and Disposal of Hazardous Waste - Includes an estimated 5% of historic fill material to be disposed of as hazardous, per RI results indicating the presence of hazardous lead.	850	Tons	$165	per Ton	$140,250
5	Underground Storage Tank (AST/UST) Removal - Cleaning, removal, and disposal of potential on-site USTs.	2	Tanks	$10,000	per Tank	$20,000
6	Backfill - Import and placement of clean fill material to bring site to development grade. An additional 10% of material is included to account for compaction.	1,100	CY	$35	CY	$39,000
7	Dust, Odor and Vapor Control - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	6	Months	10,000	per Month	$60,000
8	Support of Excavation (SOE) - Accounts for SOE installation along the site perimeters.	–		Allowance		$137,000
9	Vapor Barrier/Waterproofing Membrane - Accounts for installation of a vapor barrier/waterproofing membrane under the slab and along all subsurface foundation walls	55,700	SF	$12	per SF	$668,400
					REMEDIAL ACTION CONTRACTOR FEES SUBTOTAL	**$1,643,000**
ENGINEERING FEES						
1	Waste Characterization Sampling -To characterize soil for off-site disposal and to delineate hazardous lead.	–		Lump Sum		$75,000
2	Confirmation Sampling - To confirm source material removal (assumes analysis for VOCs, SVOCs, PCBs, pesticides, cyanide, and metals including hexavalent and trivalent chromium for each sample).	55	Samples	$1,200	per Sample	$66,000
3	Community Air Monitoring - This fee includes equipment rental fees associated with implementation of CAMP, which will be performed during ground-intrusive work including excavation and backfill.	6	Months	$3,000	per Month	$18,000
4	BCP Engineering Services - Remedial Oversight, Closure Reporting, Environmental Easement, Post-Excavation Survey	–		Allowance		$260,000
					ENGINEERING FEES SUBTOTAL	**$419,000**
					Remediation Contingency (10% of Contractor Fee Subtotal)	**$165,000**
					Total Estimated Fee	**$2,227,000**
					ESTIMATED REMEDIATION FEE - ALTERNATIVE II	**$2.2 MM**

General Assumptions and Conditions:
1. The density used for conversion from cubic yards to tons was 1.5 tons per cubic yard.
2. Excavation depths were estimated using Remedial Investigation soil sample results and field observations.
3. If soils are encountered below development cut that do not comply with Track 2 Soil Cleanup Objectives (SCOs), this material will be left in place and the project will be considered a Track 4 reme
4. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual fee. Utilization of this fee estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
5. A 6 month period is assumed for remediation and soil handling.
6. VOC = volatile organic compound; SVOC = semivolatile organic compound; PCBs = polychlorinated biphenyls, RI = Remedial Investigation

Contractor Cost Assumptions:
RAWP Item No. 2 - The unit rate provided reflects construction labor to be OSHA certified.
RAWP Item No. 3 - The unit rate provided reflects average disposal facility fees and may vary depending on time of year and facility.
RAWP Item No. 4 - The fee accounts for decommissioning and removal of two potential USTs, one of which was identified during the Phase I Environmental Site Assessment (ESA) historical records review.
RAWP Item No. 6 - Backfill placement and compaction assumes soil handling and management fees for the New York City area. Backfill assumes that the site will have to be structurally backfilled to sub-grade (and around SOE components) with material that contains no exceedances of Track 1 Unrestricted Use Soil Cleanup Objectives (6NYCRR-Part 375-6.8(a)). The quantity of soil has been increased by 10% to account for compaction.
RAWP Item No. 7 - Fee estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment fees.
RAWP Item No. 8 - SOE is expected to include a conventional sloping system.
RAWP Item No. 9 assumes a Grace Preprufe, Liquid Boot, or similar

Engineering Fee Assumptions:
Engineering Item No. 2 - The fee assumes collection of 48 samples plus quality assurance/quality control samples. Sample analysis will be for Part 375 VOCs, SVOCs, PCBs, pesticides, cyanide, and metals including hexavalent and trivalent chromium. Fee includes subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory and ASP Category B deliverables.
Engineering Item No. 3 - The assumed duration of the community air monitoring program (CAMP) is 6 months to accommodate the estimated remediation timeline. CAMP fees include full-time equipment rental to facilitate perimeter dust and VOC monitoring.
Engineering Item No. 4 - The fee excludes implementation of the Remedial Investigation and preparation of the Remedial Investigation Report. The investigation and report was completed prior to entering the Brownfield Cleanup Program. This fee includes oversight during remediation, closure reporting including the site management plan, environmental easement and post-excavation survey.
Engineering Item No. 5 - This task will be completed annually until such a time that the Environmental Easement is extinguished.

TABLE 3: UNRESTRICTED USE SOIL CLEANUP OBJECTIVES

BEACH 21st STREET DEVELOPMENT

FAR ROCKAWAY, NEW YORK

LANGAN PROJECT NO. 170540601

VOCs (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethylene	0.33
1,2,4-Trimethylbenzene	3.6
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,3,5-Trimethylbenzene	8.4
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
2-Butanone	0.12
Acetone	0.05
Benzene	0.06
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
cis-1,2-Dichloroethylene	0.25
Ethyl Benzene	1
Methyl tert-butyl ether (MTBE)	0.93
Methylene chloride	0.05
n-Butylbenzene	12
n-Propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethylene	1.3
Toluene	0.7
trans-1,2-Dichloroethylene	0.19
Trichloroethylene	0.47
Vinyl Chloride	0.02
Xylenes, Total	0.26

Metals (mg/kg)	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, hexavalent	1
Chromium, trivalent	30
Copper	50
Cyanide	27
Lead	63
Manganese	1,600
Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109

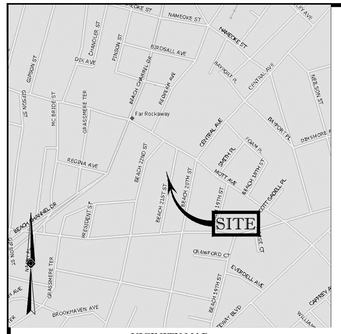
SVOCs (mg/kg)	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	0.33
Naphthalene	12
o-Cresol	0.33
p-Cresol	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	0.0033
4,4'-DDT	0.0033
4,4'-DDD	0.0033
Aldrin	0.005
alpha-BHC	0.02
beta-BHC	0.036
Chlordane (alpha)	0.094
delta-BHC	0.04
Dibenzofuran	7
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
Polychlorinated biphenyls	0.1

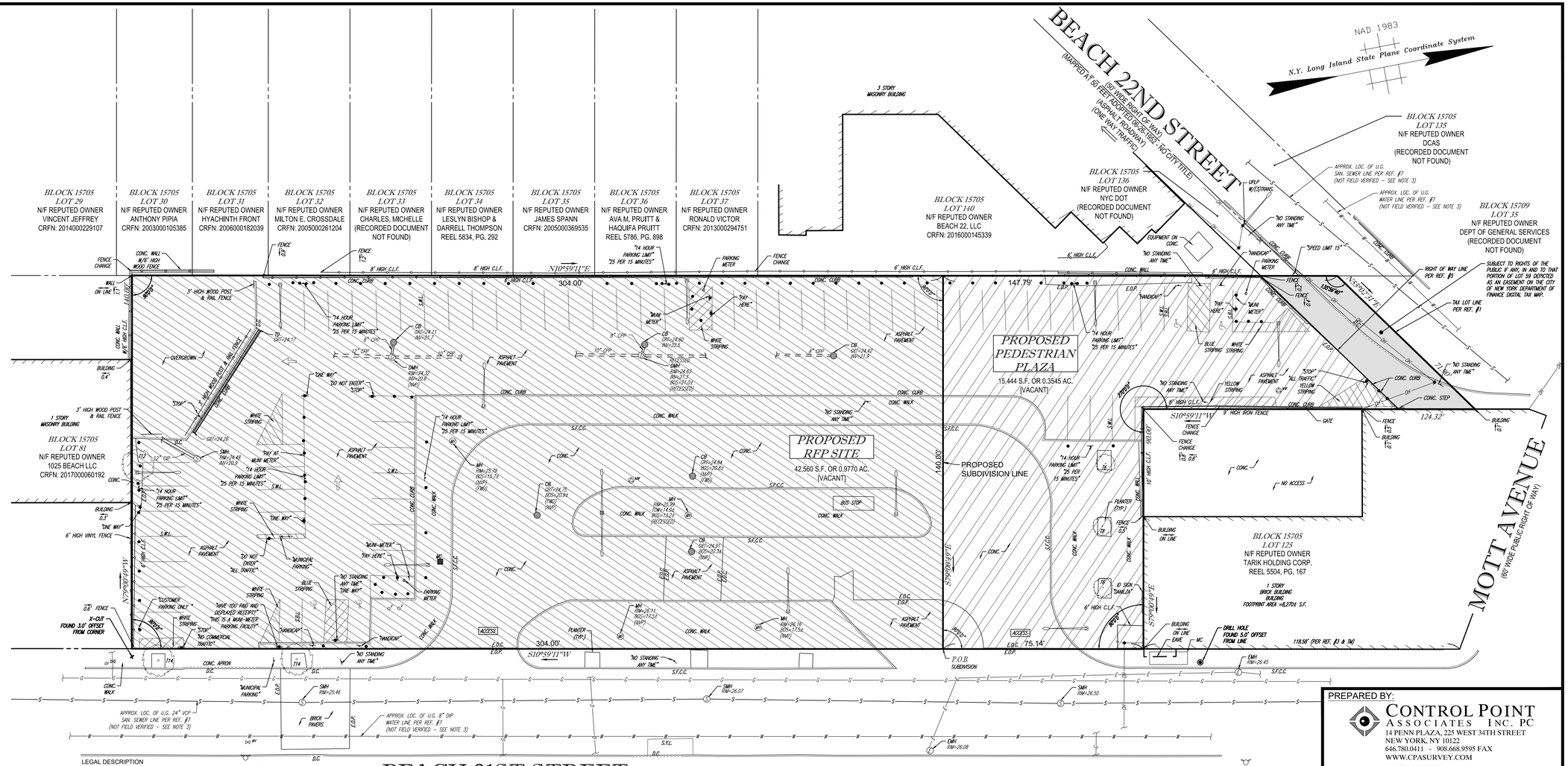
Notes:

1. The above criteria are the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (i.e., the Track 1 soil cleanup objectives).
2. SVOC: semivolatile organic compound
3. VOC: volatile organic compound
4. PCBs: polychlorinated biphenyls
5. mg/kg: milligram per kilogram

APPENDIX A



VICINITY MAP
© 2008 DeLorme, Street Atlas USA
(NOT TO SCALE)



LEGEND

124	EXISTING CONTOUR
125	EXISTING CONTOUR
× 123.45	EXISTING SPOT ELEVATION
× TC 123.45	EXIST. TOP OF CURB ELEVATION
× G 122.95	EXIST. GUTTER ELEVATION
× TW 123.45	EXIST. TOP OF WALL ELEVATION
× BW 122.95	EXIST. BOTTOM OF WALL ELEVATION
× FF 123.45	EXIST. FINISHED FLOOR ELEVATION
× [LG 125.45]	EXIST. LEGAL GRADE ELEVATION
× [88=125.45]	LEGAL GRADE ELEVATION (PER REF. 4) CONVERTED TO NAVD 88 DATUM
OH	OVERHEAD WIRES
G	APPROX. LOC. UNDERGROUND GAS LINE
E	APPROX. LOC. UNDERGROUND ELEC. LINE
S	UNCONFIRMED LOC. UNDERGROUND SAN. LINE
W	UNCONFIRMED LOC. UNDERGROUND WATER LINE
	HYDRANT
WV	WATER VALVE
GV	GAS VALVE
DMH	DRAINAGE/STORM MANHOLE
SMH	SANITARY/SEWER MANHOLE
EMH	ELECTRIC MANHOLE
MH	UNKNOWN MANHOLE
VM	VENT & NUMBER OF VENTS
UP	UTILITY POLE
UPLP	UTILITY POLE/LIGHT POLE
	GUY WIRE
	STREET LIGHT
	PAINTED ARROWS
	SIGN
	DOUBLE SIGN
	BOLLARD/SIGN
	BOLLARD
PM	PARKING METER
MW	MONITORING WELL
	CATCH BASIN OR INLET
	DECIDUOUS TREE & TRUNK SIZE
10	PARKING SPACE COUNT
S.F.C.C.	STEEL FACED CONC. CURB
C.L.F.	CHAIN LINK FENCE
D.C.	DEPRESSED CURB
E.O.C.	EDGE OF CONC.
E.O.P.	EDGE OF PAVEMENT
L.S.A.	LANDSCAPED AREA
M.C.	METAL COVER
(TYP.)	TYPICAL
S.W.L.	SOLID WHITE LINE
S.Y.L.	SOLID YELLOW LINE
S.B.L.	SOLID BLUE LINE
HT.	HEIGHT
BLDG.	BUILDING
B.F.P.A.	BUILDING FOOTPRINT AREA
N.V.P.	NO VISIBLE PIPE
FWD	FILLED W/DEBRIS
BOS	BOTTOM OF STRUCTURE
CPP	CORRUGATED PLASTIC PIPE
(TM)	TAX MAP DIMENSION
#	TITLE REPORT EXCEPTION
T.O'	OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE

811 NEW YORK CITY ONE CALL CENTER
1-800-272-4480
IT'S THE LAW - CALL THEN DIG SAFE

PARKING SPACE COUNT

REGULAR SPACES	62
HANDICAP SPACES	4
TOTAL SPACES	66

LEGAL DESCRIPTION
PROPOSED PEDESTRIAN PLAZA
PART OF LOT 59, BLOCK 15705
BOROUGH AND COUNTY OF QUEENS
CITY AND STATE OF NEW YORK

BEGINNING AT A POINT ON THE WESTERLY SIDELINE OF BEACH 21ST STREET (50' WIDE PUBLIC RIGHT OF WAY), F.K.A. WHITE STREET, SAID POINT BEING DISTANT SOUTHERLY 118.58 FEET FROM THE INTERSECTION OF SAID SIDELINE WITH THE SOUTHWESTERLY SIDELINE OF MOTT AVENUE (60' WIDE PUBLIC RIGHT OF WAY), AND RUNNING, THENCE:

1. ALONG THE WESTERLY SIDELINE OF BEACH 21ST/ STREET, SOUTH 10 DEGREES 59 MINUTES 11 SECONDS WEST, A DISTANCE OF 75.14 FEET TO A POINT IN THE DIVIDING LINE BETWEEN THE PROPOSED SITE AND PROPOSED ADJACENT PLAZA, AS SHOWN ON THE HEREINAFTER MENTIONED MAP, THENCE;
2. LEAVING THE WESTERLY SIDELINE OF BEACH 21ST/ STREET, NORTH 79 DEGREES - 00 MINUTES - 49 SECONDS WEST, A DISTANCE OF 140.00 FEET TO A POINT, THENCE;
3. NORTH 10 DEGREES - 59 MINUTES - 11 SECONDS EAST, A DISTANCE OF 147.79 FEET TO A POINT IN THE DIVIDING LINE BETWEEN LOT 59, BLOCK 15705, AND LOT 35, BLOCK 15709, THENCE;
4. ALONG SAID THE DIVIDING LINE BETWEEN LOT 59, BLOCK 15705, AND LOT 35, BLOCK 15709, NORTH 55 DEGREES - 02 MINUTES - 31 SECONDS EAST, A DISTANCE OF 71.90 FEET TO A POINT, THENCE;
5. SOUTH 10 DEGREES - 59 MINUTES - 11 SECONDS WEST, A DISTANCE OF 124.32 FEET TO A POINT, THENCE;
6. SOUTH 79 DEGREES 00 MINUTES 49 SECONDS EAST, A DISTANCE OF 90.00 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 15,444 S.F./0.3545 AC.

THE ABOVE DESCRIPTION IN ACCORDANCE WITH A CERTAIN MAP ENTITLED, "DOWNTOWN FAR ROCKAWAY EIS AND ULURP DOT SITE PLAN, BLOCK 15705, LOTS 59 AND 69" PREPARED BY BEYER, BLINDER, BELLE, DATED AUGUST 16, 2016.

REFERENCES:

1. THE NEW YORK CITY DIGITAL TAX MAP OF THE BOROUGH OF QUEENS, QUEENS COUNTY, CITY AND STATE OF NEW YORK.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, CITY OF NEW YORK, NEW YORK, BRONX, RICHMOND, NEW YORK, QUEENS AND KINGS COUNTIES," PANEL 382 OF 457, MAP NUMBER 3604970382F, MAP REVISED: SEPTEMBER 5, 2007.
3. MAP ENTITLED "ALTA SURVEY TASK ORDER 28770009-12, PROPERTY SURVEY, 1037 BEACH 21ST STREET, FAR ROCKAWAY, STATE OF NEW YORK" PREPARED BY HAKS, DATED AUGUST 2016, LAST ISSUED 09-13-16 AS ISSUE "B".
4. SECTIONAL MAP NO. 231, PROVIDED BY THE BOROUGH OF QUEENS TOPOGRAPHICAL BUREAU, DATED: MAY 21, 1914.
5. ALTERATION MAP NO. 3308, PROVIDED BY THE BOROUGH OF QUEENS TOPOGRAPHICAL BUREAU, DATED: FEBURARY 20, 1951.
6. ALTERATION MAP NO. 3756, PROVIDED BY THE BOROUGH OF QUEENS TOPOGRAPHICAL BUREAU, DATED: JUNE 2, 1954.
7. MAPS SHOWING UNDERGROUND WATER & SEWER FACILITIES IN THE VICINITY PROVIDED BY THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WATER AND SEWER OPERATIONS.

BEACH 21ST STREET

(F.K.A. WHITE STREET)
(50' WIDE PUBLIC RIGHT OF WAY)
(MAPPED AT 50 FEET - ACQUIRED TO FULL WIDTH 12-11-1925)
(ASPHALT ROADWAY)
(ONE WAY TRAFFIC)

LEGAL DESCRIPTION
PROPOSED RFP SITE
PART OF LOT 59 AND LOT 69, BLOCK 15705
BOROUGH AND COUNTY OF QUEENS
CITY AND STATE OF NEW YORK

BEGINNING AT A POINT ON THE WESTERLY SIDELINE OF BEACH 21ST/ STREET (50' WIDE PUBLIC RIGHT OF WAY), F.K.A. WHITE STREET, SAID POINT BEING DISTANT SOUTHERLY 193.72 FEET FROM THE INTERSECTION OF SAID SIDELINE WITH THE SOUTHWESTERLY SIDELINE OF MOTT AVENUE (60' WIDE PUBLIC RIGHT OF WAY), AND RUNNING, THENCE:

1. ALONG THE WESTERLY SIDELINE OF BEACH 21ST/ STREET, SOUTH 10 DEGREES 59 MINUTES 11 SECONDS WEST, A DISTANCE OF 304.00 FEET TO A POINT, THENCE;
2. LEAVING THE WESTERLY SIDELINE OF BEACH 21ST/ STREET, NORTH 79 DEGREES - 00 MINUTES - 49 SECONDS WEST, A DISTANCE OF 140.00 FEET TO A POINT, THENCE;
3. NORTH 10 DEGREES - 59 MINUTES - 11 SECONDS EAST, A DISTANCE OF 304.00 FEET TO A POINT IN THE DIVIDING LINE BETWEEN THE PROPOSED SITE AND PROPOSED ADJACENT PLAZA, AS SHOWN ON THE HEREINAFTER MENTIONED MAP, THENCE;
4. ALONG SAID DIVIDING LINE, SOUTH 79 DEGREES 00 MINUTES 49 SECONDS EAST, A DISTANCE OF 140.00 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 42,560 S.F./0.9770 AC.

THE ABOVE DESCRIPTION IN ACCORDANCE WITH A CERTAIN MAP ENTITLED, "DOWNTOWN FAR ROCKAWAY EIS AND ULURP DOT SITE PLAN, BLOCK 15705, LOTS 59 AND 69" PREPARED BY BEYER, BLINDER, BELLE, DATED AUGUST 16, 2016.

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY THE NEW YORK CITY ONE-CALL SYSTEM (1-800-272-4480) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST.
SERIAL NUMBER(S): 182691015

UTILITY COMPANY

NATIONAL GRID LONG ISLAND GAS NY
NATIONAL GRID
LONG ISLAND POWER AUTHORITY
VERIZON COMMUNICATIONS
PSEG LONG ISLAND ELECTRIC UTILITY

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

SCHEDULE A

PARCEL A:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AS DESIGNATED AS LOT 59 IN BLOCK 15705 ON THE TAX MAP OF THE COUNTY OF QUEENS IN THE CITY OF NEW YORK AS SAME EXISTED ON FEBRUARY 7, 2018.

EXCEPTING THEREFROM SO MUCH THAT LIES WITHIN THE BED OF BEACH 22ND STREET.

FOR INFORMATION ONLY: SAID PREMISES ARE KNOWN AS 1037-1039 BEACH 21ST STREET, A/K/A 10-37/10-39 BEACH 21ST STREET, A/K/A 10-57 BEACH 21ST STREET, A/K/A 10-61 BEACH 21ST STREET, FAR ROCKAWAY, NY AND DESIGNATED AS BLOCK 15705 LOT 59 AS SHOWN ON THE TAX MAP OF THE CITY OF NEW YORK, COUNTY OF QUEENS

PARCEL B:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AS DESIGNATED AS LOT 69 IN BLOCK 15705 ON THE TAX MAP OF THE COUNTY OF QUEENS IN THE CITY OF NEW YORK AS SAME EXISTED ON FEBRUARY 7, 2018.

FOR INFORMATION ONLY: SAID PREMISES ARE KNOWN AS 10-59 BEACH 21ST STREET, A/K/A 1059 BEACH 21ST STREET, FAR ROCKAWAY, NY AND DESIGNATED AS BLOCK 15705 LOT 69 AS SHOWN ON THE TAX MAP OF THE CITY OF NEW YORK, COUNTY OF QUEENS.

PROPOSED SUBDIVISION (LOTS 69 AND P/O LOT 59 IN BLOCK 15705)

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK

BEGINNING AT A POINT ON THE WESTERLY SIDELINE OF BEACH 21ST STREET (50' WIDE PUBLIC RIGHT OF WAY), F.K.A. WHITE STREET, SAID POINT BEING DISTANT SOUTHERLY 193.72 FEET FROM THE INTERSECTION OF SAID SIDELINE WITH THE SOUTHWESTERLY SIDELINE OF MOTT AVENUE (60' WIDE PUBLIC RIGHT OF WAY), AND RUNNING, THENCE:

1. ALONG THE WESTERLY SIDELINE OF BEACH 21ST STREET, SOUTH 10 DEGREES 59 MINUTES 11 SECONDS WEST, A DISTANCE OF 304.00 FEET TO A POINT, THENCE;
2. LEAVING THE WESTERLY SIDELINE OF BEACH 21ST STREET, NORTH 79 DEGREES - 00 MINUTES - 49 SECONDS WEST, A DISTANCE OF 140.00 FEET TO A POINT, THENCE;
3. NORTH 10 DEGREES - 59 MINUTES - 11 SECONDS EAST, A DISTANCE OF 304.00 FEET TO A POINT IN THE DIVIDING LINE BETWEEN THE PROPOSED SITE AND PROPOSED ADJACENT PLAZA, AS SHOWN ON THE HEREINAFTER MENTIONED MAP, THENCE;
4. ALONG SAID DIVIDING LINE, SOUTH 79 DEGREES 00 MINUTES 49 SECONDS EAST, A DISTANCE OF 140.00 FEET TO THE POINT AND PLACE OF BEGINNING

THE ABOVE DESCRIPTION IN ACCORDANCE WITH A CERTAIN MAP ENTITLED, "DOWNTOWN FAR ROCKAWAY EIS AND ULURP DOT SITE PLAN, BLOCK 15705, LOTS 59 AND 69" PREPARED BY BEYER, BLINDER, BELLE, DATED AUGUST 16, 2016.

SURVEYOR'S DESCRIPTION

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF QUEENS, CITY AND STATE OF NEW YORK, KNOWN AS DESIGNATED AS LOTS 59 AND 69 IN BLOCK 15705 ON THE TAX MAP OF THE COUNTY OF QUEENS IN THE CITY OF NEW YORK.

BEGINNING AT A POINT IN THE WESTERLY RIGHT OF WAY LINE OF BEACH 21ST STREET (50 FEET WIDE), SAID POINT BEING A DISTANCE OF 118.58 FEET FROM THE INTERSECTION OF SAID BEACH 21ST STREET AND MOTT AVENUE (60 FEET WIDE), RUNNING THENCE;

1. ALONG THE SAID WESTERLY LINE OF BEACH 21ST STREET, SOUTH 10 DEGREES 59 MINUTES 11 SECONDS WEST A DISTANCE OF 379.14 FEET TO A POINT IN DIVIDING LINE OF LOT 59 AND 81, BLOCK 15705, THENCE;
2. ALONG SAID DIVIDING LINE BETWEEN LOTS 59 AND 81, NORTH 79 DEGREES 00 MINUTES 49 SECONDS WEST A DISTANCE OF 140.00 FEET TO A POINT IN DIVIDING LINE OF LOT 59 AND 30, BLOCK 15705, THENCE;
3. ALONG THE DIVIDING LINE BETWEEN LOTS 59 AND LOTS 30, 31, 32, 33, 34, 35, 36, 37, 140, 136 AND 135, NORTH 10 DEGREES 59 MINUTES 11 SECONDS EAST A DISTANCE OF 451.79 FEET TO A POINT IN THE DIVIDING LINE BETWEEN LOT 59, BLOCK 15705, AND LOT 35, BLOCK 15709, THENCE;
4. ALONG SAID DIVIDING LINE BETWEEN LOT 59, BLOCK 15705, AND LOT 35, BLOCK 15709, NORTH 55 DEGREES 02 MINUTES 31 SECONDS EAST A DISTANCE OF 71.90 FEET TO A POINT IN THE DIVIDING LINE BETWEEN LOTS 59 AND 125, BLOCK 15705, THENCE; THE FOLLOWING TWO (2) COURSES ALONG SAID DIVIDING LINE BETWEEN LOTS 59 AND 125, BLOCK 15705;
5. SOUTH 10 DEGREES 59 MINUTES 11 SECONDS WEST A DISTANCE OF 124.32 FEET TO A POINT, THENCE;
6. SOUTH 79 DEGREES 00 MINUTES 49 SECONDS EAST A DISTANCE OF 90.00 FEET TO THE POINT AND PLACE OF BEGINNING.

THE LAND SHOWN IN THIS SURVEY IS THE SAME AS THAT DESCRIBED IN A TITLE REPORT PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, COMMITMENT NO. 2000072, WITH AN EFFECTIVE DATE OF AUGUST 27, 2018, AND AMENDED OCTOBER 19, 2018.

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

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NO.	DATE	BY	DESCRIPTION	APPROVED
2	04-11-19	R.A.B.	REVISED PER CLIENT COMMENTS	D.P.S.
1	03-25-19	J.P.J.	REVISED PER CLIENT COMMENTS	D.P.S.

REVISIONS

PROJECT NAME

THE COMMUNITY BUILDERS, INC.
BEACH 21ST STREET
LOTS 59 & 69, BLOCK 15705
BOROUGH & COUNTY OF QUEENS
CITY & STATE OF NEW YORK

DRAWING TITLE

PROPOSED SUBDIVISION PLAT

SEAL & SIGNATURE

NOT VALID UNTIL SEALED

04-11-2019
JAMES D. SENS DATE
NEW YORK PROFESSIONAL LAND SURVEYOR #050846-1

FIELD DATE:	10-01-2018
FIELD BK:	18-30
F. B. PAGE:	49
DATE:	10-22-2018
SCALE:	1"=20'
PROJECT No:	01-180356
DRAWING BY:	PRIMA
CHK BY:	D.S.
APPROVED BY:	J.D.S.
DWG No:	V-001.0.0
CAD FILE No:	01-180365-00
PAGE No:	1 OF 1

APPENDIX B

AKRF

Environmental and Planning Consultants

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June 30, 2016

Nathan Gray, AICP
Vice President, Planning
New York City Economic Development Corporation
110 William Street
New York, NY 10038

Re: Phase I Environmental Site Assessment
Far Rockaway Municipal Parking Field – Queens, New York
AKRF Project Number: 20552

Dear Mr. Gray:

AKRF, Inc. is pleased to submit this Phase I Environmental Site Assessment Report for the above-referenced Property. This report includes the findings of a reconnaissance of the Property, an evaluation of readily available historical information and selected environmental databases and electronic records. AKRF, Inc. met the requirements of American Society for Testing and Materials (ASTM) as established by ASTM Standard E1527-13 unless noted otherwise in Section 8.0: "Limitations and Data Gaps".

We appreciate the opportunity to provide you with our services. If you should have any questions, please do not hesitate to contact us.

Sincerely,
AKRF, Inc.

Marcus Simons
Senior Vice President

Asya Bychkov
Environmental Engineer

Enc.

Far Rockaway Municipal Parking Field

Tax Block 15705, Lots 59 and 69

QUEENS, NY

Phase I Environmental Site Assessment

AKRF Project Number: 20552

Prepared for:

New York City Economic Development Corporation
110 William Street
New York, NY 10038

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

JUNE 2016

EXECUTIVE SUMMARY

AKRF, Inc. (AKRF) was retained by the New York City Economic Development Corporation (EDC) to perform a Phase I Environmental Site Assessment of a Property located at 1037-1059 Beach 21st Street (also identified as Queens Tax Block 15705, Lots 59 and 69). The Property consisted of an approximately 58,000-square foot asphalt-paved municipal parking field with small landscaped areas.

This Phase I Environmental Site Assessment was performed in conformance with ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice*. Any exceptions to, or deletions from, the Standard are described in Section 8.0. The term "Recognized Environmental Condition" or REC means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The Standard also includes definitions of Historic REC (HREC), Controlled REC (CREC), and *De Minimis* Condition. A *De Minimis* Condition is defined as an environmental concern that is not a threat to human health or the environment and would not be subject to enforcement action.

The Property was historically developed with commercial, residential and auto-related buildings, including: a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; a lumber yard; a screen manufacturer; a publishing company; roofing works; and sheet metal works. A Long Island Railroad (LIRR) rail spur historically traversed the western portion of the Property. At some time between 1951 and 1979, all structures on the Property were demolished, the rail spur was removed, and the Property became a municipal parking lot. The surrounding area was mixed-use, including residential and commercial uses, churches, vacant buildings and lots, parking lots, and auto repair.

This assessment revealed the following:

Recognized Environmental Conditions (RECs)

- Historical Sanborn maps showed two gasoline underground storage tanks (USTs) in the western portion of the Property (1912 map), and in the northeastern corner of the Property (1933-1951 maps). The status of these tanks could not be ascertained. Additional aboveground or underground petroleum storage tanks may have been associated with historical on-site structures. Any such tanks may have been removed or, if they were underground, may remain beneath the Property.
- As noted above, historical Property uses included a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; a lumber yard; a screen manufacturer; a publishing company; a roofing works; and a sheet metal works.
- The, historical on-site rail spur may have been associated with use of creosote (a rail tie treatment containing semi-volatile organic compounds) and/or other oils. Additionally, spills from trains could have occurred.
- Various past and/or present off-site uses with some potential to affect the Property were identified, including: nearby rail tracks; auto repair shops (including two shops on the Property block, of which one was a historical filling station with a reported closed-status spill, and the second had evidence of poor housekeeping); filling stations; factories; paint and oil shops; printers; a sign painter; dry cleaners; and registered Petroleum Bulk Storage (PBS) facilities. A vacant, unpaved lot with an abandoned 55-gallon drum, apparent remnants of building foundations, and evidence of construction and demolition (C&D) debris in soil was observed south-adjacent to the Property.
- A Property survey provided by the NYC Department of Transportation (DOT), the Property owner, indicated that while some on-site storm drains appeared to be connected to the municipal sewer

system), others had no visible discharge pipes (i.e., they may be dry wells discharging to the subsurface).

De Minimis Condition

- Spill No. 0408292 at the Property was reported to NYSDEC in October 2004. The spill listing indicated that two abandoned 55-gallon drums of motor oil were found at the municipal parking lot, emptied, and removed. The spill listing was closed in December 2004. Based on listing details, this spill is not anticipated to have affected subsurface conditions.

Other on-site environmental concerns (items outside the scope of E1527-13 like ACM, LBP and/or PCBs in building materials or fill/debris)

- No suspect asbestos-containing materials (ACM) were observed on the Property. Painted surfaces (pavement stripes, signs and bollards) may contain lead-based paint; these surfaces were observed to be in good condition. If demolition debris from historical structures is present beneath the Property, it may contain ACM and/or lead-based paint.
- Fluorescent lighting fixtures on the Property may contain polychlorinated biphenyl (PCB)-containing components and/or mercury. If demolition debris is present beneath the Property, it may contain PCB-containing electrical equipment or lighting fixtures.
- A cluster of apparent plastic groundwater monitoring wells was observed in a small vegetated area in the southwestern corner of the Property. According to DOT, the apparent monitoring wells were associated with a New York City Department of Environmental Protection (NYCDEP) porous pavement pilot study, rather than an environmental investigation.

Potential for Vapor Encroachment

This Phase I assessment identified a potential for subsurface vapors and thus a potential for vapor encroachment into future buildings at the Property, based on the RECs noted above.

RECOMMENDATIONS

- Subsurface conditions beneath the Property may have been affected by past or present, on- or off-site uses. AKRF recommends a subsurface investigation involving the collection and laboratory analysis of subsurface samples prior to Property redevelopment. It is possible that this investigation may uncover evidence of a petroleum spill or other situation reportable to NYSDEC and/or other regulatory agencies.
- If any petroleum storage tanks are encountered during Property redevelopment, they should be properly closed in accordance with the applicable regulations, which may include NYSDEC registration and/or spill reporting requirements.
- Unless there is labeling or test data indicating that fluorescent lighting fixtures do not contain PCBs and/or mercury, if disposal is required, it should be performed in accordance with applicable federal, state, and local regulations and guidelines.
- If demolition debris containing any suspect ACM, or PCB-containing electrical equipment or fluorescent lighting fixtures, is encountered beneath the Property, such materials must be properly handled and disposed of in accordance with the applicable regulations.
- Any activities (such as renovation or demolition) with the potential to disturb lead-based paint must be performed in accordance with applicable requirements (including federal Occupational Safety and Health Administration regulation 29 CFR 1926.62 - *Lead Exposure in Construction*).

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FIGURES

APPENDICES

1.0 INTRODUCTION

AKRF, Inc. (AKRF) was retained by the New York City Economic Development Corporation (EDC) to perform a Phase I Environmental Site Assessment (ESA) of a Property located at 1037-1059 Beach 21st Street (also identified as Queens Tax Block 15705, Lots 59 and 69). The Property consisted of an approximately 58,000-square foot asphalt-paved municipal parking field with small landscaped areas. The surrounding area was mixed-use and included commercial, residential, institutional (churches and a school), warehouse, and auto-related (parking and auto repair) uses, as well as numerous vacant lots.

The scope of services for this assessment was in conformance with ASTM Standard E1527-13 (*Standard Practice for Environmental Site Assessments: Phase I ESA Practice)*. Any exceptions to, or deletions from, this practice are described in Section 8.0. The scope included the following:

- Observations of the Property (reconnaissance) to identify potential sources or indications of hazardous substances, including: aboveground storage tanks (ASTs); underground storage tanks (USTs); tank vents and fill ports; transformers and other items that could contain polychlorinated biphenyls (PCBs), drums or areas where hazardous materials were used, stored, or disposed; stained surfaces and soils; stressed vegetation, leaks, odors. In addition, neighboring properties were viewed, but only from public rights-of-way, to identify similar concerns.
- Readily available geological and groundwater (hydrogeological) information was evaluated to assist in determining the potential for contamination migration (including in soil, soil vapor and/or groundwater) within, from and onto the Property.
- The reconnaissance of the Property included observation of any readily visible suspect asbestos-containing materials (ACMs) and potential lead-based paint. However, no samples were collected or analyzed and this reconnaissance provides neither definitive nor exhaustive information.
- A state database of county-level radon concentrations was used to determine typical indoor radon levels and compare them to United States Environmental Protection Agency (USEPA) guidelines.
- Historical fire insurance maps for the Property and nearby sites were reviewed to evaluate historical land uses.
- The following federal regulatory databases were reviewed to determine the regulatory status of the Property and other properties within the ASTM-defined radii: National Priority List (NPL); Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); Emergency Response Notification System (ERNS); Toxic Release Inventory System (TRIS); the Permit Compliance System of Toxic Wastewater Discharges (WWD); the Air Discharge Facilities Index (ADF) and the USEPA Civil Enforcement Docket. The federal listing of facilities which are subject to corrective action under the Resource Conservation and Recovery Act (CORRACTS) is discussed with the State databases of RCRA listings.
- The following state regulatory databases were reviewed to determine the regulatory status of the Property and other properties within predetermined radii: petroleum and hazardous material spills (SPILLS); Resource Conservation and Recovery Act Notifiers (RCRA); Chemical Bulk Storage (CBS); Solid Waste Facilities (SWF); Petroleum Bulk Storage (PBS); State Inactive Hazardous Waste Disposal Sites (SHWS); Hazardous Substance Disposal Site Draft Study; Hazardous Waste Treatment, Storage or Disposal Facilities; Major Oil Storage Facilities (MOSF); Brownfield Cleanup Program (BCP); and Historic Utility Sites.

- Local agency reviews including NYC Fire Department records (obtained as part of the database search), online Buildings and Finance Departments records, and Environmental Quality Review (CEQR) E Designation Sites were conducted for the Property only.

2.0 PHYSICAL SITE DESCRIPTION

On May 19, 2016, Ms. Asya Bychkov of AKRF conducted a reconnaissance of the Property. No one was available at the Property (a municipal parking lot) to answer pertinent questions. Neighboring properties were also viewed, but only from public rights-of way. The weather was sunny and approximately 75 °F, and the visibility good. Photographs from the reconnaissance are included in Appendix A.

2.1 General Site Conditions

The Property consisted of an asphalt-paved municipal parking lot with concrete sidewalks. A bus stop was located on the eastern side of the parking lot. Storm drains were observed throughout the parking lot. The pavement was noted to be in good condition. Small areas of surface staining (likely from parked vehicles) were noted, but did not appear likely to affect subsurface conditions.

A triangular grass area was located at the southwestern corner of the parking lot. No odors, staining, or stressed vegetation were noted in this area. Two clusters of apparent plastic monitoring wells were observed in this area. Mr. Nathan Gray, an EDC representative, contacted the NYC Department of Transportation (DOT, the Property owner), which indicated that the wells were associated with a failed NYC Department of Environmental Protection (DEP) porous pavement/bioswale pilot test.

2.2 Topography and Hydrogeology

Based on the U.S. Geological Survey Far Rockaway Quadrangle map, the Property is approximately 25 feet above mean sea level and is located on a hilltop, with surface topography sloping slightly down toward the northwest and southeast, away from the Property. Based on USGS mapping, bedrock is anticipated to be over 1,000 feet below grade, and groundwater is anticipated to be approximately 20 feet below grade. Based on surface topography, groundwater is likely to flow in a northwesterly direction toward Motts Basin (an inlet of Jamaica Bay approximately 2,200 feet away), or in a southeasterly direction toward Reynolds Channel (part of East Rockaway Inlet approximately 3,800 feet away). However, actual groundwater depth and flow direction may be affected by tides, past or present pumping, subsurface openings or obstructions, and other factors beyond the scope of this assessment. Groundwater in this portion of Queens is not used as a source of potable water (the municipal water supply uses upstate reservoirs).

2.3 Storage Tanks

2.3.1 Underground Storage Tanks (USTs)

During the reconnaissance, no evidence, such as vent pipes, fill caps, or concrete patches, was observed that would indicate USTs are or were present. No records pertaining to USTs were identified in the regulatory database, or computerized NYC Fire Department (FDNY) or NYC Buildings Department (DOB) records.

Off-site USTs are discussed in Section 5.2.2.

2.3.2 Aboveground Storage Tanks (ASTs)

As noted in Section 2.3.1, during the reconnaissance, no evidence, such as tanks or vaults likely to contain tanks, vent pipes or fill caps was observed during the reconnaissance to indicate that ASTs are or were present. No records pertaining to ASTs were identified in the regulatory database, or computerized FDNY or DOB records.

Off-site ASTs are discussed in Section 5.2.2.

2.4 Polychlorinated Biphenyls (PCBs)

Until 1979, polychlorinated biphenyls (PCBs), which provided beneficial insulating properties, were used in a variety of products, in particular electrical equipment such as transformers, capacitors, fluorescent light fixtures, and voltage regulators, but also in hydraulic fluids and some other products such as caulking.

Based on the parking lot's age (constructed in approximately 1979), fluorescent lighting fixtures may contain PCBs. If demolition debris is present beneath the Property, it may contain PCB-containing electrical equipment or lighting fixtures. Additionally, fluorescent lighting fixtures may contain mercury.

2.5 Lead-Based Paint

After 1977, the use of lead-based paint inside commercial structures was restricted and its use elsewhere became less common, but lead-based paint may still sometimes be used outdoors. Lead-based paint can present a hazard, particularly to children, especially when it is in poor condition.

Painted surfaces (pavement stripes, signs and bollards) were observed to be in good condition. Additionally, if demolition debris is present beneath the Property, it may contain lead-based paint.

Activities (such as renovation or demolition) with the potential to disturb lead-based paint are subject to a variety of requirements, including US Occupational Safety and Health Administration regulation 29 CFR 1926.62 (Lead Exposure in Construction).

2.6 Utilities

National Grid provided electricity to the Property and surrounding area. A site survey provided by DOT indicated that some on-site storm drains were noted to have pipes (i.e., a potential connection to the municipal sewer system), while others had no visible pipes (i.e., these drains may be dry wells).

2.7 Waste Management and Chemical Handling

At the time of the reconnaissance, trash bins were observed on the Property. No chemical storage or evidence of dumping was noted.

2.8 Radon

Radon is a colorless, odorless gas most commonly produced by the natural radioactive decay of certain rocks. According to a New York State Department of Health database, the average radon level in Queens is 1.24 picocuries/liter in basements and 0.61 picocuries/liter on ground floors, both below the USEPA recommended action level of 4.0 picocuries/liter.

3.0 ASBESTOS-CONTAINING MATERIALS (ACM)

Asbestos refers to a group of natural minerals that provide good fire resistance and insulation. Asbestos is also commonly found in vinyl flooring, plaster, sheetrock, joint compound, ceiling tiles, roofing materials, gaskets, mastics, caulks and other products. Materials containing more than one percent asbestos are considered asbestos-containing materials (ACM). ACM are classified as either friable (i.e., more readily release fibers, such as most spray-applied fireproofing) or non-friable (such as floor tiles).

No suspect ACM were observed during the reconnaissance. If demolition debris is present beneath the Property, it may contain ACM. Additionally, underground utilities may include ACM components.

4.0 ADJACENT LAND USE

The surrounding area was mixed-use, including residential and commercial uses, churches, vacant buildings and lots, parking lots, and auto repair. The two nearest auto repair shops were located west-adjacent to the Property, and approximately 220 feet south of the Property on the same block. The west-adjacent auto repair shop included a large unpaved area used to store tires, auto maintenance chemicals in five-gallon containers, 55-gallon drums, apparent waste oil containers, and an apparent abandoned 275 gallon AST. The auto repair shop to the south included an unpaved area north of the shop building, which was also used for repair activities at the time of the reconnaissance. A large vacant, unpaved lot with an abandoned 55-gallon drum, apparent remnants of building foundations, and evidence of construction and demolition (C&D) debris in soil was observed south-adjacent to the Property. Elevated A Line subway tracks and the Mott Avenue-Far Rockaway subway station were located approximately 150 feet west of the Property. Dry cleaners were observed approximately 370 feet north of the Property, and approximately 320 feet northwest of the Property.

5.0 PROPERTY HISTORY AND RECORDS REVIEW

5.1 Prior Ownership and Usage

5.1.1 Historical Land Use maps

Historical maps were reviewed for indications of uses (or other evidence) suggesting hazardous material generation, usage or disposal on or near the Property. Specifically, Sanborn Fire Insurance Maps from 1901, 1912, 1933, 1951, 1982, 1990, and 2015 were reviewed.

1901

The Property was developed with one- and two-story structures, including three dwellings, a store, a coal and wood yard, and accessory sheds. A LIRR rail spur ran north-south across the western portion of the Property. The remainder of the Property consisted of yards, and open land along the rail spur.

The Property was bounded to the east by White Street (the current Beach 21st Street). The southern portion of the Property block, and surrounding blocks, were developed with dwellings, churches, hotels and commercial buildings. The western portion of the Property block was vacant. A carriage shop, a coal yard, a bottling works, and a Chinese laundry (potential dry cleaner) were noted south of the Property on the same block. Additional Chinese laundries were noted on the south-

and east-adjacent blocks. The south-adjacent block also included a carriage repair shop and two paint and oil shops (one with a gasoline UST). Additional LIRR tracks were shown approximately 150 feet west of the Property, running northeast-southwest.

1912

One dwelling shown on the Property on the 1901 map had been demolished. New structures constructed on the Property included a barn, four stores, and a three-story (plus basement) furniture factory with upholstering and painting areas. A gasoline UST was shown behind the furniture factory, in the west-central portion of the Property adjacent to the on-site rail spur.

The surrounding area was more densely developed with dwellings, churches, schools and commercial uses compared to the 1901 map. The carriage shop, bottling works, and Chinese laundry shown on the Property block on the 1901 map were no longer present. Chinese laundries and paint and oil shops shown on the south- and east-adjacent blocks on the 1901 map were no longer present.

1933

Sheds shown in the northern portion of the Property on the 1912 map were labeled as an auto repair shop and paint storage. A gasoline UST was shown in the northeastern corner of the Property. The former coal and wood yard in the central portion of the Property had been replaced by an upholsterer and an unspecified store. The northern half of the former furniture factory shown on the 1912 map was illegible, while the southern half was labeled as woodworking. A gasoline UST was no longer shown behind this facililty. A dwelling and sheds shown in the southern portion of the Property on the 1912 map had been demolished and replaced with a carpentry shop with lumber storage.

Two printers and a sign painter were shown east of the Property across Beach 21st Street. A building material and paint store, coal storage, and an auto repair shop with gasoline USTs were shown in the southern portion of the Property block. A filling station with auto repair was shown at the southwestern corner of the east-adjacent block. The carriage repair shop shown on the south-adjacent block on the 1912 map was replaced by a bottling works. No further significant changes from the 1912 map were noted in the surrounding area.

1951

The paint storage shed shown on the northern side of the Property on the 1933 map had been demolished. The upholsterer in the central portion of the Property was replaced by a tin shop. The woodworking facility in the southern portion of the Property was replaced by a lumber yard. Paint storage was shown in the carpentry shop on the southern side of the Property.

A roofing materials warehouse was shown south-adjacent to the Property, with stores and two auto repair shops with gasoline USTs further south on the same block. The formerly vacant western portion of the Property block was developed with stores, dwellings, a Postal Office garage, and a bottling works with a gasoline UST. A sign painter was no longer shown on the east-adjacent block. A dry cleaner was shown approximately 390 feet south of the Property on the south-adjacent

block. No further significant changes from the 1933 map were noted in the surrounding area.

1982

All structures on the Property had been demolished, and the Property was shown as a vacant lot with a rail spur along its western side. Portions of the rail spur appeared to have been removed.

A printer was shown north of the Property on the same block. Most structures shown on the Property block on the 1951 map had been demolished, although several stores and dwellings remained in its southwestern portion. An auto repair shop and two filling stations had been constructed south of the Property on this block. A filling station was no longer shown at the southwestern corner of the east-adjacent block, but the auto repair shop shown on the 1951 map remained. The former LIRR tracks west of the Property were labeled as part of the NYC Transit system and no longer extended northeast past Mott Avenue, terminating at Far Rockaway Station on the south side of Mott Avenue. The rail spur formerly extending south from the Property was no longer shown.

1990

The Property remained similar to the 1982 map.

A filling station shown on the 1982 map at the southeastern corner of the Property block was labeled as an auto repair shop. A dry cleaner was no longer shown on the block to the south. No further significant changes from the 1982 map were noted on the Property or in the surrounding area.

2015

The Property was labeled as a public parking lot with a bus terminal. No rails were shown on the Property.

An auto repair shop was shown west-adjacent to the Property. New dwellings were shown on the western portion of the Property block. No further significant changes from the 1990 map were noted in the surrounding area.

To summarize, the historical maps indicated that the Property was historically developed with a number of commercial, residential and auto-related buildings, including: a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; and a lumber yard. Gasoline USTs were shown in the western portion of the Property on the 1912 map, and in the northeastern corner of the Property on the 1933-1951 maps. A LIRR rail spur was shown in the western portion of the Property on the 1901-1990 maps. All structures on the Property were demolished between 1951 and 1982, and the Property was labeled as a parking lot on the 2015 map.

The surrounding area was developed with a mix of commercial, residential, manufacturing, and auto-related uses throughout the 20th century. Nearby historical uses that may have affected subsurface conditions beneath the Property included: LIRR/New York City transit tracks; a dry cleaner; Chinese laundries (potential dry cleaners); paint and oil shops; printers; a sign painter; and auto repair shops and filling stations with gasoline USTs.

5.1.2 Historical Aerial Photographs

Since historical fire insurance maps were available for the Property (and surrounding area) and these maps included information relating to land use, aerial photographs would, most likely, not provide additional useful information relevant to the potential for recognized environmental conditions or other environmental concerns. As such, aerial photographs were not reviewed.

5.1.3 Property Tax Files and Zoning Records

Based on information provided by Toxics Targeting, Inc. of Ithaca, New York, the Property is zoned as R5 (residential district) with a C8-1 (commercial district) overlay, and the Property is classified as V8 (State or Federal vacant land) and noted to have no buildings.

5.1.4 Recorded Land Title Records

No title records were provided for the Property, and no such records were available on the NYC ACRIS website (discussed in Section 5.2.3).

5.1.5 Local Street Directories

A City Directory prepared by Environmental Data Resources, Inc. was reviewed as part of this Phase I ESA. The City Directory consisted of the names of businesses located on-site and in adjacent properties, compiled from city and reverse telephone directories at approximately five-year intervals starting in 1922.

The following historical Property uses were identified: a screen manufacturer, a publishing company, a roofing works, and residential uses in 1934; a roofing and sheet metal business in 1950; and an apparent commercial listing (Walker & Son) in 1962.

5.2 Regulatory Review

The regulatory database listings, shown in Appendix B, were obtained from Toxics Targeting, Inc. of Ithaca, New York. It includes summaries of the databases searched, their radii around the Property and limitations of the data. The databases searched and associated radii were consistent with ASTM E1527-13.

5.2.1 Federal

Databases searched included the National Priority List (NPL); Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS); Emergency Response Notification System (ERNS); Toxic Chemical Release Inventory System (TRIS); the Permit Compliance System of Toxic Wastewater Discharges (WWD); the Air Discharge Facilities Index (ADF); and the USEPA Civil Enforcement Docket. Facilities subject to corrective action under the Resource Conservation and Recovery Act (CORRACTS) are discussed with State RCRA listings.

National Priority List (NPL)

The NPL is the USEPA's list of sites that probably require remedial action under the Superfund Program. Nearby NPL sites can sometimes pose a risk of stigmatizing surrounding properties and thus impacting property values.

No NPL sites were identified within a one-mile radius of the Property.

Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)

CERCLIS is a compilation of sites which the USEPA has investigated, or plans to investigate, pursuant to the Superfund Act of 1980 (CERCLA). As such, some of these sites may ultimately present concerns and others may not (but could still pose a perceived concern).

No CERCLIS sites were reported within a ½-mile radius of the Property.

Emergency Response Notification System (ERNS)

This federal database, compiled by the Emergency Response Notification System, records and stores information on certain reported releases of petroleum and other potentially hazardous substances.

The Property was not listed as an ERNS site.

Toxic Chemical Release Inventory System (TRIS)

The TRIS contains information reported by a variety of industries on their annual estimated releases of certain chemicals.

No TRIS sites were identified within a ⅛-mile radius of the Property.

Permit Compliance System of Toxic Wastewater Discharge (WWD)

This database includes certain sites which discharge wastewater containing potentially hazardous chemicals.

No WWD facilities were reported within a ⅛-mile radius of the Property.

United States Environmental Protection Agency Civil Enforcement Docket

This database tracks civil judiciary cases filed on behalf of the USEPA by the Department of Justice.

No facilities were listed in the USEPA's Civil Enforcement Docket within a ⅛-mile radius of the Property.

Air Discharge Facilities Index (ADF)

This federal database includes information on certain air emission sources.

No Air Discharge Facilities were identified within a ⅛-mile radius of the Property:

5.2.2 State

State databases included the listings of petroleum/hazardous material spills (SPILLS); Resource Conservation and Recovery Act Notifiers (RCRA); Chemical Bulk Storage (CBS); Solid Waste Facilities (SWF); Petroleum Bulk Storage (PBS); State Inactive Hazardous Waste Disposal Sites (SHWS); Major Oil Storage Facilities (MOSF); Brownfield Cleanup Program (BCP) Sites; and Historic Utility Sites.

New York SPILLS Database

This database includes releases reported to the NYSDEC, including tank test failures (for USTs only) and tank failures.

One spill was reported on the Property. One hundred twenty-six additional spills were reported within a ½-mile radius of the Property, including six active-status spills and 120 closed-status spills. Spill listings with some potential to affect the Property are summarized below:

- In October 2004, two abandoned 55-gallon drums of motor oil were reportedly found at a municipal parking lot across from 10-44 Beach 21st Street (i.e., on the Property) and Spill No. 0408292 was reported. The drums were reportedly emptied and removed, and the spill listing was closed in December 2004.
- In November 2008, a spill was reported at the Far Rockaway Shopping Mall, located on Mott Avenue between Beach Channel Drive and Central Avenue, approximately 150 feet north of the Property. According to the listing, a caller complained that commuter buses were regularly using the parking lot to dump crank-case oil, trash, and other materials. A visit by NYSDEC indicated several potholes in the parking lot, with a small quantity of oil noted in one pothole. Based on the "minor" nature of the observed dumping, the listing was closed within a week of reporting.
- In July 2013, a spill was reported at an auto repair shop at 10-09 Cornaga Avenue, approximately 220 feet south of the Property. According to the listing, this site was historically a filling station, and nine gasoline USTs and piping were removed in 1999. A subsurface investigation reportedly identified contaminated groundwater, but no significant soil contamination, with a dry well as the apparent source. No further information was provided; however, the listing was closed in December 2013. This facility was also identified in the Petroleum Bulk Storage database as 10-09 Beach 21st Street.

Based on the listing details, distance and/or anticipated groundwater flow direction, the remaining spill listings are unlikely to have significantly affected the Property. Details from all spills are included in Appendix C.

Resource Conservation and Recovery Act (RCRA) Notifiers Listings

This database lists sites which have filed notification forms regarding hazardous waste activity, including: treatment, storage and disposal facilities (TSDs); small-quantity (SQG) and large-quantity generators (LQG); and transporters regulated under RCRA. The discussion below includes any CORRACTS listings of facilities which are subject to corrective action under RCRA.

No TSD facilities were identified within a ½-mile radius of the Property. No CORRACTS sites were reported within a one-mile radius of the Property.

Six RCRA generators/transporters were reported within a ⅛-mile radius of the Property. Facilities with some potential to affect subsurface conditions beneath the Property, based on proximity and/or the nature of the listings, are as follows:

- The Metropolitan Transit Authority (MTA) Mott Avenue Station, located at Mott Avenue and Beach 22nd Street, approximately 325 feet north of the Property, was listed as a Small Quantity Generator (SQG) of lead and cadmium waste in 2011 and 2012.
- Snow White Cleaners, located at 20-88 Mott Avenue, approximately 330 feet north-northeast of the Property, was listed as a generator of spent halogenated solvents in 2003.

- George L. Chris Cleaners, located at 21-40 Mott Avenue, approximately 530 feet north-northwest of the Property, was listed as a Conditionally Exempt SQG (CESQG) of spent halogenated solvents in 2003.
- Myles Cleaner, located at 11-59 Beach Channel Drive, approximately 650 feet northwest of the Property, was listed as a generator of spent halogenated solvents in 2005.

Based on the nature of the listings, distance, and/or anticipated groundwater flow direction, potential discharges from the dry cleaners may have affected subsurface conditions beneath the Property. The remaining facilities were unlikely to have affected the Property.

Chemical Bulk Storage (CBS) Database

The New York CBS is a list of facilities that store regulated non-petroleum substances in aboveground tanks with capacities greater than 185 gallons and/or in underground tanks of any size.

No CBS facilities were listed within a ⅛-mile radius of the Property.

Solid Waste Facilities (SWF)

This database includes certain landfills, incinerators, transfer stations, recycling centers, and other sites which manage solid waste.

Four facilities were located within ½ mile of the Property. The nearest was Auto Maven Dent Dr. at 10-16 Beach 19th Street, approximately 795 feet east-southeast of the Property, which was listed as an auto dismantling facility. Based on distance and/or anticipated groundwater flow direction, none of the SWF facilities are anticipated to have significantly affected subsurface conditions beneath the Property.

Petroleum Bulk Storage (PBS) Database

This database lists facilities that registered having either aboveground or underground petroleum tanks with total storage exceeding 1,100 gallons. Facilities with more than 400,000 gallons appear on the Major Oil Storage Facilities (MOSF) database (see below).

The Property was not listed in the PBS or FDNY databases. Seventeen PBS and FDNY facilities were identified within a ⅛-mile radius of the Property. Details of facilities with some potential to affect the Property, based on listing details and/or location, are given in Table 1.

Table 1
Area Petroleum Bulk Storage Facility Data

Location	Capacity (gallons)	Product Stored	Status	Distance/Direction from Property
Nobo Corporation 10-74 Beach 22nd Street	275 AST 275 AST	No. 2 Fuel Oil Waste Oil	Conv. to Non-Regulated Use Temporarily Out Of Service	West-adjacent
Owen Auto Service 10-17 Beach 21st Street	5 x 550 UST	Gasoline	Closed-Removed	South-adjacent

Table 1
Area Petroleum Bulk Storage Facility Data

Location	Capacity (gallons)	Product Stored	Status	Distance/Direction from Property
BayMart 10-57 Beach 20th Street	1,500 AST	No. 2 Fuel Oil	In Service	40 feet east
RCL Service Center 10-09 Beach 21st Street (also identified as 10-09 Cornaga Avenue)	4,000 UST 8 x 500 UST	Gasoline	Closed-Removed	220 feet south
Rockaway Co. 19-31 Mott Avenue	2,000 UST 2,000 AST	No. 2 Fuel Oil	Closed In Place In Service	395 feet east

Notes: AST - aboveground storage tank
UST - underground storage tank

A spill with the potential to have affected the Property was reported for 10-09 Beach 21st Street/10-09 Cornaga Avenue. In addition, potential undocumented releases from the above facilities may have affected subsurface conditions beneath the Property. Other PBS and FDNY facilities are not anticipated to have significantly affected the Property, based on listing details, distance, and/or anticipated groundwater flow direction. Details of all PBS facilities located within ⅛-mile of the Property are included in Appendix C.

State Inactive Hazardous Waste Disposal Site Registry (SHWS)

This program (also known as State Superfund) lists information regarding a variety of sites likely requiring cleanup.

Two inactive hazardous waste disposal sites were located within a 1-mile radius of the Property. Based on their distance (over 3,200 feet away) and the anticipated groundwater flow direction, these facilities are not anticipated to have affected the Property.

State Hazardous Substance Waste Disposal Site Study (SHSWDS)

This database tracks certain sites that were not listed on SHWS, but may still require investigation and/or cleanup.

No SHSWDSs were identified within a ½-mile radius of the Property.

Major Oil Storage Facilities (MOSF) Database

These facilities have petroleum storage of 400,000 gallons or more.

No Major Oil Storage Facilities were reported within a ⅛-mile radius of the Property.

Environmental Restoration Program

These sites (which are generally municipally-owned) are receiving New York State funding for site investigation and remediation. Some sites in this program have known contamination, whereas others have not had sufficient investigation to determine whether contamination is present.

No ERP sites were identified within a ½-mile radius of the Property.

Voluntary Cleanup Program

The Voluntary Cleanup Program is a NYSDEC program for investigation and remediation of (generally) privately-owned sites. Some sites in this program have known contamination, whereas others have not had sufficient investigation to determine whether contamination is present.

No VCP sites were identified within a ½-mile radius of the Property.

Brownfield Cleanup Program

This NYSDEC program is the successor to the Voluntary Cleanup Program. Again, some sites have known contamination, whereas others have not had sufficient investigation to determine whether contamination is present.

No BCP sites were identified within a ½-mile radius of the Property.

Historic Utility Sites

This is an inventory of certain power generating stations, manufactured gas plants, gas storage facilities, maintenance yards and other gas and electric utility sites identified in various historic documents, maps and annual reports from 1898 to 1950.

No historical utility sites were reported within a ⅛-mile of the Property.

5.2.3 Local Agency File Review

Records available online from the New York City Fire, Buildings and Finance Departments were viewed for the Property. The Fire Department records were obtained by Toxics Targeting, Inc. as part of the regulatory database search. Since the records typically address a multitude of issues, the review focused on items likely to relate to the potential presence of hazardous materials, e.g., petroleum tank installation applications and permits, and records indicating prior uses. Copies of pertinent information are included in Appendices C (Fire Department Records) and D (Buildings Department Records).

Fire Department

The computerized FDNY Tanks database was searched regarding past or current motor vehicle fuel and heating oil tank listings within a ⅛-mile radius of the Property.

Seven listings within a ⅛-mile radius of the Property were identified in computerized FDNY tank records. These listings are discussed with PBS listings in Section 5.2.2.

Buildings Department

Buildings Department records were generally consistent with the historical information detailed in the Sanborn maps, reviewed in Section 5.1.1. Computerized records identified the following:

- Three new building permits dated 1910, 1913 and 1928;
- Nine demolition permits dated 1910, 1919, 1926, 1961 and 1961; and
- A 1979 Certificate of Occupancy (C of O) for an on-ground public parking lot with a bus stop.

Most of the other listed actions were associated with inspections, alterations and repairs. Files pertaining to the new building and demolition permits were unavailable for review.

Land Title Records and Tax Records

Electronic property transaction records for the Property Block and Lot were reviewed from the New York City Department of Finance Office of the City Register Automated City Register Information System (ACRIS). No deed information was obtained from the ACRIS files. The ACRIS records identified a 1976 court order indicating that land would be condemned for the expansion of a municipal parking field and creation of a bus stop.

Department of City Planning

A search of NYC Environmental Quality Review Requirements (CEQR) data by Toxics Targeting, Inc. indicated that no sites within a ⅛-mile radius of the Property have been assigned (E) designations.

5.2.4 Additional Environmental Record Sources

To enhance the search, ASTM requires that additional local records be reviewed (i.e., beyond those included as part of the standard database search or checked online) when, in judgment of the environmental professional, such records for the Property or any adjoining property would be reasonably ascertainable; and useful, accurate and complete in light of the objective of the records review. These records may include:

- Local Brownfields Lists
- Local Lists of Landfill/solid waste disposal sites
- Local Lists of Hazardous Waste/Contaminated Sites
- Local Lists of Registered Tanks
- Local Land Records (for activity use limitations)
- Records of emergency release reports
- Records of contaminated public wells

Sources for these records include:

- Department of Health/Environmental Division
- Fire Department
- Building Permit/Inspection Department
- Local/Regional Pollution Control Agency
- Local/Regional Water Quality Agency
- Local Electric Utility (for PCB records)

Freedom of Information Law (FOIL) requests for information relevant to environmental conditions on the Property were submitted to DEP, NYC Department of Health and Mental Hygiene (NYCDOH), New York State Department of Health (NYSDOH), and NYSDEC. To date, no responses have been provided to AKRF. In the event that pertinent information is provided following the completion of this report, an addendum to the report will be prepared to discuss the findings.

In AKRF's judgment, no other additional local records meeting the ASTM criteria are pertinent for the Property.

6.0 USER-PROVIDED INFORMATION

In preparing this Phase I ESA, AKRF requested that EDC provide any pertinent information regarding the Property, specifically:

- Whether any *environmental liens* or *activity and land use limitations (AULs)* are in place or filed or recorded against the Property?
- Whether they had any specialized knowledge or experience related to the Property or nearby properties (e.g., specialized knowledge of any chemicals used on-site)?
- Whether the (anticipated) purchase price reflects that the Property is or could be contaminated?
- Whether they were aware of commonly known or reasonably ascertainable information about environmental conditions of the Property?
- Whether they were aware of any obvious indicators of contamination at the Property?
- Whether they were aware of any pending, threatened, ongoing or past litigation/enforcement action/consent order/notice of violation related to hazardous substances or petroleum products?

According to EDC, this Phase I ESA was performed to evaluate the Property as part of due diligence related to its potential its potential disposition to a private owner for eventual redevelopment. Mr. Nathan Gray, Vice President of Planning at EDC, provided information from DOT regarding a porous pavement pilot study at the Property (see Section 7.0). Mr. Gray was not aware of any: environmental liens or activity use limitations on the Property; Property value reduction due to environmental issues; any pending, threatened, ongoing or past litigation/enforcement action/consent order/notice of violation related to hazardous substances or petroleum products; or any obvious indicators of contamination on the Property. To the extent that pertinent additional information was provided, it has been summarized elsewhere in this report.

7.0 PREVIOUS STUDIES

Mr. Gray provided a Property survey and construction plans for a NYCDEP porous pavement pilot program at the Property, dated September 2010, which were provided to EDC by DOT. The plans indicated that the monitoring wells observed during the reconnaissance at the southwestern corner of the Property were associated with the pilot program. According to the survey, some on-site storm drains were noted to have pipes (i.e., a potential connection to the municipal sewer system), while others had no visible pipes (i.e., these drains may be dry wells).

No other previous studies were provided to AKRF.

8.0 LIMITATIONS AND DATA GAPS

This assessment met the requirements of the American Society for Testing and Materials (ASTM) as established by ASTM Standard E1527-13 at the time it was performed, with the following limitations:

- Results of this investigation are valid as of the dates on which the investigation was performed.
- Interviews and user provided information were limited to those discussed in Sections 2.0 and 6.0. To the extent that interviews were not conducted with the list of interviewees cited in the ASTM Standard (past and present owners, operators, and occupants of the Property and local government officials), AKRF does not believe that this represents a significant data gap likely to result in additional or significantly changed recognized environmental conditions or conclusions.
- The Property area history was not conducted in five-year intervals. However, sufficient information about the history of the site and surrounding area could be obtained from the available historical Sanborn maps, New York City Buildings Department records, and interviews, and this data gap is not likely to alter the conclusions of this report.
- Agency File Reviews for the Property and adjacent properties consisted of: a review of standard databases and electronic records maintained by pertinent departments and agencies (summarized in Section 5.2); and FOIL requests for pertinent records submitted to the DEP, NYCDOH, NYSDOH, and NYSDEC. AKRF believes that this file review was sufficient in determining the potential for recognized environmental conditions or other environmental concerns at the Property and additional reviews beyond this are not warranted and would not likely change the conclusions of this assessment.

9.0 CONCLUSIONS AND RECOMMENDATIONS

This Phase I Environmental Site Assessment was performed in conformance with ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice*. Any exceptions to, or deletions from, the Standard are described in Section 8.0. The term "Recognized Environmental Condition" or REC means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The Standard also includes definitions of Historic REC (HREC), Controlled REC (CREC), and *De Minimis* Condition. A *De Minimis* Condition is defined as an environmental concern that is not a threat to human health or the environment and would not be subject to enforcement action.

The Property was historically developed with commercial, residential and auto-related buildings, including: a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; a lumber yard; a screen manufacturer; a publishing company; roofing works; and sheet metal works. A Long Island Railroad (LIRR) rail spur historically traversed the western portion of the Property. At some time between 1951 and 1979, all structures on the Property were demolished, the rail spur was removed, and the Property became a municipal parking lot. The surrounding area was mixed-use, including residential and commercial uses, churches, vacant buildings and lots, parking lots, and auto repair.

This assessment revealed the following:

Recognized Environmental Conditions (RECs)

- Historical Sanborn maps showed two gasoline underground storage tanks (USTs) in the western portion of the Property (1912 map), and in the northeastern corner of the Property (1933-1951 maps). The status of these tanks could not be ascertained. Additional aboveground or underground petroleum storage tanks may have been associated with historical on-site structures. Any such tanks may have been removed or, if they were underground, may remain beneath the Property.
- As noted above, historical Property uses included a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; a lumber yard; a screen manufacturer; a publishing company; a roofing works; and a sheet metal works.
- The, historical on-site rail spur may have been associated with use of creosote (a rail tie treatment containing semi-volatile organic compounds) and/or other oils. Additionally, spills from trains could have occurred.
- Various past and/or present off-site uses with some potential to affect the Property were identified, including: nearby rail tracks; auto repair shops (including two shops on the Property block, of which one was a historical filling station with a reported closed-status spill, and the second had evidence of poor housekeeping); filling stations; factories; paint and oil shops; printers; a sign painter; dry cleaners; and registered Petroleum Bulk Storage (PBS) facilities. A vacant, unpaved lot with an abandoned 55-gallon drum, apparent remnants of building foundations, and evidence of construction and demolition (C&D) debris in soil was observed south-adjacent to the Property.
- A Property survey provided by the NYC Department of Transportation (DOT), the Property owner, indicated that while some on-site storm drains appeared to be connected to the municipal sewer system), others had no visible discharge pipes (i.e., they may be dry wells discharging to the subsurface).

De Minimis Condition

- Spill No. 0408292 at the Property was reported to NYSDEC in October 2004. The spill listing indicated that two abandoned 55-gallon drums of motor oil were found at the municipal parking lot, emptied, and removed. The spill listing was closed in December 2004. Based on listing details, this spill is not anticipated to have affected subsurface conditions.

Other on-site environmental concerns (items outside the scope of E1527-13 like ACM, LBP and/or PCBs in building materials or fill/debris)

- No suspect asbestos-containing materials (ACM) were observed on the Property. Painted surfaces (pavement stripes, signs and bollards) may contain lead-based paint; these surfaces were observed to be in good condition. If demolition debris from historical structures is present beneath the Property, it may contain ACM and/or lead-based paint.
- Fluorescent lighting fixtures on the Property may contain polychlorinated biphenyl (PCB)-containing components and/or mercury. If demolition debris is present beneath the Property, it may contain PCB-containing electrical equipment or lighting fixtures.
- A cluster of apparent plastic groundwater monitoring wells was observed in a small vegetated area in the southwestern corner of the Property. According to DOT, the apparent monitoring wells were associated with a New York City Department of Environmental Protection (NYCDEP) porous pavement pilot study, rather than an environmental investigation.

Potential for Vapor Encroachment

This Phase I assessment identified a potential for subsurface vapors and thus a potential for vapor encroachment into future buildings at the Property, based on the RECs noted above.

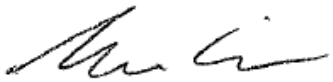
RECOMMENDATIONS

- Subsurface conditions beneath the Property may have been affected by past or present, on- or off-site uses. AKRF recommends a subsurface investigation involving the collection and laboratory analysis of subsurface samples prior to Property redevelopment. It is possible that this investigation may uncover evidence of a petroleum spill or other situation reportable to NYSDEC and/or other regulatory agencies.
- If any petroleum storage tanks are encountered during Property redevelopment, they should be properly closed in accordance with the applicable regulations, which may include NYSDEC registration and/or spill reporting requirements.
- Unless there is labeling or test data indicating that fluorescent lighting fixtures do not contain PCBs and/or mercury, if disposal is required, it should be performed in accordance with applicable federal, state, and local regulations and guidelines.
- If demolition debris containing any suspect ACM, or PCB-containing electrical equipment or fluorescent lighting fixtures, is encountered beneath the Property, such materials must be properly handled and disposed of in accordance with the applicable regulations.
- Any activities (such as renovation or demolition) with the potential to disturb lead-based paint must be performed in accordance with applicable requirements (including federal Occupational Safety and Health Administration regulation 29 CFR 1926.62 - *Lead Exposure in Construction*).

10.0 SIGNATURE PAGE

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Property for which the assessment was performed. We have performed all the appropriate inquiries in conformance with standards and practices set forth in 40 CFR Part 312.



Marcus Simons
Senior Vice President

Asya Bychkov
Environmental Engineer

11.0 QUALIFICATIONS

The purpose of this assessment was to convey a professional opinion about the potential presence or absence of contamination, or possible sources of contamination on the Property, and to identify existing and/or potential environmental issues associated with the Property including *Recognized Environmental Conditions* as defined in ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice*.

The assessment was performed in accordance with customary principles and practices in the environmental consulting industry, and in accordance with the above-referenced ASTM Standard, except as noted otherwise in Section 8.0. It should only be used as a guide in determining the possible presence or absence of hazardous materials on the Property at the time of the reconnaissance, as it is based upon the review of readily available records relating to both the Property and the surrounding area, as well as a visual reconnaissance of current conditions.

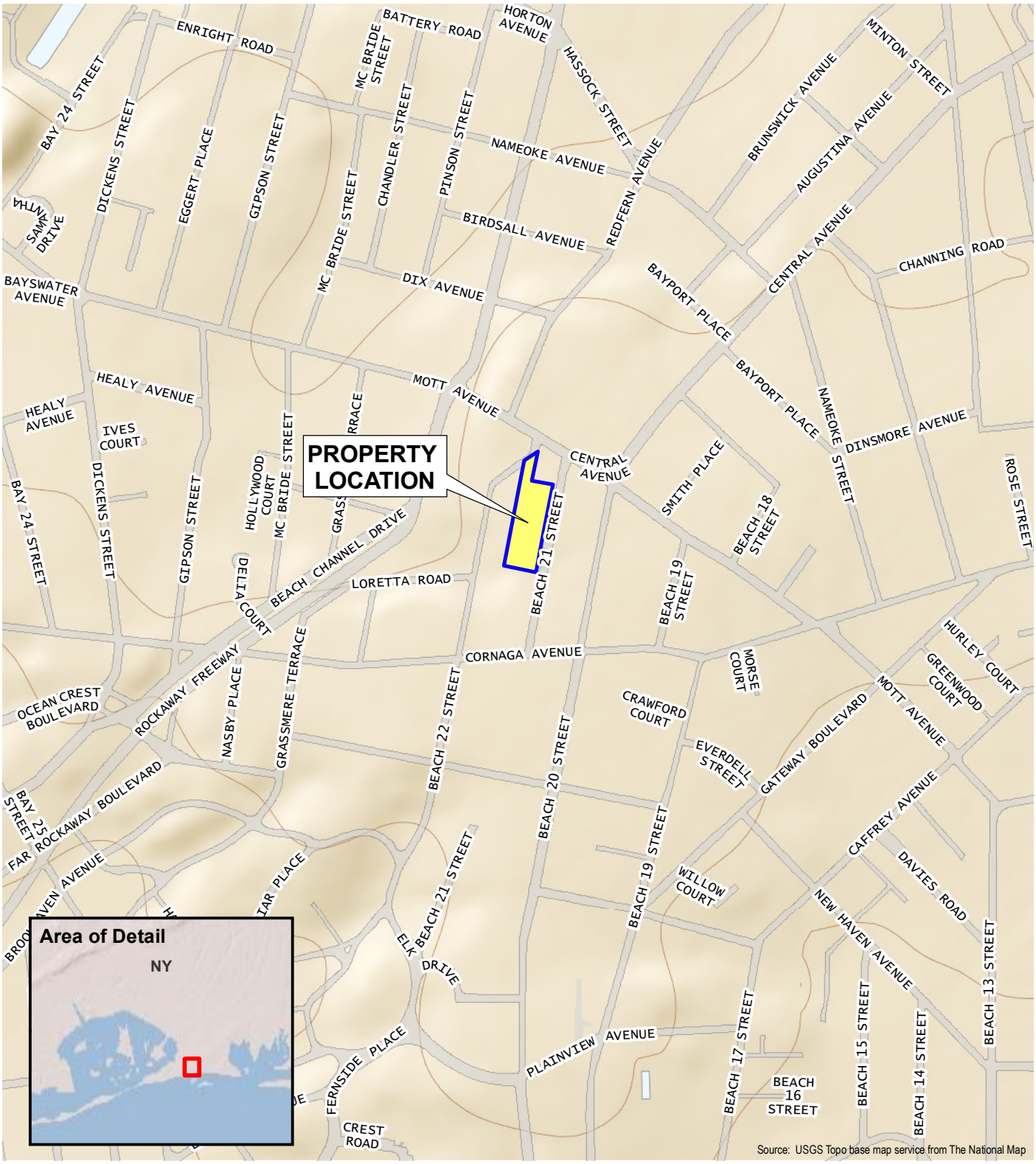
This Phase I Assessment is not, and should not be construed as, a guarantee, warranty, or certification of the presence or absence of hazardous substances, which can be made only with testing, and contains no formal plans or recommendations to rectify or remediate the presence of any hazardous substances which may be subject to regulatory approval. This report is not a regulatory compliance audit.

This report is based on services performed by AKRF, Inc. professional staff and observation of the Property and its surroundings. We represent that observations made in this assessment are accurate to the best of our knowledge, and that no findings or observations concerning the potential presence of hazardous substances have been withheld or amended. The research and reconnaissance have been carried to a level that meets accepted industry and professional standards. Nevertheless, AKRF and the undersigned shall have no liability or obligation to any party other than the New York City Economic Development Corporation and their successors or assignees, and AKRF's obligations and liabilities to the above, their successors or assignees is limited to fraudulent statements made, or grossly negligent or willful acts or omissions.

12.0 REFERENCES

1. Toxics Targeting, Inc., 1037-1059 Beach 21st Street - Queens, NY, Regulatory Radius Search, May 18, 2016.
2. U.S. Geological Survey, *Far Rockaway, NY Quadrangle*, 7.5 minute Series (Topographic), Scale 1:24,000, 2013.
3. U.S. Geological Survey, *Reconnaissance of the Ground-Water Resources of Kings and Queens Counties, New York - Open-File Report 81-1186*, 1981.
4. U.S. Geological Survey, *Fact Sheet FS 134-97: Water-Table Altitude in Kings and Queens Counties, New York, in March 1997*, November 1997.
5. New York State Department of Health: Office of Public Health - Environmental Radiation Section, Basement Radon Screening Data, 2016.
6. Sanborn Insurance Maps dated 1901, 1912, 1933, 1951, 1982, 1990, and 2015.
7. Environmental Data Resources, Inc., 10-49 Beach 21st Street – Far Rockaway, NY 11691, City Directory Abstract, May 18, 2016.

FIGURES



Far Rockaway Municipal Parking Field
Queens, New York

PROPERTY LOCATION

AKRF
Environmental Consultants
440 Park Avenue South, New York, NY 10016

DATE
6/3/2016

PROJECT No.
20552

FIGURE
1

Aerial Source: 2014 New York Statewide Digital Orthoimagery

Legend

Property Boundary

30 Lot Boundary

0 50 100 200

Feet

Far Rockaway Municipal Parking Field
Queens, New York

PROPERTY DETAIL

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6/3/2016

PROJECT No.
20552

FIGURE
2

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

Photograph 1. The Property, view north.

Photograph 2. A bus stop on the eastern side of the Property, and commercial/ residential development to the east across Beach 21st Street, view north.

Photograph 3. The western side of the Property, view southwest.

Photograph 4. A grassy patch in the southwestern corner of the Property, with monitoring wells for a permeable pavement pilot test.

Photograph 5. A vacant lot south-adjacent to the Property, view west from Beach 21st Street.

Photograph 6. An abandoned drum on the vacant lot.

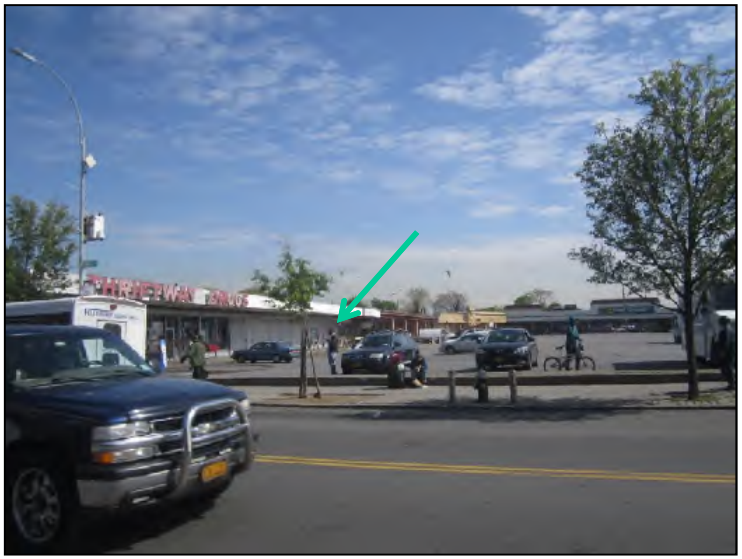
Photograph 7. An auto repair shop at the southeastern corner of the Property block, view northwest across Cornaga Avenue.

Photograph 8. A parking and repair area adjacent to the auto repair shop. Note that the northern portion (marked with an arrow) is unpaved.

Photograph 9. An auto repair shop west-adjacent to the Property, view south from Beach 22nd Street.

Photograph 10. Tire, drum and chemical storage in an unpaved area south of the auto repair shop (west-adjacent to the Property), view west from the Property.

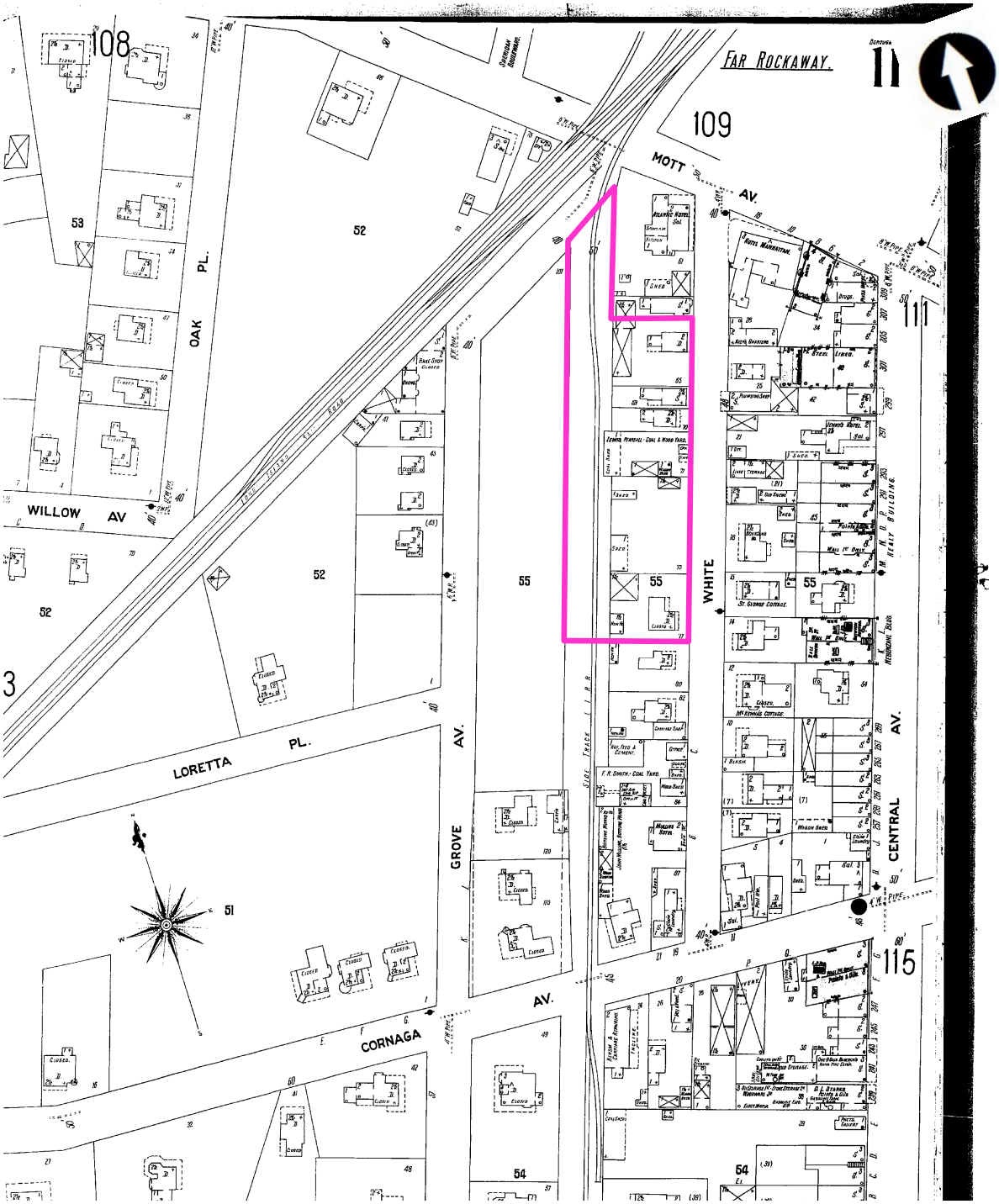
Photograph 11. Elevated MTA A Line tracks and Mott Avenue station west of the Property, view south from Mott Avenue.



Photograph 12. A shopping mall on the north-adjacent block, view north across Mott Avenue. A dry cleaner is marked with an arrow.

APPENDIX B

HISTORICAL SANBORN MAPS



LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1901 SANBORN MAP

AKRF
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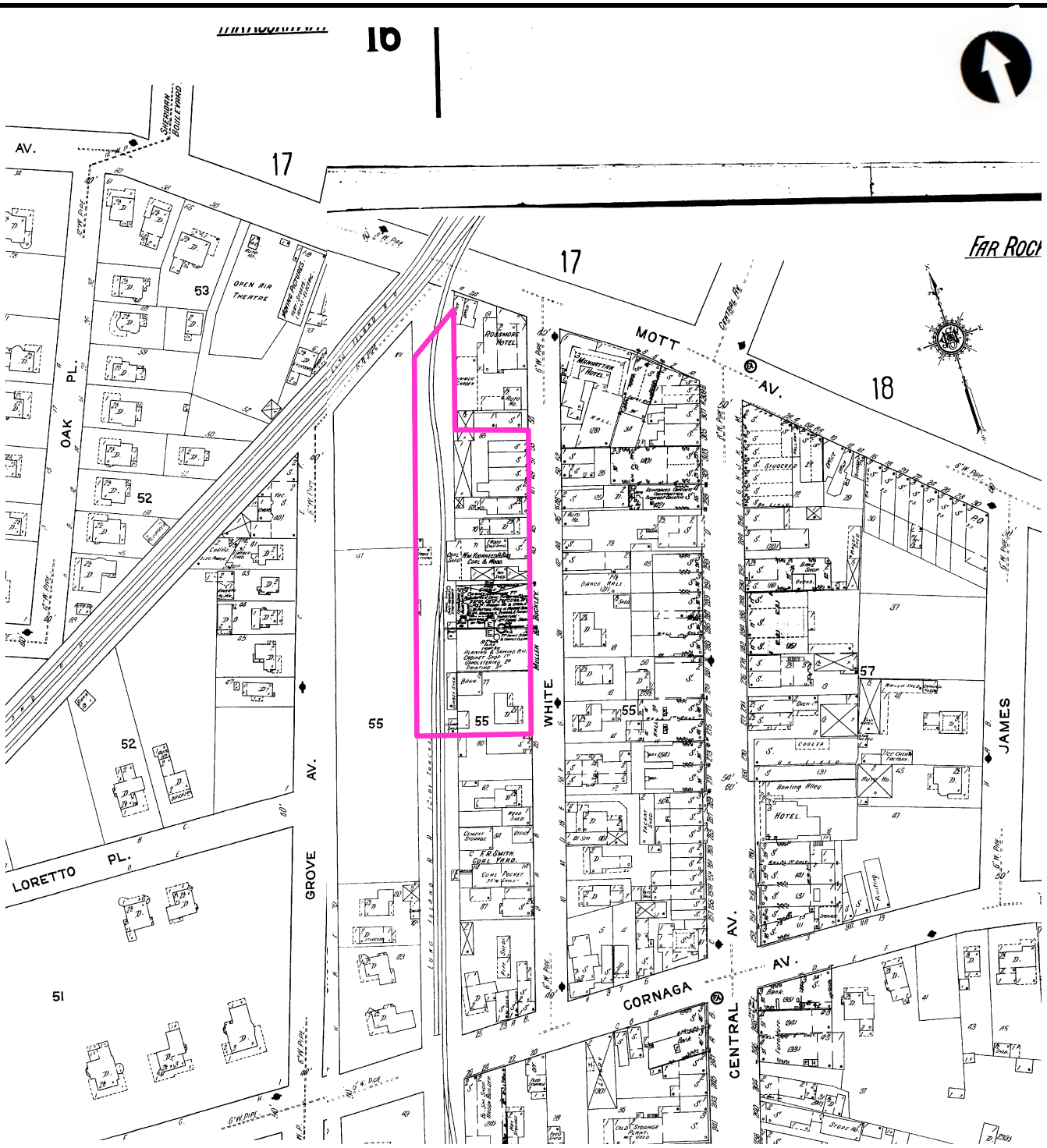
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

W:\Projects\20552 - EDC DOWNTOWN FAR ROCKAWAY\Technical\Hazmat\South Disposition Site Phase I\Sanborns



LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1912 SANBORN MAP

AKRF

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440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

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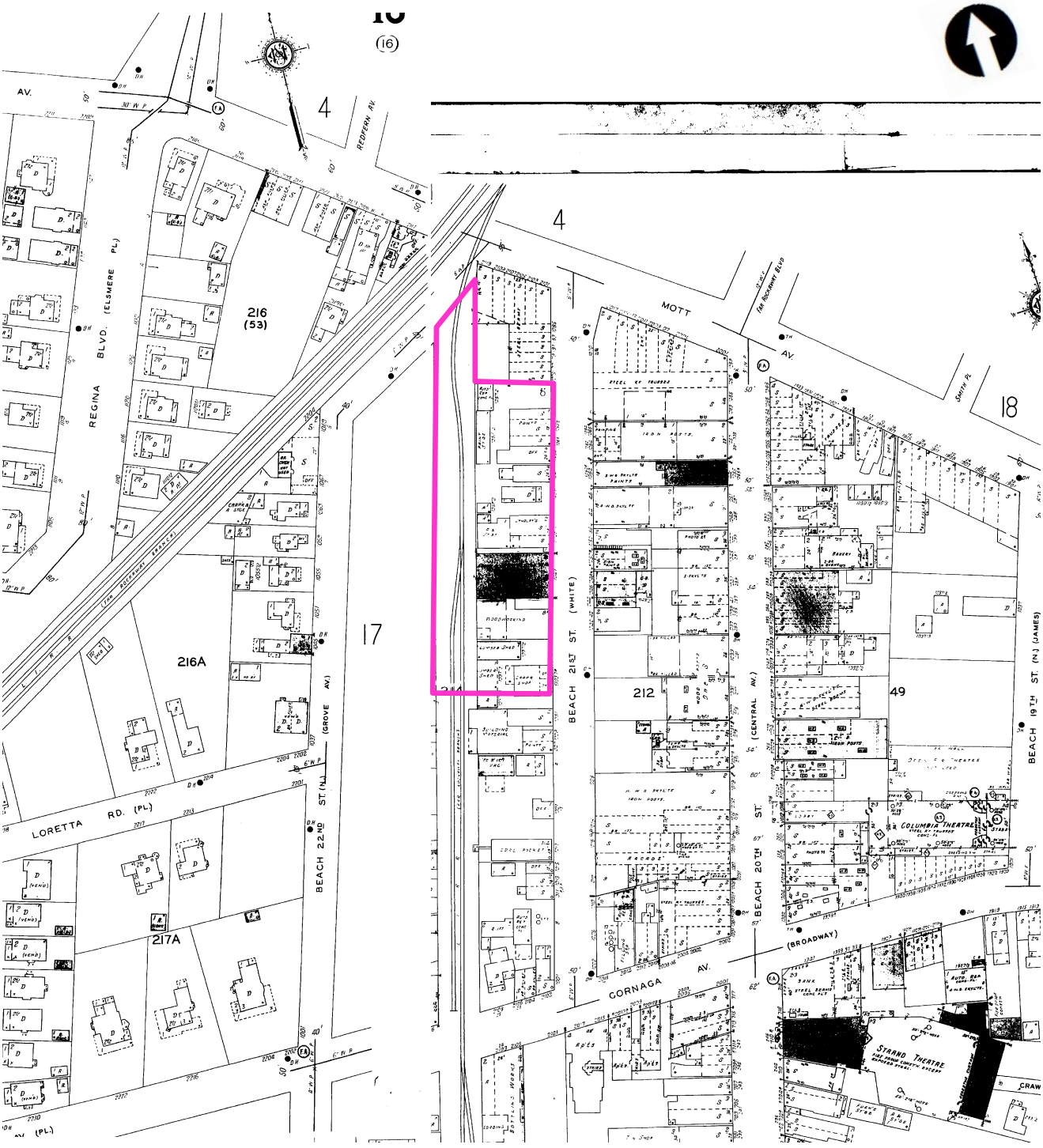

LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1933 SANBORN MAP

AKRF

Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

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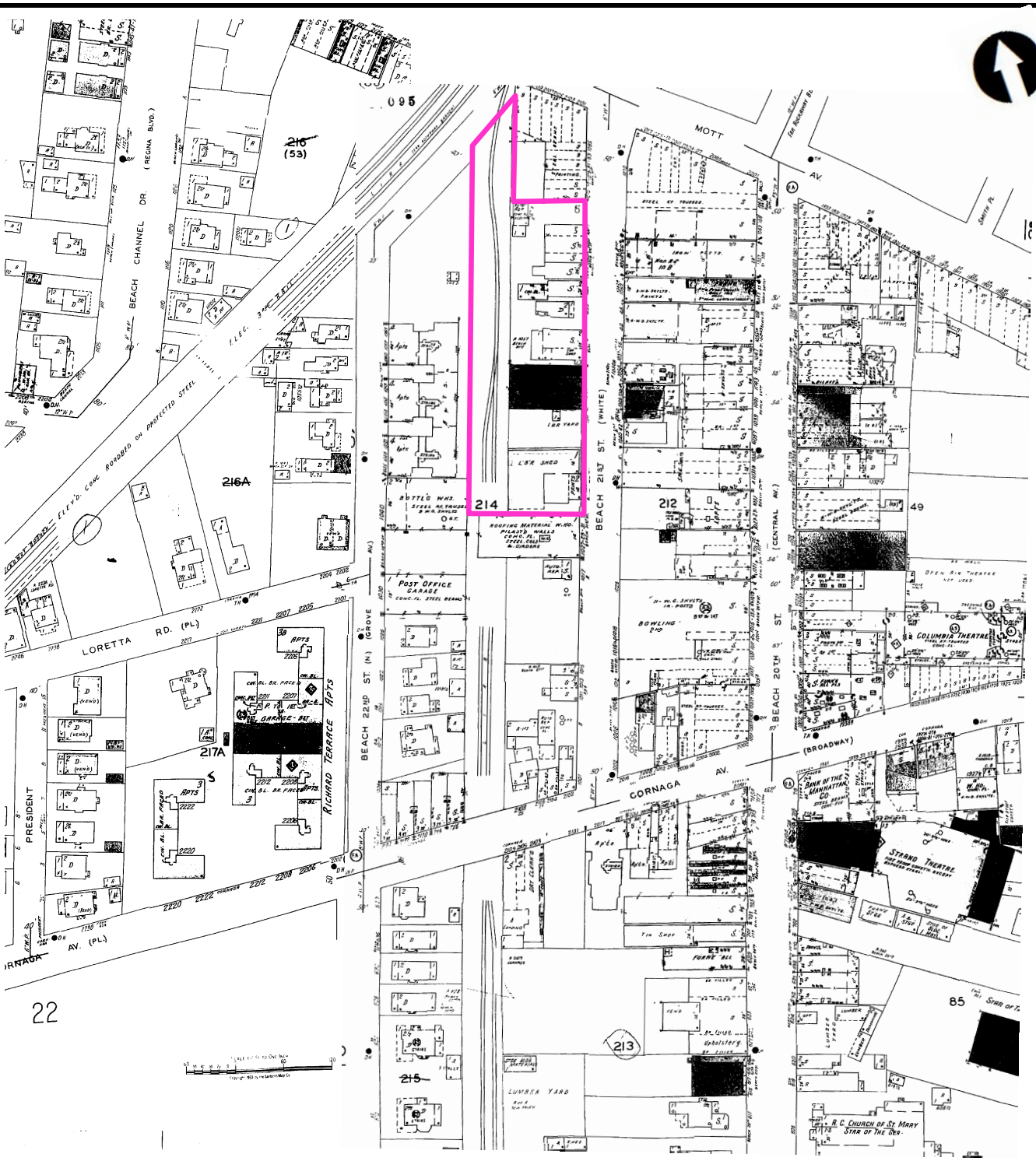

LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1951 SANBORN MAP

AKRF

Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

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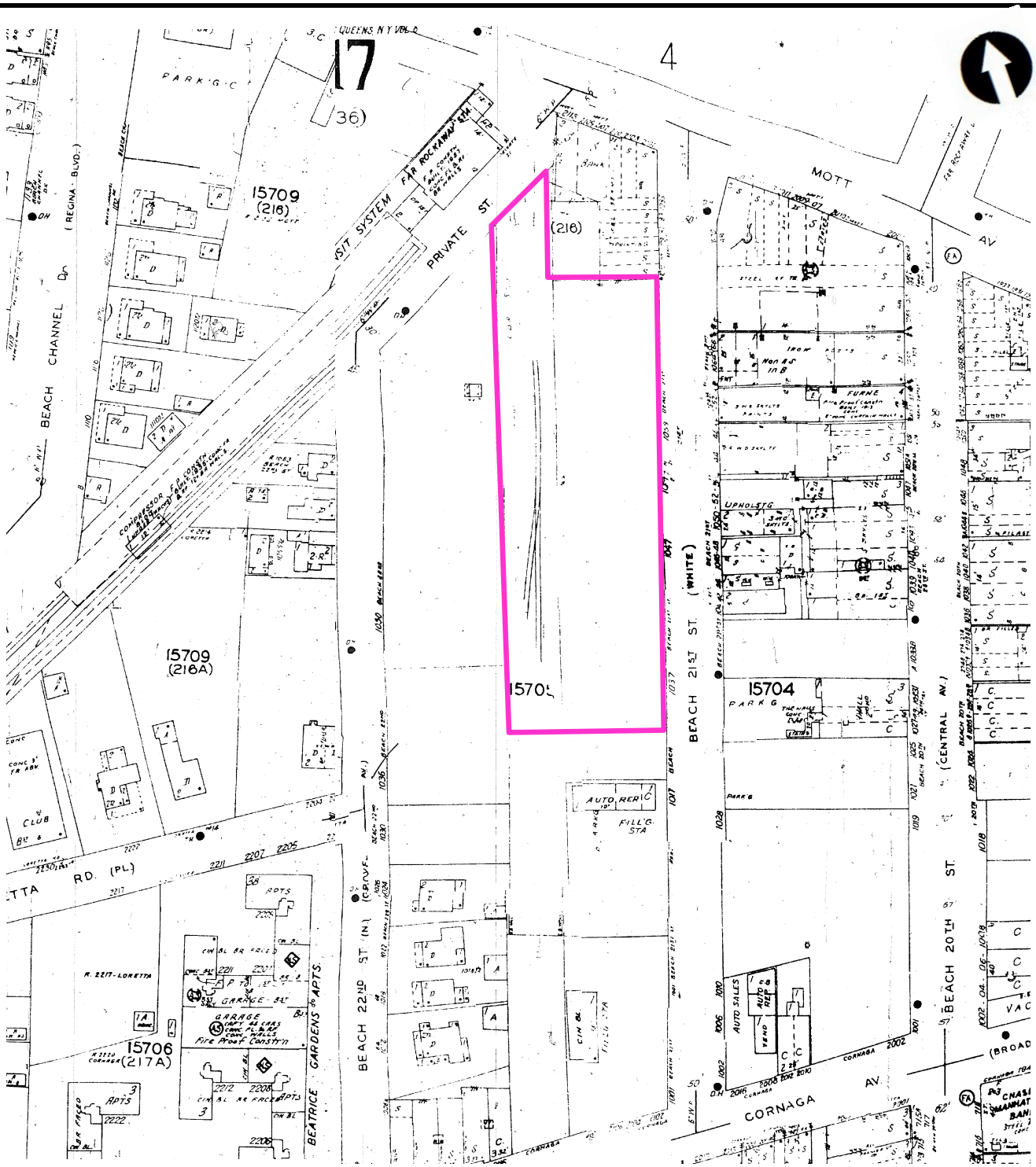


LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1982 SANBORN MAP

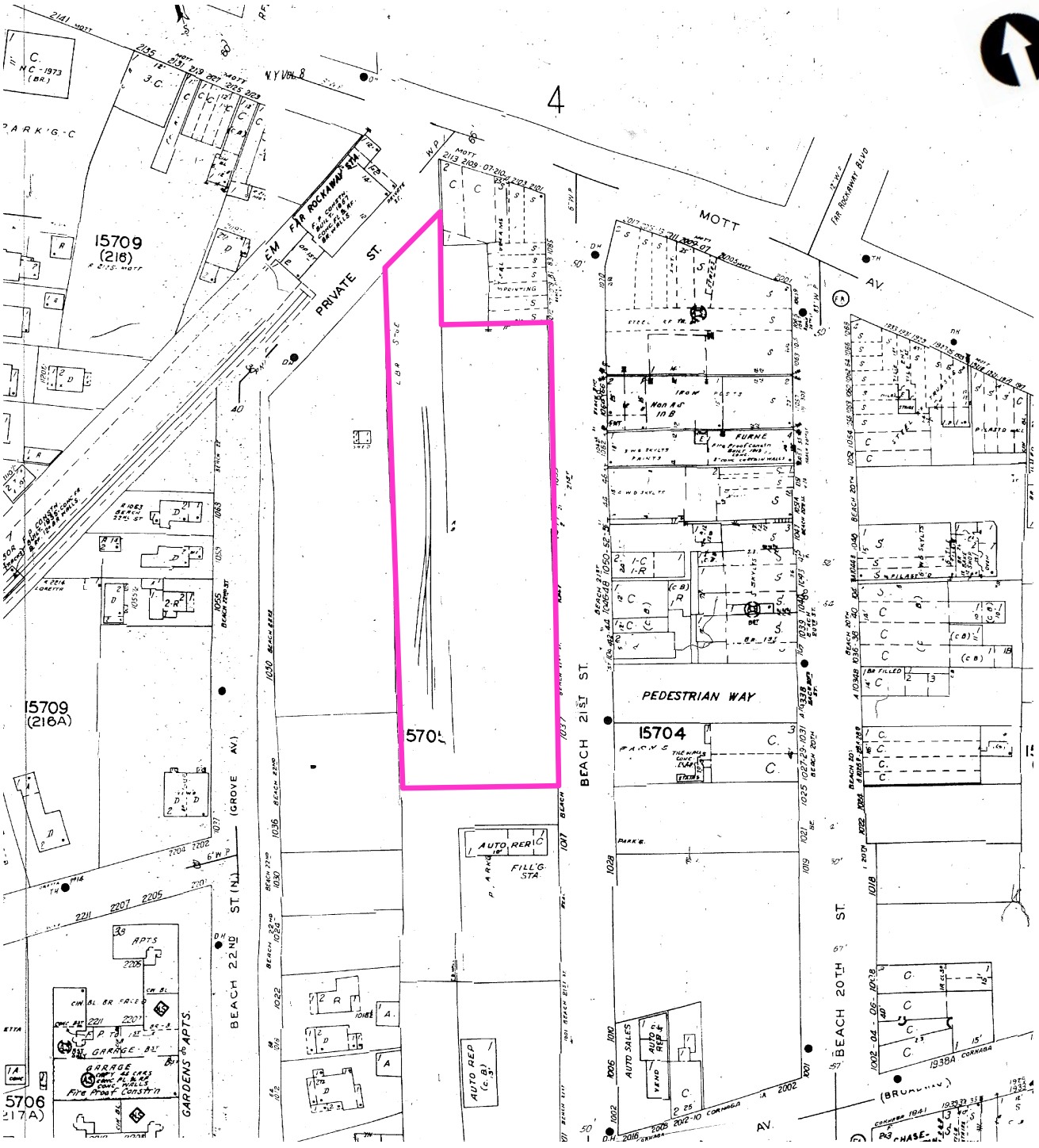
AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

W:\Projects\20552 - EDC DOWNTOWN FAR ROCKAWAY\Technical\Hazmat\South Disposition Site Phase I\Sanborns



LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

1990 SANBORN MAP

AKRF

Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

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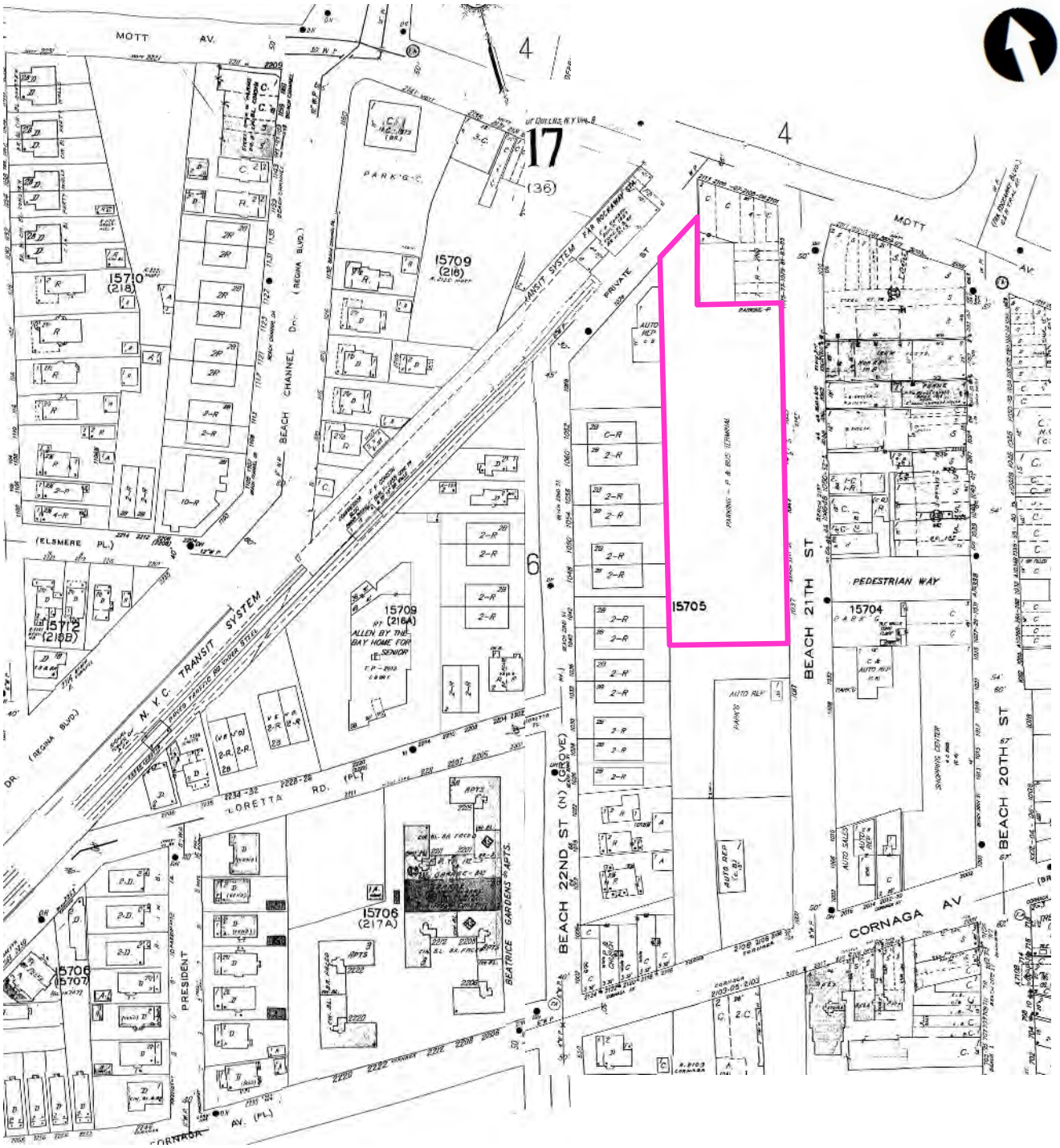

LEGEND:

Property Boundary

Far Rockaway Municipal Parking Field
Queens, New York

2015 SANBORN MAP

AKRF

Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
6.03.16

PROJECT No.
20552

FIGURE
Appx B

W:\Projects\20552 - EDC DOWNTOWN FAR ROCKAWAY\Technical\Hazmat\South Disposition Site Phase I\Sanborns

APPENDIX C

REGULATORY RECORDS REVIEW

TOXICS TARGETING

Phase I
Environmental Database Report

1037-1059 Beach 21st Street
Queens, NY 11691

May 18, 2016

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PLEASE REFER TO PAGES ONE AND FIVE FOR A DESCRIPTION OF SOME OF THE LIMITATIONS OF THIS ENVIRONMENTAL REPORT.

Table of Contents

Introduction

Toxics Targeting has combined environmental database searches, extensive regulatory analysis and sophisticated mapping techniques to produce your *Environmental Report.* It checks for the presence of 25 categories of government-reported toxic sites and provides detailed, up-to-date information on each identified site. The findings of your report are presented in an easy-to-understand format that:

1. ***Maps*** the approximate locations of selected government-reported toxic sites identified on or near a specified target address.

2. ***Estimates*** the distance and direction between the target address and each identified toxic site.

3. ***Reports*** air and water permit non-compliance and other regulatory violations.

4. ***Profiles*** some aspects of the usage, manufacture, storage, handling, transport or disposal of toxic chemicals at individual sites.

5. ***Summarizes*** some potential health effect information and drinking water standards for selected chemicals reported at individual sites.

The Three Sections Of Your Report

The first section highlights your report's findings by summarizing identified sites according to: **a)** distance intervals, **b)** direction, **c)** proximity to the target address and **d)** individual site categories. In addition, the locations of all identified toxic sites are illustrated on individual maps for each radius search distance used in your report. A close-up map illustrates the locations of all identified toxic sites, at the shortest radius search distance used in your report. Finally, a map of tax parcels and a table of selected information about those parcels are included.

The second section of your report contains *Toxic Site Profiles* that provide detailed information on each identified toxic site. The information in each *Toxic Site Profile* varies according to its source. Some toxic site categories have extensive information and some have limited information. All the information is updated on a regular basis.

The third section of the report contains appendices that identify: **1)** on-site spills reported to the national Emergency Response Notification System (ERNS), **2)** various toxic sites that cannot be mapped due to incomplete or erroneous addresses or other mapping problems, **3)** codes that characterize hazardous wastes reported at various facilities, **4)** methods used to map toxic sites identified in your report and **5)** information sources used in your report.

How to Use Your Report

- Check Table One to see the number of identified sites by distance intervals.

- Check Table Two to see identified sites sorted by direction.

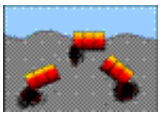
- Check Table Three to see identified sites ranked by proximity to the target address.

- Check Table Four to see identified sites sorted by site categories.

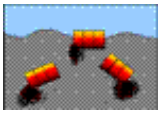
- Use Table Five to get info for the subject parcel and every parcel found on the Tax Parcel Map
- Refer to the various maps to see the locations of identified toxic sites. Refer to the *Toxic Site Profile* and *Appendix* sections for additional information.

Toxic Site Databases Analyzed In Your Report

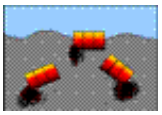
Search Radius

One-Mile 

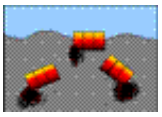
1) ***National Priority List for Federal Superfund Cleanup****:* a listing of sites known to pose environmental or health hazards that are being investigated or cleaned up under the Federal Superfund program.

Half-Mile 

2) ***Delisted National Priority List Sites****:* a listing of NPL sites that have been removed from the National Priority List.

One-Mile 

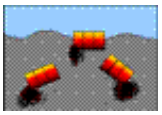
3) ***New York Inactive Hazardous Waste Disposal Site Registry****:* a state listing of sites that can pose environmental or public health hazards requiring investigation or clean up.

One-Mile 

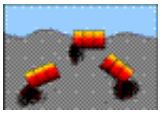
4) ***New York Inactive Hazardous Waste Disposal Site Registry Qualifying****:* a state listing of sites that qualify for possible inclusion to the NYS DEC Inactive Haz. Waste Disposal Site Registry.

One-Mile 

5) ***New York and Federal RCRA Corrective Action Activity (CORRACTS):*** waste facilities with RCRA corrective action activity reported by the USEPA and NYS DEC.

Half-Mile 

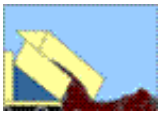
6) ***CERCLIS*** (Comprehensive Environmental Response, Compensation and Liability Information System): a federal listing of Non-NFRAP sites that can pose environmental or public health hazards requiring investigation or clean up.

Half-Mile 

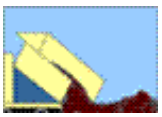
7) ***CERCLIS NFRAP:*** a federal listing of CERCLIS sites that have no further remedial action planned.

Half-Mile 

8) ***NYS & NYC Brownfield Program Sites****:* a listing of sites that are abandoned, idled or under-used industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Half-Mile 

9) ***New York Solid Waste Facilities Registry****:* active and inactive landfills, incinerators, transfer stations or other solid waste management facilities.

Half-Mile 

10) ***New York City 1934 Solid Waste Sites****:* a listing of solid waste disposal sites operated by New York City municipal authorities circa 1934.

Half-Mile 

11) ***New York and Federal Hazardous Waste Treatment, Storage or Disposal Facilities****:* sites reported by the NYS manifest system and the USEPA's Resource Conservation and Recovery Act Information System (RCRIS). Also includes the following database:

- ***RCRA violations:*** waste facilities with violations reported by the USEPA pursuant to the Resource Conservation and Recovery Act.

Half-Mile 

12) ***Toxic Spills: active and inactive or closed*** spills reported to state environmental authorities, including *remediated* and *unremediated* leaking underground storage tanks. This database includes the following categories:

- Tank Failures
- Tank Test Failures
- Unknown Spill Cause or Other Spill Causes
- Miscellaneous Spill Causes

Eighth-Mile 

13) ***New York State Major Oil Storage Facilities****:* sites with more than a 400,000 gallon capacity for storing petroleum products.

Eighth-Mile 

14) ***New York State Petroleum Bulk Storage Facilities****:* sites with more than an 1,100 gallon capacity for storing petroleum products.

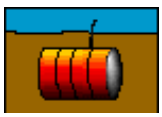
Eighth-Mile 

15) ***New York City Fire Dept Tank Data****:* tank data from 1997.

Eighth-Mile 

16) ***New York and Federal Hazardous Waste Generators and Transporters****:* sites reported by the NYS manifest system and the USEPA's Resource Conservation and Recovery Act Information System (RCRA). Also includes the following database:

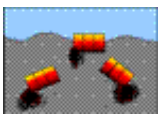
- ***RCRA violations:*** waste facilities with violations reported by the USEPA pursuant to the Resource Conservation and Recovery Act.

Eighth-Mile 

17) ***New York Chemical Bulk Storage Facilities****:* sites storing hazardous substances listed in 6 NYCRR Part 597 in aboveground tanks with capacities of 185 gallons or more and/or underground tanks of any size

Eighth-Mile 

18) ***Historic New York City Utility Sites (1890's to 1940's)****:* power generating stations, manufactured gas plants, gas storage facilities, maintenance yards and other gas and electric utility sites.

Half-Mile 

19) ***New York Hazardous Substance Disposal Site Draft Study****:* a state listing of sites contaminated with toxic substances that can pose environmental or public health hazards. These sites were not eligible for state clean up funding programs.

Eighth-Mile 

20) ***Federal Toxic Release Inventory Facilities****:* discharges of selected toxic chemicals to air, land, water or treatment facilities.

Eighth-Mile 

21) ***Federal Air Discharges****:* air pollution point sources monitored by U.S. EPA and/or state and local air regulatory agencies.

Eighth-Mile 

22) ***Federal Permit Compliance System Toxic Wastewater Discharges:*** permitted toxic wastewater discharges.

Eighth-Mile 

23) ***Federal Civil and Administrative Enforcement Docket****:* judiciary cases filed on behalf of the U. S. Environmental Protection Agency by the Department of Justice.

On-site only (250 ft) 

24) ***New York City Environmental Quality Review (CEQR) – E Designation Sites****:* parcels assigned a special environmental ("E") designation under the CEQR process. E designation requires specific protocols that must be followed.

Property only 

25) ***ERNS: Federal Emergency Response Notification System Spills****:* a listing of federally reported spills.

Limitations Of The Information In Your Report

The information presented in your *Environmental Report* has been obtained from various local, state and federal government agencies. Please be aware that: **1)** additional information on individual sites may be available, **2)** newly discovered sites are continually reported and **3)** all map locations are approximate. As a result, this report is intended to be the FIRST STEP in the process of identifying and evaluating possible environmental threats to specific properties and can only serve as a guide for conducting on-site visits or additional, more detailed toxic hazard research.

Toxics Targeting tries to ensure that the information in your report is presented accurately and with minimal alteration. Systematic changes are made to correct obvious address errors in order to allow sites to be mapped. Any address changes that are made are noted in the map information section at the top of each corresponding *Toxic Site Profile*. Some information that has been withheld by government authorities remains included in Toxic Site Profiles and is identified as archival information. Since the information presented in your report is not edited, please be aware that it can contain reporting errors or typographical mistakes made by the site owners/operators or government agencies that produced the information. Also please be aware of some other limitations of the information in your report:

- The digital map used by *Toxics Targeting* is the same one used by the U. S. Census or local authorities in New York City. While the map is generally accurate, no map is perfect. In addition, *Toxics Targeting's* mapping methods estimate where toxic site addresses are located if the address is not specifically designated. FOR THESE REASONS, ALL MAP LOCATIONS OF ADDRESSES AND REPORTED TOXIC SITES SHOULD BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY ON-SITE VISITS;

- UNDISCOVERED, UNREPORTED OR UNMAPPABLE TOXIC SITES MIGHT NOT BE IDENTIFIED BY THIS REPORT'S CHECK OF 25 TOXIC SITE CATEGORIES. TOXIC SITES REPORTED IN OTHER GOVERNMENT DATABASES MIGHT ALSO EXIST. FOR THESE REASONS, YOUR REPORT MIGHT NOT IDENTIFY ALL THE TOXIC SITES THAT EXIST IN THE AREA IT SEARCHES;

- The appendix of your report contains a listing of sites that could not be mapped due to incomplete or erroneous address information or other mapping problems. This listing includes unmappable toxic sites in the zip codes searched for the report as well as toxic sites without zip codes reported in the same county. IF YOU WOULD LIKE INFORMATION ON ANY OF THE LISTED SITES, PLEASE CONTACT *TOXICS TARGETING AND REFER TO THE SITE ID NUMBER.*

- New York State Department of Environmental Conservation Remediation Site Borders are approximate and may not align with tax parcel boundaries mapped by local authorities or the digital map used by the US Census Bureau. As a result, Remediation Site Borders may overlap parcels that do not involve site remediation activities. Selected parcels also can involve multiple Remediation Site Borders. Refer to individual site profiles for more information. Sites without profiles include potential new sites or sites that have not yet been publicly listed by DEC.

- Some toxic sites identified in your report may be classified as **known hazards**. Most of the toxic sites identified in your report involve **potential hazards** related to the on-site use, manufacture, handling, storage, transport or disposal of toxic chemicals. Some of the toxic sites identified in your report may be the addresses of parties responsible for toxic sites located elsewhere. YOU SHOULD ONLY CONCLUDE THAT TOXIC HAZARDS ACTUALLY EXIST AT A SPECIFIC SITE WHEN GOVERNMENT AUTHORITIES MAKE THAT DETERMINATION OR WHEN THAT CONCLUSION IS FULLY DOCUMENTED BY THE FINDINGS OF AN APPROPRIATE SITE INVESTIGATION UNDERTAKEN BY LICENSED PROFESSIONALS;

- Compass directions and distances are approximate. Compass directions are calculated from the subject property address to the mapped location of each identified toxic site. The compass direction does not necessarily refer to the closest property boundary of an identified toxic site. The compass direction also can vary substantially for toxic sites that are located very close to the subject property address.

- The information presented in your report is a summary of the information that *Toxics Targeting* obtains from government agencies on reported toxic sites. YOU MAY BE ABLE TO OBTAIN ADDITIONAL INFORMATION ABOUT REPORTED SITES WITH THE FREEDOM OF INFORMATION REQUEST FORM LETTERS THAT ARE PROVIDED ON THE INSIDE OF THE BACK COVER.

Section One:

Report Summary

- *Table One: Number of Identified Toxic Sites By Distance Interval*
- *Table Two: Identified Toxic Sites By Direction*
- *Table Three: Identified Toxic Sites By Category*
- *Table Four: Identified Toxic Sites By Proximity*
- *Map One: One-Mile Radius Map*
- *Map Two: Half-Mile Radius Map*
- *Map Three: Eighth-Mile Radius Map*
- *Map Four: Eighth-Mile Radius Close up Map*
- *Map Five: Tax Parcel Map*
- *Table Five: Tax Parcel Map Information Table*

NUMBER OF IDENTIFIED SITES BY DISTANCE INTERVAL

Database Searched	0 − 100 ft	100 ft − 1/8 mi	1/8 mi − 1/4 mi	1/4 mi − 1/2 mi	1/2 mi − 1 mi	Site Category Totals
ASTM−Required 1 Mile Search						
National Priority List (NPL) Sites	0	0	0	0	0	0
NYS Inactive Hazardous Waste Disposal Site Registry	0	0	0	0	2	2
NYS Inactive Haz Waste Disposal Site Registry Qualifying	0	0	0	0	0	0
RCRA Corrective Action (CORRACTS) Sites	0	0	0	0	0	0
ASTM−Required 1/2 Mile Search						
Delisted National Priority List (NPL) Sites	0	0	0	0	Not searched	0
CERCLIS Superfund Non−NFRAP Sites	0	0	0	0	Not searched	0
CERCLIS Superfund NFRAP Sites	0	0	0	0	Not searched	0
Brownfields Sites						
Voluntary Cleanup Program	0	0	0	0	Not searched	0
Environmental Restoration Program	0	0	0	0	Not searched	0
Brownfield Cleanup Program	0	0	0	0	Not searched	0
NYC Voluntary Cleanup Program	0	0	0	0	Not searched	0
NYSDEC Solid Waste Facilities / Landfills	0	0	3	1	Not searched	4
RCRA Hazardous Waste Treatment, Storage, Disposal Sites	0	0	0	0	Not searched	0
NYS Toxic Spills						
Active Tank Failures	0	0	0	0	Not searched	0
Active Tank Test Failures	0	0	1	0	Not searched	1
Active Spills − Unknown / Other Causes	0	0	0	0	Not searched	0
Active Spills − Miscellaneous Causes	0	0	0(1)	0(4)	Not searched	0(5)
Closed Tank Failures	0	0	0	4	Not searched	4
Closed Tank Test Failures	0	0	5	6	Not searched	11
Closed Spills − Unknown / Other Causes	0	2	3	16	Not searched	21
Closed Spills − Miscellaneous Causes	0	4	2(17)	6(56)	Not searched	12(73)
ASTM−Required Property & Adjacent Property (1/8 Mile Search)						
NYS Major Oil Storage Facilities	0	0	Not searched	Not searched	Not searched	0
Local & State Petroleum Bulk Storage Sites	0	17	Not searched	Not searched	Not searched	17
RCRA Hazardous Waste Generators & Transporters	0	6	Not searched	Not searched	Not searched	6
NYS Chemical Bulk Storage Sites	0	0	Not searched	Not searched	Not searched	0
Historic Utility Facilities	0	0	Not searched	Not searched	Not searched	0
ASTM−Required On−Site Only Search						
NYC Environmental Quality Review Requirements ("E") Sites*	0	0	Not searched	Not searched	Not searched	0
Emergency Response Notification System (ERNS)	0	Not searched	Not searched	Not searched	Not searched	0
Institutional Controls / Engineering Controls (IC/EC)	See databases for NPL, CERCLIS, Inactive Hazardous Waste Disposal Site Registry and Brownfield Sites.					
ASTM−Required Databases Distance Interval Totals	**0**	**29**	**14(18)**	**33(60)**	**2**	**78(78)**

Numbers in ( ) indicate spills not mapped and profiled in this report, and are listed at the end of the active and closed spills sections. See these lists for a description of the parameters involved with identifying these spills.

* NYC Environmental Quality Review Requirements ("E") Sites were searched at 250 feet.

NOTE: Table continues on next page.

Non−ASTM Databases 1/2 Mile Search						
1934 NYC Municipal Waste Landfills	0	0	0	0	Not searched	0
Hazardous Substance Waste Disposal Sites	0	0	0	0	Not searched	0
Non−ASTM Databases 1/8 Mile Search						
Toxic Release Inventory Sites (TRI)	0	0	Not searched	Not searched	Not searched	0
Permit Compliance System (PCS) Toxic Wastewater Discharges	0	0	Not searched	Not searched	Not searched	0
Air Discharges	0	0	Not searched	Not searched	Not searched	0
Civil & Administrative Enforcement Docket Facilities	0	0	Not searched	Not searched	Not searched	0
Non−ASTM Databases Distance Interval Totals	**0**	**0**	**0**	**0**	**Not Searched**	**0**
Distance Interval Totals	***0***	***29***	***14(18)***	***33(60)***	***2***	***78(78)***

Numbers in ( ) indicate spills not mapped and profiled in this report, and are listed at the end of the active and closed spills sections. See these lists for a description of the parameters involved with identifying these spills.

Identified Toxic Sites by Direction

1037−1059 Beach 21st Street
Queens, NY 11691

* Compass directions can vary substantially for sites located very close to the subject property address.

Sites less than 100 feet from subject property sorted by distance

Map Id#	Site Name	Site Street	Approximate Distance & Direction From Property	Toxic Site Category
No sites found less than 100 feet from subject property				

Sites between 100 ft and 660 ft from the subject property sorted by direction and distance

Map Id#	Site Name	Site Street	Approximate Distance & Direction From Property	Toxic Site Category
46	FAR ROCKAWAY SHOPPING MALL	MOTT AVE., BETWEEN B. CHANNEL DRIVE & CENTRAL AVE	326 feet to the N	Closed Status Spill (Misc. Spill Cause)
73	MTA NYCT − MOTT AVENUE STATION − A	MOTT AVE & BEACH 22ND ST	326 feet to the N	Hazardous Waste Generator/Transporter
45	DRUM RUN	BEACH 21ST ST AND MOTT AVE	293 feet to the NNE	Closed Status Spill (Misc. Spill Cause)
74	SNOW WHITE CLEANERS	2088 MOTT AVENUE	330 feet to the NNE	Hazardous Waste Generator/Transporter
67	INT.PENTECOSTAL MISSION	16−18 CENTRAL AVE	613 feet to the NE	Petroleum Bulk Storage Site
68	ACTION CENTER FOR DEUCATION & COMMUNITY DEV.	16−12 CENTRAL AVENUE	651 feet to the NE	Petroleum Bulk Storage Site
69	SEAGRIT BAR & GRILL INC.	1612 CENTRAL AVE	651 feet to the NE	Petroleum Bulk Storage Site
59	SY YOUNG BAY	20−11 MOTT AVE	263 feet to the ENE	Petroleum Bulk Storage Site
65	ENGINE 328 AND ENGINE 264	16−15 CENTRAL AVENUE	560 feet to the ENE	Petroleum Bulk Storage Site
47	SPILL NUMBER 0000082	1920 MOTT AVE	623 feet to the ENE	Closed Status Spill (Misc. Spill Cause)
70	ROCKAWAY COMPANY	19−20 MOTT AVENUE	655 feet to the ENE	Petroleum Bulk Storage Site
71	JP MORGAN CHASE	19−12 MOTT AVENUE	655 feet to the ENE	Petroleum Bulk Storage Site
72	ROCKAWAY CO	19−14 MOTT AVE	655 feet to the ENE	Petroleum Bulk Storage Site
57	BAYMART (RETAIL STORE)	1057 BEACH 20TH STREET	223 feet to the E	Petroleum Bulk Storage Site
58	D−MART INC	1057 BEACH 20 ST	223 feet to the E	Petroleum Bulk Storage Site
62	ROCKAWAY CO	19−31 MOTT AVENUE	396 feet to the E	Petroleum Bulk Storage Site
44	OPPOSITE 1044 BEACH 21 ST	(MUNICPLE PARKING LOT)	145 feet to the SE*	Closed Status Spill (Misc. Spill Cause)
60	OWEN AUTO SERVICE	1017 BEACH 21ST STREET	319 feet to the S	Petroleum Bulk Storage Site
61	O & L AUTO REPAIRS	1017 BEACH 21 ST	319 feet to the S	Petroleum Bulk Storage Site
63	RCL SERVICE CENTER	1009 BEACH 21ST STREET	514 feet to the S	Petroleum Bulk Storage Site
64	D.J.S.SERVICE CORP.	1009 BEACH 21 ST	514 feet to the S	Petroleum Bulk Storage Site
23	VEHICLE REPAIR SHOP	10−09 CORNAGA AVE	516 feet to the S	Closed Status Spill (Unk/Other Cause)
76	NYNEX	CORNAGA AVE & BEAD 21ST	600 feet to the S	Hazardous Waste Generator/Transporter
66	2206 REALTY CORP	22−06 CORNAGA AVENUE	593 feet to the SW	Petroleum Bulk Storage Site

56	NOBO CORPORATION	10−74 BEACH 22ND STREET	124 feet to the NW*	Petroleum Bulk Storage Site
78	MYLES CLEANER	11−59 BEACH CHANNEL DRIVE	650 feet to the NW	Hazardous Waste Generator/Transporter
75	GEORGE L CHRIS CLEANERS	2140 MOTT AVENUE	531 feet to the NNW	Hazardous Waste Generator/Transporter
24	UNKNOWN	1210 BEACH CHANNEL DR	562 feet to the NNW	Closed Status Spill (Unk/Other Cause)
77	BELL ATLANTIC−NY	MOTT AVE & BEACH CHANNEL DR MH	617 feet to the NNW	Hazardous Waste Generator/Transporter

Sites equal to or greater than 660 ft from subject property sorted by direction and distance

Map Id#	Site Name	Site Street	Approximate Distance & Direction From Property	Toxic Site Category
43	MOTT BASIN	SHERIDAN BLVD	2493 feet to the N	Closed Status Spill (Unk/Other Cause)
1	K − INWOOD HOLDER	W. OF SHERIDAN BLVD. & S. OF NASSAU AVE.	3260 feet to the N	NYSDEC Inactive Haz Waste Disposal Site
4	JACK COLETTA INC./COLETTA RECYCLING	1629 REDFERN AVE	1160 feet to the NNE	Solid Waste Facility
5	REDFERN RECYCLING LLC	1629 REDFERN AVENUE	1160 feet to the NNE	Solid Waste Facility
6	METROPOLITAN RUBBER CO.	1406 AUGUSTINA AVENUE	1326 feet to the NNE	Solid Waste Facility
28	LIRR	NAMEOKE ST/REDFERN AVE	1489 feet to the NNE	Closed Status Spill (Unk/Other Cause)
30	INWOOD STATION − LIRR	RED FERN AVE	1573 feet to the NNE	Closed Status Spill (Unk/Other Cause)
51	LIRR	LIRR/INWOOD STA/REDFERN	1573 feet to the NNE	Closed Status Spill (Misc. Spill Cause)
40	SPILL NUMBER 9903890	13−02 REDFERN AVE	2377 feet to the NNE	Closed Status Spill (Unk/Other Cause)
41	REDFERN HOUSING −NYCHA	14−68 BEACH CHANNEL DR	2377 feet to the NNE	Closed Status Spill (Unk/Other Cause)
12	13−11 BAYPORT PLACE	13−11 BAYPORT PLACE	1043 feet to the NE	Closed Status Tank Test Failure
49	NYNEX BUILDING	13−11 BAYPORT PLACE	1043 feet to the NE	Closed Status Spill (Misc. Spill Cause)
9	12−13 NELSON ST	12−13 NELSON ST	1664 feet to the NE	Closed Status Tank Failure
10	12−13 NEILSON ST	12−13 NEILSON ST	1664 feet to the NE	Closed Status Tank Failure
53	PS253Q	1307 CENTRAL AVE	1922 feet to the NE	Closed Status Spill (Misc. Spill Cause)
31	CONSTRUCTION	1152 NEILSON ST	1842 feet to the ENE	Closed Status Spill (Unk/Other Cause)
42	1130 BEACH 9TH ST	1130 BEACH 9TH ST	2423 feet to the ENE	Closed Status Spill (Unk/Other Cause)
18	APART	10−14 NEILSON STREET	1854 feet to the E	Closed Status Tank Test Failure
3	AUTO MAVEN DENT DR INC	1016 BEACH 19TH STREET	796 feet to the ESE	Solid Waste Facility
26	HI AUTO SERVICE	18−11 MOTT AVENUE	1140 feet to the ESE	Closed Status Spill (Unk/Other Cause)
13	101ST POLICE PRECINT	16−12 MOTT AVENUE	1184 feet to the ESE	Closed Status Tank Test Failure
17	APARTMENT BUILDING TTF	15−02 MOTT AVENUE	1521 feet to the ESE	Closed Status Tank Test Failure
29	15−02 MOTT AVENUE	15002 MOTT AVENUE	1521 feet to the ESE	Closed Status Spill (Unk/Other Cause)
52	K MNGT BUILDINGS	13−22 CAFFREY AVE	1893 feet to the SE	Closed Status Spill (Misc. Spill Cause)
36	BEHIND THIS ADDRESS	13−25 CAFFREY AVE	2066 feet to the SE	Closed Status Spill (Unk/Other Cause)
38	RESIDENCE	2 WILLIAMS COURT	2153 feet to the SE	Closed Status Spill (Unk/Other Cause)
14	CLOSED−LACKOF RECENT INFO	19020 NEW HAVEN AVE.	1189 feet to the SSE	Closed Status Tank Test Failure
15	CLOSED−LACKOF RECENT INFO	19−20 NEW HAVEN AVENUE	1189 feet to the SSE	Closed Status Tank Test Failure
16	SAINT MARYS STAR OF SEA	19−20 NEW HAVEN AVENUE	1189 feet to the SSE	Closed Status Tank Test Failure
19	327 BCH 19TH ST	327 BEACH 19TH STREET	1880 feet to the S	Closed Status Tank Test Failure

20	ST JOHNS EPISCOPAL HOSPIT	327 BEACH 19TH ST	1880 feet to the S	Closed Status Tank Test Failure
21	APARTMENT BLDG.	20−30 ELK DR	1915 feet to the S	Closed Status Tank Test Failure
7	APT BUILDING TTF	22−11 NEW HAVEN AVE	1243 feet to the SSW	Active Tank Test Failure
54	SANDY FOLLOW UP	431 BEACH 122ND ST	1998 feet to the SSW	Closed Status Spill (Misc. Spill Cause)
22	KINGDOM HALL JEHOVA WIT	2360 BROOKHAVEN AVE	1924 feet to the SW	Closed Status Tank Test Failure
35	PUBLIC SCHOOL 215	535 BRIAR PL	1998 feet to the SW	Closed Status Spill (Unk/Other Cause)
25	PRIVATE HOME−SEWAGE	2254 CORNAGA AVE	1034 feet to the WSW	Closed Status Spill (Unk/Other Cause)
32	HOME	1035 DICKINS STREET	1900 feet to the W	Closed Status Spill (Unk/Other Cause)
33	1053 DICKENS AVENUE	1053 DICKONS AVENUE	1928 feet to the W	Closed Status Spill (Unk/Other Cause)
27	STREET SPILL?	11−43 MCBRIDE ST	1294 feet to the WNW	Closed Status Spill (Unk/Other Cause)
48	2230−40 MOTT AVENUE	2230−40 MOTT AVENUE	1011 feet to the NW	Closed Status Spill (Misc. Spill Cause)
8	22−88 MOTT AVENUE	22−88 MOTT AVENUE	1469 feet to the NW	Closed Status Tank Failure
34	PRIVATE RESD	13−77 GIPSON ST	1984 feet to the NW	Closed Status Spill (Unk/Other Cause)
50	1365 CHANDLER ST (HURRICANE SANDY)	1365 CHANDLER ST	1476 feet to the NNW	Closed Status Spill (Misc. Spill Cause)
11	NEXT TO	22−54 NAMEOKE AVE.	1822 feet to the NNW	Closed Status Tank Failure
37	CANAL	22−55 BATTERY ROAD	2117 feet to the NNW	Closed Status Spill (Unk/Other Cause)
55	MEK BUTTERY RD	BATTERY RD	2120 feet to the NNW	Closed Status Spill (Misc. Spill Cause)
39	IN ROADWAY	BATTERY RD & MCBRIDE ST	2212 feet to the NNW	Closed Status Spill (Unk/Other Cause)
2	175 ROGER AVENUE	175 ROGER AVENUE	4156 feet to the NNW	NYSDEC Inactive Haz Waste Disposal Site

Identified Toxic Sites by Category

1037−1059 Beach 21st Street
Queens, NY 11691

* Compass directions can vary substantially for sites located very close to the subject property address.

NYSDEC Inactive Haz. Waste Disposal Site Registry −− Total Sites − 2

Database searched at 1 MILE − ASTM required search distance: 1 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
1	130121	K − INWOOD HOLDER	W. OF SHERIDAN BLVD. & S. OF NASSAU AVE.	3260 feet to the N
2	130164	175 ROGER AVENUE	175 ROGER AVENUE	4156 feet to the NNW

Solid Waste Facilities −− Total Sites − 4

Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
3	NY40000011865	AUTO MAVEN DENT DR INC	1016 BEACH 19TH STREET	796 feet to the ESE
4	NY00000000355	JACK COLETTA INC./COLETTA RECYCLING	1629 REDFERN AVE	1160 feet to the NNE
5	NY40000116947	REDFERN RECYCLING LLC	1629 REDFERN AVENUE	1160 feet to the NNE
6	NY00000000356	METROPOLITAN RUBBER CO.	1406 AUGUSTINA AVENUE	1326 feet to the NNE

Active Tank Test Failures −− Total Sites − 1

Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
7	1304503	APT BUILDING TTF	22−11 NEW HAVEN AVE	1243 feet to the SSW

Closed Status Tank Failures −− Total Sites − 4

Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
8	9809570	22−88 MOTT AVENUE	22−88 MOTT AVENUE	1469 feet to the NW
9	9303657	12−13 NELSON ST	12−13 NELSON ST	1664 feet to the NE
10	9303442	12−13 NEILSON ST	12−13 NEILSON ST	1664 feet to the NE
11	0509035	NEXT TO	22−54 NAMEOKE AVE.	1822 feet to the NNW

Closed Status Tank Test Failures −− Total Sites − 11

Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
12	8801169	13−11 BAYPORT PLACE	13−11 BAYPORT PLACE	1043 feet to the NE
13	9412991	101ST POLICE PRECINT	16−12 MOTT AVENUE	1184 feet to the ESE
14	8706832	CLOSED−LACKOF RECENT INFO	19020 NEW HAVEN AVE.	1189 feet to the SSE
15	8706791	CLOSED−LACKOF RECENT INFO	19−20 NEW HAVEN AVENUE	1189 feet to the SSE
16	0307675	SAINT MARYS STAR OF SEA	19−20 NEW HAVEN AVENUE	1189 feet to the SSE
17	0904364	APARTMENT BUILDING TTF	15−02 MOTT AVENUE	1521 feet to the ESE
18	0800413	APART	10−14 NEILSON STREET	1854 feet to the E
19	9013017	327 BCH 19TH ST	327 BEACH 19TH STREET	1880 feet to the S
20	0204866	ST JOHNS EPISCOPAL HOSPIT	327 BEACH 19TH ST	1880 feet to the S
21	0403513	APARTMENT BLDG.	20−30 ELK DR	1915 feet to the S
22	9914058	KINGDOM HALL JEHOVA WIT	2360 BROOKHAVEN AVE	1924 feet to the SW

Closed Status Spills (Unknown Causes & Other Causes) −− Total Sites − 21

Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
23	1304092	VEHICLE REPAIR SHOP	10−09 CORNAGA AVE	516 feet to the S
24	9702230	UNKNOWN	1210 BEACH CHANNEL DR	562 feet to the NNW
25	0713846	PRIVATE HOME−SEWAGE	2254 CORNAGA AVE	1034 feet to the WSW
26	9707778	HI AUTO SERVICE	18−11 MOTT AVENUE	1140 feet to the ESE
27	0800735	STREET SPILL?	11−43 MCBRIDE ST	1294 feet to the WNW
28	0100123	LIRR	NAMEOKE ST/REDFERN AVE	1489 feet to the NNE
29	9304779	15−02 MOTT AVENUE	15002 MOTT AVENUE	1521 feet to the ESE
30	9802015	INWOOD STATION − LIRR	RED FERN AVE	1573 feet to the NNE
31	0903973	CONSTRUCTION	1152 NEILSON ST	1842 feet to the ENE

32	0613102	HOME	1035 DICKINS STREET	1900 feet to the W
33	9609624	1053 DICKENS AVENUE	1053 DICKONS AVENUE	1928 feet to the W
34	1006122	PRIVATE RESD	13−77 GIPSON ST	1984 feet to the NW
35	0108314	PUBLIC SCHOOL 215	535 BRIAR PL	1998 feet to the SW
36	0512048	BEHIND THIS ADDRESS	13−25 CAFFREY AVE	2066 feet to the SE
37	0606146	CANAL	22−55 BATTERY ROAD	2117 feet to the NNW
38	0412964	RESIDENCE	2 WILLIAMS COURT	2153 feet to the SE
39	9903496	IN ROADWAY	BATTERY RD & MCBRIDE ST	2212 feet to the NNW
40	9903890	SPILL NUMBER 9903890	13−02 REDFERN AVE	2377 feet to the NNE
41	9510331	REDFERN HOUSING −NYCHA	14−68 BEACH CHANNEL DR	2377 feet to the NNE
42	9107338	1130 BEACH 9TH ST	1130 BEACH 9TH ST	2423 feet to the ENE
43	9508409	MOTT BASIN	SHERIDAN BLVD	2493 feet to the N

Closed Status Spills (Miscellaneous Spill Causes) −− Total Sites − 12 **Database searched at 1/2 MILE − ASTM required search distance: 1/2 Mile**

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
44	0408292	OPPOSITE 1044 BEACH 21 ST	(MUNICPLE PARKING LOT)	145 feet to the SE*
45	1204054	DRUM RUN	BEACH 21ST ST AND MOTT AVE	293 feet to the NNE
46	0809169	FAR ROCKAWAY SHOPPING MALL	MOTT AVE., BETWEEN B. CHANNEL DRIVE & CENTRAL AVE	326 feet to the N
47	0000082	SPILL NUMBER 0000082	1920 MOTT AVE	623 feet to the ENE
48	9710254	2230−40 MOTT AVENUE	2230−40 MOTT AVENUE	1011 feet to the NW
49	9608080	NYNEX BUILDING	13−11 BAYPORT PLACE	1043 feet to the NE
50	1213364	1365 CHANDLER ST (HURRICANE SANDY)	1365 CHANDLER ST	1476 feet to the NNW
51	9201639	LIRR	LIRR/INWOOD STA/REDFERN	1573 feet to the NNE
52	8908672	K MNGT BUILDINGS	13−22 CAFFREY AVE	1893 feet to the SE
53	0312969	PS253Q	1307 CENTRAL AVE	1922 feet to the NE
54	1208861	SANDY FOLLOW UP	431 BEACH 122ND ST	1998 feet to the SSW
55	8600474	MEK BUTTERY RD	BATTERY RD	2120 feet to the NNW

Petroleum Bulk Storage Sites −− Total Sites − 17 **Database searched at 1/8 MILE − ASTM required search distance: Property & Adjacent**

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
56	2−602577	NOBO CORPORATION	10−74 BEACH 22ND STREET	124 feet to the NW*
57	2−607761	BAYMART (RETAIL STORE)	1057 BEACH 20TH STREET	223 feet to the E
58	NY03001	D−MART INC	1057 BEACH 20 ST	223 feet to the E
59	NY09596	SY YOUNG BAY	20−11 MOTT AVE	263 feet to the ENE
60	2−604688	OWEN AUTO SERVICE	1017 BEACH 21ST STREET	319 feet to the S
61	NY07570	O & L AUTO REPAIRS	1017 BEACH 21 ST	319 feet to the S
62	2−309060	ROCKAWAY CO	19−31 MOTT AVENUE	396 feet to the E
63	2−604080	RCL SERVICE CENTER	1009 BEACH 21ST STREET	514 feet to the S
64	NY03011	D.J.S.SERVICE CORP.	1009 BEACH 21 ST	514 feet to the S
65	2−358037	ENGINE 328 AND ENGINE 264	16−15 CENTRAL AVENUE	560 feet to the ENE
66	2−117773	2206 REALTY CORP	22−06 CORNAGA AVENUE	593 feet to the SW
67	NY04986	INT.PENTECOSTAL MISSION	16−18 CENTRAL AVE	613 feet to the NE
68	2−610219	ACTION CENTER FOR DEUCATION & COMMUNITY DEV.	16−12 CENTRAL AVENUE	651 feet to the NE
69	NY08938	SEAGRIT BAR & GRILL INC.	1612 CENTRAL AVE	651 feet to the NE
70	2−159263	ROCKAWAY COMPANY	19−20 MOTT AVENUE	655 feet to the ENE
71	2−612280	JP MORGAN CHASE	19−12 MOTT AVENUE	655 feet to the ENE
72	NY08576	ROCKAWAY CO	19−14 MOTT AVE	655 feet to the ENE

Hazardous Waste Generators, Transporters −− Total Sites − 6 **Database searched at 1/8 MILE − ASTM required search distance: Property & Adjacent**

MAP ID	FACILITY ID	FACILITY NAME	FACILITY STREET	DISTANCE & DIRECTION
73	NYR000150961	MTA NYCT − MOTT AVENUE STATION − A	MOTT AVE & BEACH 22ND ST	326 feet to the N
74	NYD982180663	SNOW WHITE CLEANERS	2088 MOTT AVENUE	330 feet to the NNE
75	NYD077444206	GEORGE L CHRIS CLEANERS	2140 MOTT AVENUE	531 feet to the NNW

76	NYP000932921	NYNEX	CORNAGA AVE & BEAD 21ST	600 feet to the S
77	NYP000940486	BELL ATLANTIC−NY	MOTT AVE & BEACH CHANNEL DR MH	617 feet to the NNW
78	NYD981141468	MYLES CLEANER	11−59 BEACH CHANNEL DRIVE	650 feet to the NW

Identified Toxic Sites by Proximity

1037−1059 Beach 21st Street, Queens, NY 11691

* Compass directions can vary substantially for sites located very close to the subject property address.

Map Id#	Site Name	Site Street	Approximate Distance & Direction From Property	Toxic Site Category
56	NOBO CORPORATION	10−74 BEACH 22ND STREET	124 feet to the NW*	Petroleum Bulk Storage Site
44	OPPOSITE 1044 BEACH 21 ST	(MUNICPLE PARKING LOT)	145 feet to the SE*	Closed Status Spill (Misc. Spill Cause)
57	BAYMART (RETAIL STORE)	1057 BEACH 20TH STREET	223 feet to the E	Petroleum Bulk Storage Site
58	D−MART INC	1057 BEACH 20 ST	223 feet to the E	Petroleum Bulk Storage Site
59	SY YOUNG BAY	20−11 MOTT AVE	263 feet to the ENE	Petroleum Bulk Storage Site
45	DRUM RUN	BEACH 21ST ST AND MOTT AVE	293 feet to the NNE	Closed Status Spill (Misc. Spill Cause)
60	OWEN AUTO SERVICE	1017 BEACH 21ST STREET	319 feet to the S	Petroleum Bulk Storage Site
61	O & L AUTO REPAIRS	1017 BEACH 21 ST	319 feet to the S	Petroleum Bulk Storage Site
46	FAR ROCKAWAY SHOPPING MALL	MOTT AVE., BETWEEN B. CHANNEL DRIVE & CENTRAL AVE	326 feet to the N	Closed Status Spill (Misc. Spill Cause)
73	MTA NYCT − MOTT AVENUE STATION − A	MOTT AVE & BEACH 22ND ST	326 feet to the N	Hazardous Waste Generator/Transporter
74	SNOW WHITE CLEANERS	2088 MOTT AVENUE	330 feet to the NNE	Hazardous Waste Generator/Transporter
62	ROCKAWAY CO	19−31 MOTT AVENUE	396 feet to the E	Petroleum Bulk Storage Site
63	RCL SERVICE CENTER	1009 BEACH 21ST STREET	514 feet to the S	Petroleum Bulk Storage Site
64	D.J.S.SERVICE CORP.	1009 BEACH 21 ST	514 feet to the S	Petroleum Bulk Storage Site
23	VEHICLE REPAIR SHOP	10−09 CORNAGA AVE	516 feet to the S	Closed Status Spill (Unk/Other Cause)
75	GEORGE L CHRIS CLEANERS	2140 MOTT AVENUE	531 feet to the NNW	Hazardous Waste Generator/Transporter
65	ENGINE 328 AND ENGINE 264	16−15 CENTRAL AVENUE	560 feet to the ENE	Petroleum Bulk Storage Site
24	UNKNOWN	1210 BEACH CHANNEL DR	562 feet to the NNW	Closed Status Spill (Unk/Other Cause)
66	2206 REALTY CORP	22−06 CORNAGA AVENUE	593 feet to the SW	Petroleum Bulk Storage Site
76	NYNEX	CORNAGA AVE & BEAD 21ST	600 feet to the S	Hazardous Waste Generator/Transporter
67	INT.PENTECOSTAL MISSION	16−18 CENTRAL AVE	613 feet to the NE	Petroleum Bulk Storage Site
77	BELL ATLANTIC−NY	MOTT AVE & BEACH CHANNEL DR MH	617 feet to the NNW	Hazardous Waste Generator/Transporter
47	SPILL NUMBER 0000082	1920 MOTT AVE	623 feet to the ENE	Closed Status Spill (Misc. Spill Cause)
78	MYLES CLEANER	11−59 BEACH CHANNEL DRIVE	650 feet to the NW	Hazardous Waste Generator/Transporter
68	ACTION CENTER FOR DEUCATION & COMMUNITY DEV.	16−12 CENTRAL AVENUE	651 feet to the NE	Petroleum Bulk Storage Site
69	SEAGRIT BAR & GRILL INC.	1612 CENTRAL AVE	651 feet to the NE	Petroleum Bulk Storage Site
70	ROCKAWAY COMPANY	19−20 MOTT AVENUE	655 feet to the ENE	Petroleum Bulk Storage Site
71	JP MORGAN CHASE	19−12 MOTT AVENUE	655 feet to the ENE	Petroleum Bulk Storage Site
72	ROCKAWAY CO	19−14 MOTT AVE	655 feet to the ENE	Petroleum Bulk Storage Site
3	AUTO MAVEN DENT DR INC	1016 BEACH 19TH STREET	796 feet to the ESE	Solid Waste Facility
48	2230−40 MOTT AVENUE	2230−40 MOTT AVENUE	1011 feet to the NW	Closed Status Spill (Misc. Spill Cause)
25	PRIVATE HOME−SEWAGE	2254 CORNAGA AVE	1034 feet to the WSW	Closed Status Spill (Unk/Other Cause)
12	13−11 BAYPORT PLACE	13−11 BAYPORT PLACE	1043 feet to the NE	Closed Status Tank Test Failure
49	NYNEX BUILDING	13−11 BAYPORT PLACE	1043 feet to the NE	Closed Status Spill (Misc. Spill Cause)
26	HI AUTO SERVICE	18−11 MOTT AVENUE	1140 feet to the ESE	Closed Status Spill (Unk/Other Cause)
4	JACK COLETTA INC./COLETTA RECYCLING	1629 REDFERN AVE	1160 feet to the NNE	Solid Waste Facility
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13	101ST POLICE PRECINT	16−12 MOTT AVENUE	1184 feet to the ESE	Closed Status Tank Test Failure
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8	22−88 MOTT AVENUE	22−88 MOTT AVENUE	1469 feet to the NW	Closed Status Tank Failure

50	1365 CHANDLER ST (HURRICANE SANDY)	1365 CHANDLER ST	1476 feet to the NNW	Closed Status Spill (Misc. Spill Cause)
28	LIRR	NAMEOKE ST/REDFERN AVE	1489 feet to the NNE	Closed Status Spill (Unk/Other Cause)
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29	15−02 MOTT AVENUE	15002 MOTT AVENUE	1521 feet to the ESE	Closed Status Spill (Unk/Other Cause)
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18	APART	10−14 NEILSON STREET	1854 feet to the E	Closed Status Tank Test Failure
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54	SANDY FOLLOW UP	431 BEACH 122ND ST	1998 feet to the SSW	Closed Status Spill (Misc. Spill Cause)
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55	MEK BUTTERY RD	BATTERY RD	2120 feet to the NNW	Closed Status Spill (Misc. Spill Cause)
38	RESIDENCE	2 WILLIAMS COURT	2153 feet to the SE	Closed Status Spill (Unk/Other Cause)
39	IN ROADWAY	BATTERY RD & MCBRIDE ST	2212 feet to the NNW	Closed Status Spill (Unk/Other Cause)
40	SPILL NUMBER 9903890	13−02 REDFERN AVE	2377 feet to the NNE	Closed Status Spill (Unk/Other Cause)
41	REDFERN HOUSING −NYCHA	14−68 BEACH CHANNEL DR	2377 feet to the NNE	Closed Status Spill (Unk/Other Cause)
42	1130 BEACH 9TH ST	1130 BEACH 9TH ST	2423 feet to the ENE	Closed Status Spill (Unk/Other Cause)
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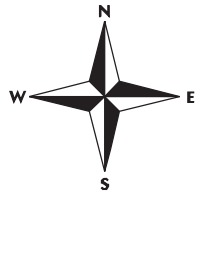
2	175 ROGER AVENUE	175 ROGER AVENUE	4156 feet to the NNW	NYSDEC Inactive Haz Waste Disposal Site

Toxics Targeting
1 Mile Radius Map

1037-1059 Beach 21st Street

Queens, NY 11691



Queens County

National Priority List (NPL)

Inactive Hazardous Waste Disposal Registry Site

Inact. Haz Waste Disp. Registry Qualifying

RCRA Corrective Action Facility

Site Location

Waterbody

County Border

Railroad Tracks

1 Mile Radius

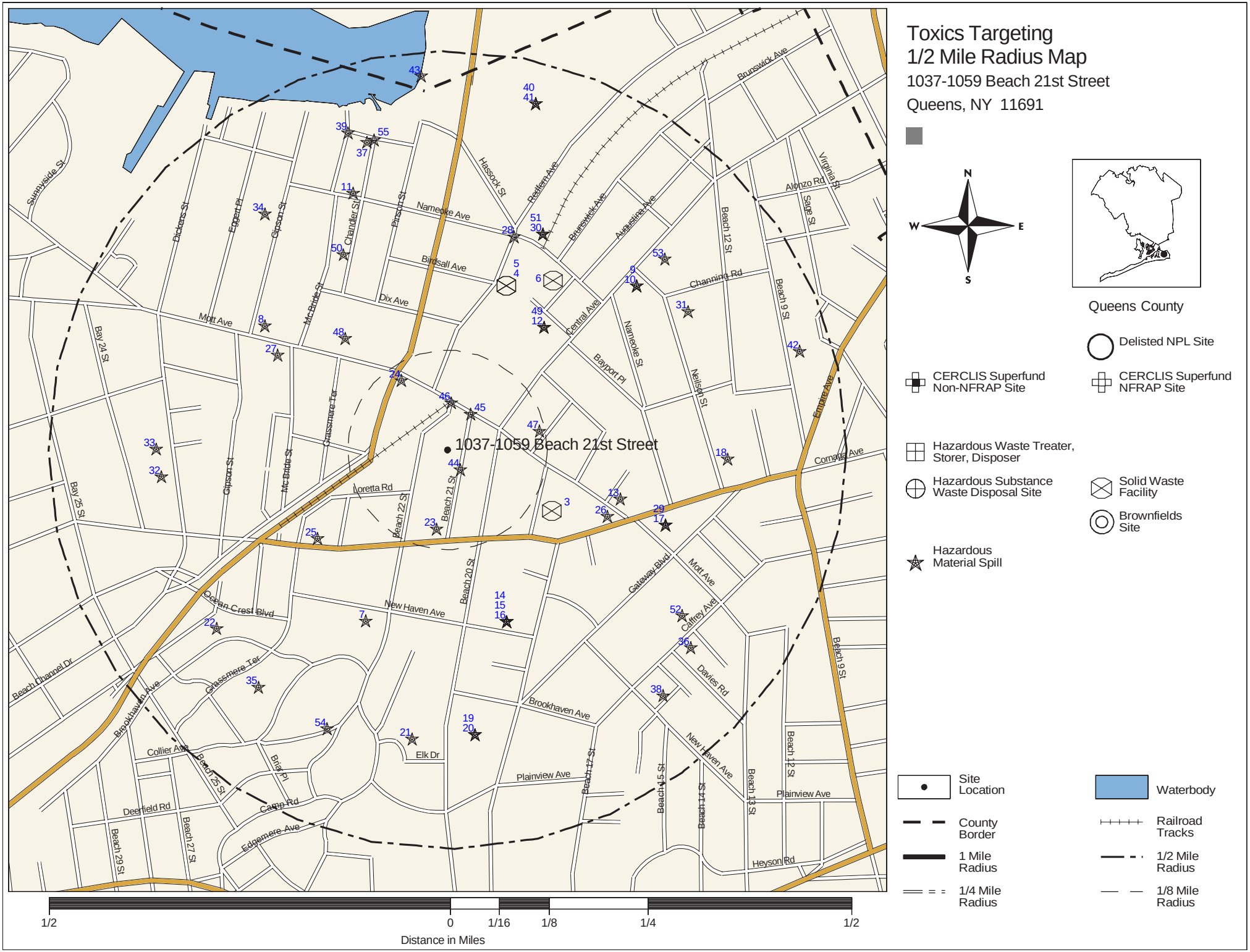
1/2 Mile Radius

1/4 Mile Radius

1/8 Mile Radius

1 0 1/8 1/4 1/2 1

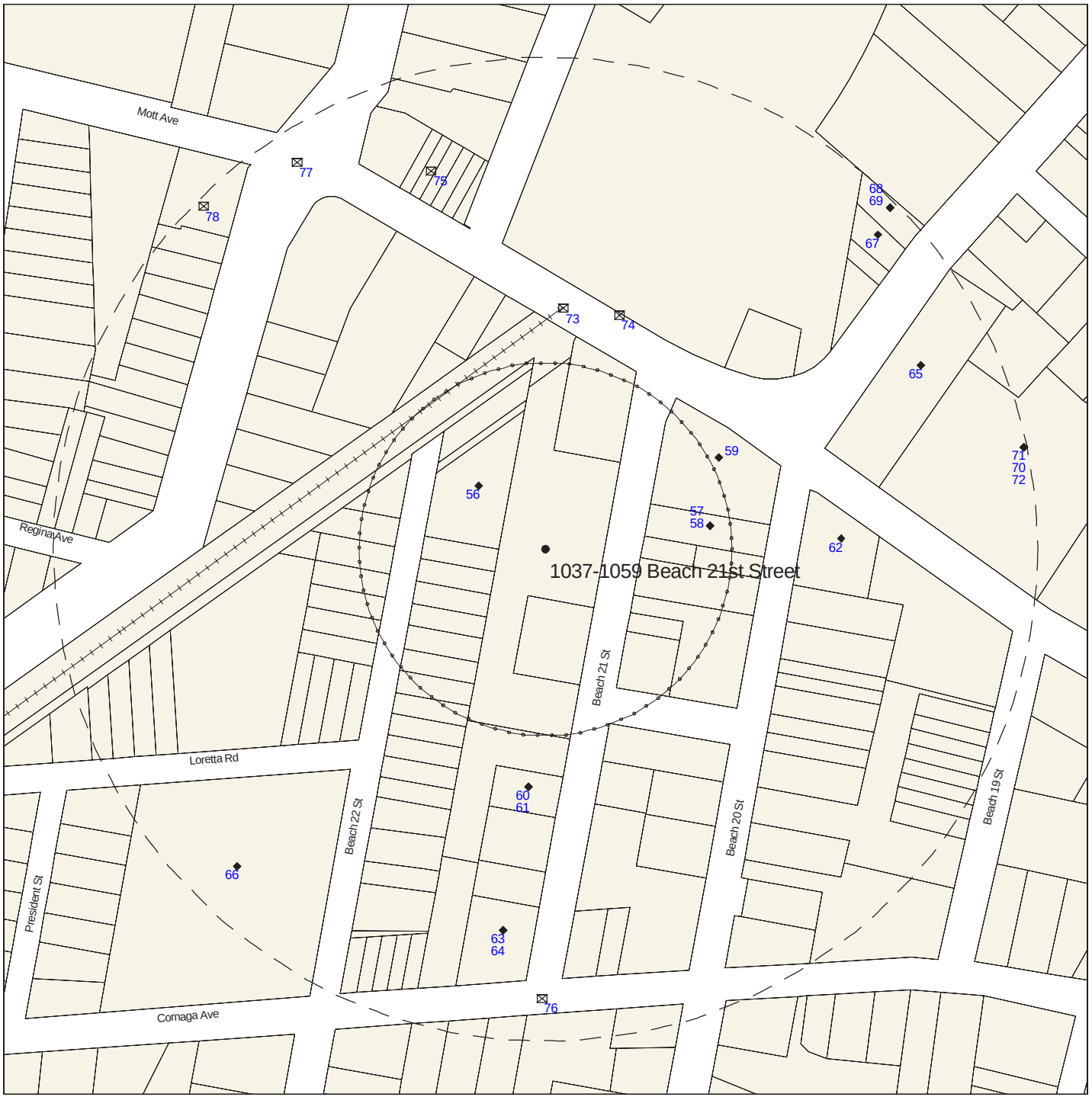
Distance in Miles


Toxics Targeting
1/2 Mile Radius Map
1037-1059 Beach 21st Street
Queens, NY 11691
N
W
E
S
Queens County
Delisted NPL Site
CERCLIS Superfund Non-NFRAP Site
CERCLIS Superfund NFRAP Site
Hazardous Waste Treater, Storer, Disposer
Hazardous Substance Waste Disposal Site
Solid Waste Facility
Brownfields Site
Hazardous Material Spill
1037-1059 Beach 21st Street
Site Location
Waterbody
County Border
Railroad Tracks
1 Mile Radius
1/2 Mile Radius
1/4 Mile Radius
1/8 Mile Radius
1/2
0
1/16
1/8
1/4
1/2
Distance in Miles
Brunswick Ave
Hassock St
Redfern Ave
Virginia St
Alonzo Rd
Sage St
Augustina Ave
Beach 12 St
Sunnyside St
Dickens St
Egbert Pl
Gipson St
Chandler St
Beach St
Nameoke Ave
Birdsall Ave
Channing Rd
Beach 9 St
Mott Ave
Mc Bride St
Dix Ave
Central Ave
Nameoke St
Bayport Pl
Nellison St
Empire Ave
Bay 24 St
Grassmere Ter
Cornaga Ave
Loretta Rd
Beach 22 St
Beach 21 St
Bay 25 St
Gateway Blvd
Beach 20 St
Ocean Crest Blvd
New Haven Ave
Cafrey Ave
Beach Channel Dr
Brookhaven Ave
Davies Rd
Collier Ave
Beach 25 St
Brigg Pl
Elk Dr
Plainview Ave
Beach 17 St
Beach 15 St
Beach 14 St
Beach 13 St
Deerfield Rd
Camp Rd
Edgemere Ave
Beach 27 St
Beach 29 St
Heyson Rd

Toxics Targeting
1/8 Mile Radius Map

1037-1059 Beach 21st Street

Queens, NY 11691



Queens County

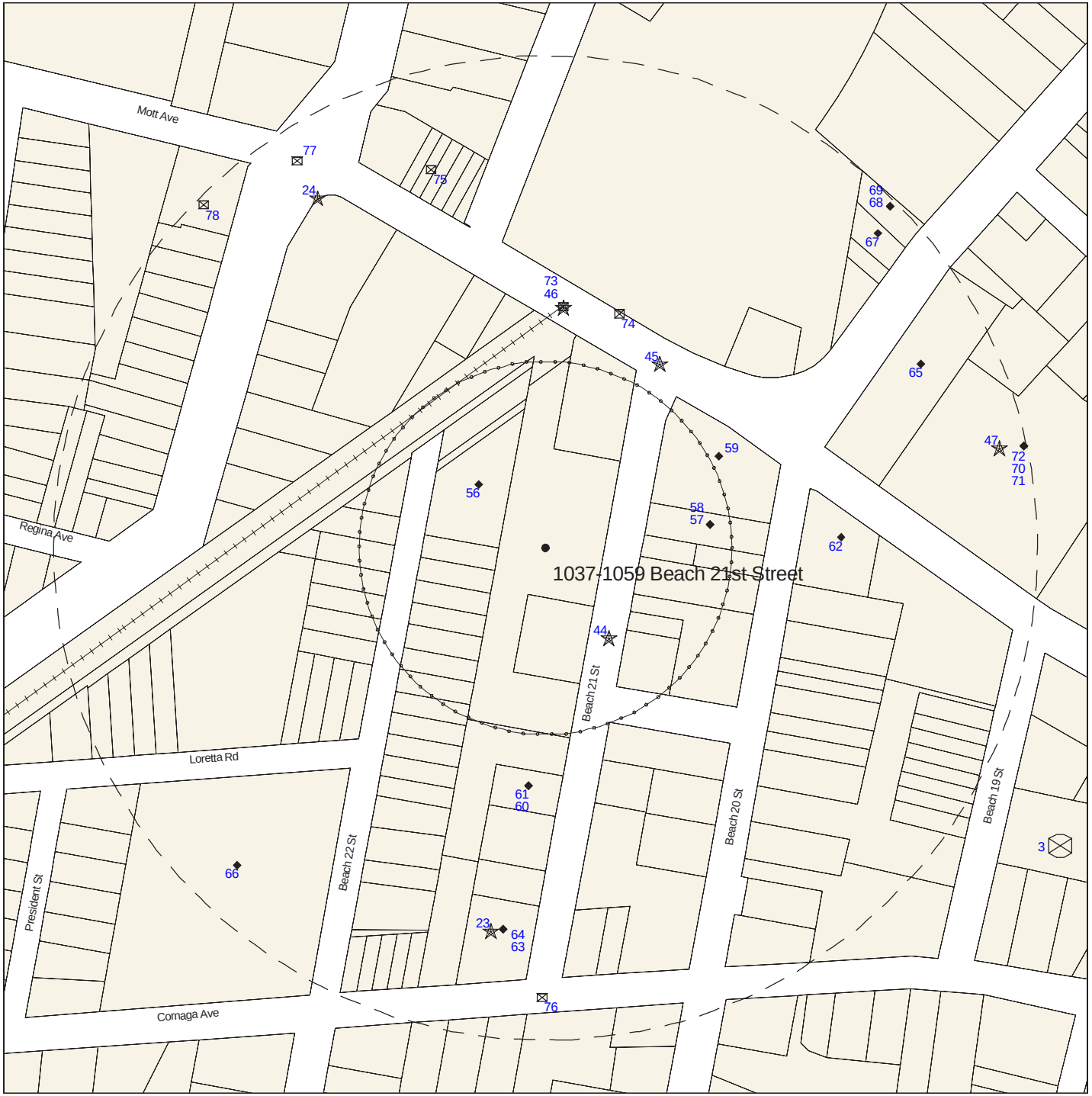
- Major Oil Storage Facility
- Chemical Storage Facility
- Toxic Release
- Wastewater Discharge
- Hazardous Waste Generator, Transp.
- Enforcement Docket Facility
- Air Release
- Env Qual Review E Designation
- Petroleum Bulk Storage Facility
- Historic Utility Site

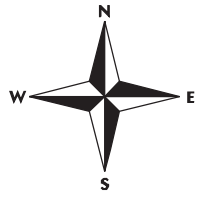
- Site Location
- County Border
- 1/8 Mile Radius
- Waterbody
- Railroad Tracks
- 250 Foot Radius

Toxics Targeting
1/8 Mile Closeup Map

1037-1059 Beach 21st Street

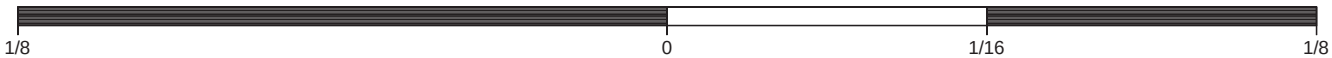
Queens, NY 11691





Queens County

- National Priority List (NPL) *
- Delisted NPL Site **
- CERCLIS Superfund Non-NFRAP Site **
- CERCLIS Superfund NFRAP Site **
- Inactive Hazardous Waste Disposal Registry Site *
- Inact. Haz Waste Disp. Registry Qualifying *
- Hazardous Waste Treater, Storer, Disposer **
- RCRA Corrective Action Facility *
- Hazardous Substance Waste Disposal Site **
- Solid Waste Facility **
- Major Oil Storage Facility ****
- Brownfields Site **
- Chemical Storage Facility ****
- Hazardous Material Spill **
- Toxic Release ****
- Wastewater Discharge ****
- Petroleum Bulk Storage Facility ****
- Hazardous Waste Generator, Transp. ****
- Historic Utility Site ****
- Enforcement Docket Facility ****
- Air Release ****
- Env Qual Review E Designation *****
- Remediation Site Borders
- Site Location
- Waterbody
- County Border
- Railroad Tracks
- 1/8 Mile Radius
- 250 Foot Radius



Distance in Miles

* 1 Mile Search Radius
** 1/2 Mile Search Radius
**** 1/8 Mile Search Radius
***** Onsite Search (250 Ft)

Toxics Targeting Tax Parcel Map

1037-1059 Beach 21st Street

Queens, NY 11691

N

W E

S

Queens County

- National Priority List (NPL)
- Delisted NPL Site
- CERCLIS Superfund Non-NFRAP Site
- CERCLIS Superfund NFRAP Site
- Inactive Hazardous Waste Disposal Registry Site
- Inact. Haz Waste Disp. Registry Qualifying
- Hazardous Waste Treater, Storer, Disposer
- RCRA Corrective Action Facility
- Hazardous Substance Waste Disposal Site
- Solid Waste Facility
- Major Oil Storage Facility
- Brownfields Site
- Chemical Storage Facility
- Hazardous Material Spill
- Toxic Release
- Wastewater Discharge
- Petroleum Bulk Storage Facility
- Hazardous Waste Generator, Transp.
- Historic Utility Site
- Enforcement Docket Facility
- Air Release
- Env Qual Review E Designation
- Remediation Site Borders
- Site Location
- Waterbody
- County Border
- Railroad Tracks

Tax Parcel Information Table

1037−1059 Beach 21st Street
Queens, NY 11691

Subject Parcel or Parcels

BBL #	Address	Owner	Zoning District(s)	Building Class	# of Buildings	Year Built	Assessment	Lot Area
4−15705−0059	BEACH 21 STREET	DEPT OF TRANSPORTATIO	C8−1 R5	V8	0		1147500	48565

Other Parcels Found On The Tax Parcel Map

BBL #	Address	Owner	Zoning District(s)	Building Class	# of Buildings	Year Built	Assessment	Lot Area
4−15537−0005	2010 MOTT AVENUE	NORTH FORK BANK	C4−2	O6	1	1970	409500	11100
4−15537−0001	2002 MOTT AVENUE	STARK RITA (EX)	C4−2 C8−1	K6	2	1931	1087650	563404
4−15705−0031	1042 BEACH 22 STREET	FROST, HYACINTH	R5	B2	1	2002	26400	2844
4−15704−0040	2001 BEACH 20 STREET	CENTRAL BUILDING CORP	C4−2	K9	1	1941	614250	18027
4−15709−0158	1049 BEACH 22 STREET	GERALD STANLEY	R5	B2	1	2002	25567	3125
4−15704−0030	1050 BEACH 21 STREET	BRENTON DEER	C4−2	S1	1	1931	15714	1800
4−15705−0030	1040 BEACH 22 STREET	PIPIA, ANTHONY	R5	B2	1	2002	26400	2844
4−15705−0078	1027 BEACH 21 STREET	BEACH 21ST STREET REA	C8−1 R5	Z9	1		101700	14060
4−15705−0136	BEACH 22 STREET	STATE LAND UNDER WATE	C8−1	V8	0		48600	2059
4−15704−0066	1027 BEACH 20 STREET	KOTLAR REALTY LLC	C4−2	K9	1	1931	355500	8000
4−15704−0053	1057 BEACH 20 STREET	D−MART, INC	C4−2	K9	1	1930	345600	7200
4−15704−0055	1055 BEACH 20 STREET	GLEITMAN RLTY ASSOCIA	C4−2	L8	1	1931	48600	2638
4−15704−0026	1040 BEACH 21 STREET	BURKE, PATRICK	C4−2	K4	1	1931	186300	5250
4−15705−0140	1074 BEACH 22 STREET	10−74 BEACH 22ND ST I	C8−1 R5	G2	1	1995	85500	13710
4−15705−0135	BEACH 22 STREET	D C A S	C8−1	V9	0		145800	6170
4−15705−0034	1054 BEACH 22 STREET	LESLYN BISHOP	R5	B2	1	2000	25249	3058
4−15709−0002	2204 LORETTA ROAD	SANDERS, KIM	R5	B1	1	1940	9028	3069
4−15705−0028	1034 BEACH 22 STREET	JEFFREY, VINCENT	R5	B2	1	2002	26400	2844
4−15705−0033	1050 BEACH 22 STREET	MICHELLE CHARLES	R5	B2	1	2000	25249	3058
4−15709−0001	2202 LORETTA ROAD	GODETTE, CHRISTINE	R5	B1	1	1940	13310	2316
4−15709−0025	LORETTA ROAD	NYS DOT	R5 R4−1	U7	0			7392
4−15705−0069	BEACH 21 STREET	NYC TRANSIT AUTHORITY	C8−1	V8	0		224100	9479
4−15705−0029	1036 BEACH 22 STREET	JEFFREY, VINCENT	R5	B2	1	2002	26400	2844
4−15709−0160	1047 BEACH 22 STREET	WAYNE MCGHEE	R5	B2	1	2002	25567	3125
4−15704−0057	1051 BEACH 20 STREET	1051 BCH 20ST ASSOCIA	C4−2	K1	1	1967	278100	8000
4−15709−0150	1063 BEACH 22 STREET	MARIA NOBOA	R5	A1	1	1930	10026	3548
4−15709−0109	2123 MOTT AVENUE	CHO & P PRODPERTY COR	R5	K1	1	1938	464850	26578
4−15704−0060	1047 BEACH 20 STREET	LINO REALTY CORP	C4−2	C7	2	1930	838350	12950
4−15705−0036	1060 BEACH 22 STREET	AVA M PRUITT	R5	B2	1	2000	25249	3058
4−15705−0032	1048 BEACH 22 STREET	MILTON CROSSDALE	R5	B2	1	2000	25249	3062
4−15705−0035	1056 BEACH 22 STREET	JAMES SPANN	R5	B2	1	2000	25249	3058
4−15709−0118	2117 MOTT AVENUE	ROCKAWAY DEVELOPMENT&	R5	K9	1	1931	204750	2200
4−15709−0154	1055 BEACH 22 STREET	ALMEIDA, MANUEL	R5	B2	1	2002	25567	3125
4−15709−0155	1053 BEACH 22 STREET	ICILDA MOORE	R5	B2	1	2002	25567	3125
4−15709−0115	2119 MOTT AVENUE	PATEL PRAVIN	R5	K9	1	1931	328950	5008
4−15709−0215	2119A MOTT AVENUE	FAVIOLA LLC	R5	V3	0		8880	2816
4−15709−0152	1059 BEACH 22 STREET	TULLOCH, VANTROY	R5	S1	2	1930	13320	3750
4−15705−0037	1062 BEACH 22 STREET	VICTOR, RONALD	R5	B2	1	2000	20220	3058

BBL #	Address	Owner	Zoning District(s)	Building Class	# of Buildings	Year Built	Assessment	Lot Area
4−15709−0145	BEACH 22 STREET	VEERASAWMY, JOAN W	R5	Z9	0		33300	3086
4−15705−0125	2101 MOTT AVENUE	TARIK HOLDING CORP	C8−1	K9	1	1960	556200	11844
4−15709−0086	1120 BEACH CHANNEL DRIVE	LUCAS, GWENDOLINE	R5	B3	2	1920	21703	7604
4−15709−0035	LORETTA ROAD	DEPT OF GENERAL SERVI	R5 R4−1	U7	0			59600
4−15704−0036	1062 BEACH 21 STREET	GLEITMAN RLTY ASSOCIA	C4−2	G2	1	1963	77850	2100

Section Two: Toxic Site Profiles

The heading of each *Toxic Site Profile* refers to the site's map location and details:

- The facility name, address, city, state, and zip code.
- Any changes that were made to a site's address in order to map its location.
- The site mapping method that was used (see ***How Sites are Located***, at the end of this section for more information).

Toxic Site Profiles summarize information provided by site owners or operators and government agencies regarding various toxic chemical activities reported at each site, such as:

- Whether chemicals were stored, produced, transported, discharged or disposed of.
- The name of chemicals and their Chemical Abstract Series (CAS) numbers.
- The amount of chemicals and the units (gallons/pounds) the chemical was measured in.
- Whether the site or storage tanks at the site are currently active or inactive.
- Special codes used by government agencies to regulate hazardous waste activities at some sites, or a complete description of the codes follows the profiles section.

For selected individual chemicals reported at various toxic sites, some potential health effect summary information appears below the site profile. Each potential health effect summary identifies chemicals by name and by Chemical Abstract Series (CAS) Number. An "x" under each potential health effect heading indicates positive toxicity testing results reported by the National Institute of Occupational Safety and Health's Registry of Toxic Effects of Chemical Substances (RTECS). Some chemicals (mostly appearing in profiles of Hazardous Waste facilities), are reported as mixtures, and RTECS health effect information is only available for individual chemicals. In addition, RTECS only provides information on approximately 100,000 common chemicals. Consequently, the absence of potential health effect summary information for a particular chemical identified in a Toxic Site Profile does not necessarily mean that the chemical does not pose potential health effects.

The Maximum Contaminant Level (MCL) in drinking water allowed for selected chemicals is also noted. In most cases, the only applicable MCL has been set by the New York State Department of Health (NYSDOH). Where NYSDOH has not set an MCL, the federal standard, if one exists, is listed and is marked by an asterisk.

Presented below are column headings that describe the health effect definitions used in RTECS and applicable New York State and federal drinking water standards. Reference sources for information presented in this section are also provided.

ACUTE TOX: **Acute Toxicity**: Short-term exposure to this chemical can cause lethal and non-lethal toxicity effects not included in the following four categories.

TUMOR TOX: **Tumorigenic Toxicity**: The chemical can cause an increase in the incidence of tumors.

MUTAG TOX: **Mutagenic Toxicity**: The chemical can cause genetic alterations that are passed from one generation to the next.

REPRO TOX: **Reproductive Toxicity**: May signify one of the following effects: maternal effects, paternal effects, effects on fertility, effects on the embryo or fetus, specific developmental abnormalities, tumorigenic effects, or effects on the newborn (only positive reproductive effects data for mammalian species are referenced).

IRRIT TOX: **Primary Irritant**: The chemical can cause eye or skin irritation.

MCL: **Drinking Water Standard - Maximum Contaminant Level** (MCL) listed under Drinking Water Supplies, 10 NYCRR Part 5, Subparts 1.51(f),(g), and (h) for NYDOH MCL's and under the Safe Drinking Water Act, 40 CFR 141, Subparts B and G, (* indicates value for total trihalomethanes) for federal MCL's.

Reference Source for Toxicity Information: Registry of Toxic Effects of Chemical Substances (RTECS), NIOSH (on-line database); For further information, contact: NIOSH, 4676 Columbia Parkway, Cincinnati, OH, 45226, 800/35-NIOSH.

Reference Source for Drinking Water Standards: New York State Department of Health, Bureau of Toxic Substances Assessment, 2 University Place, Room 240, Albany, NY 12203, 518/458-6373.

U.S. Environmental Protection Agency, Office of Drinking Water, 401 M St SW, Mailstop WH-556, Washington, DC, 20460, 202/260-5700.

Inactive Hazardous Waste Disposal Site Classifications:

1 -- Causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or the environment -- immediate action required;
2 -- Significant threat to the public health or environment -- action required;
3 -- Does not Present a significant threat to the environment or public health -- action may be deferred;
4 -- Site properly closed --requires continued management;
5 -- Site properly closed, no evidence of present or potential adverse impact -- no further action required;
2a -- This temporary classification has been assigned to sites where there is inadequate data to assign them to the five classifications specified by law;
A -- Work underway and not yet complete;
P -- Potential Site;
$D_{1, 2, 3}$ -- Delisted Site (1: hazardous waste not found; 2: remediated; 3: consolidated site or site incorrectly listed);
C -- Remediation Complete (formerly D2).

NO NATIONAL PRIORITIES LIST (NPL) SITES IDENTIFIED WITHIN 1 MILE SEARCH RADIUS

INACTIVE HAZ WASTE DISPOSAL REGISTRY OR REGISTRY−QUALIFYING SITES IDENTIFIED WITHIN 1 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 1 **K − INWOOD HOLDER** **Facility Id: 130121**
W. OF SHERIDAN BLVD. & S. OF NASSAU AVE. INWOOD (V), NY 11696 TT−Id: 120A−0007−059

MAP LOCATION INFORMATION
Site location mapped by: MAP COORDINATE − LARGE SITE
Approximate distance from property: 3260 feet to the N

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: UNKNOWN

****

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL SITE INFORMATION

SITE CODE: 130121
CLASSIFICATION CODE: A REGION: 1 DEC ID: 378988
CLASSIFICATION CODE DESCRIPTION:
Work is underway and not yet complete.

NAME OF SITE: K - Inwood Holder
STREET ADDRESS: W. of Sheridan Blvd. & S. of Nassau Ave. TOWN: Hempstead
CITY: Inwood (V) ZIP: 11696 COUNTY: Nassau

ESTIMATED SIZE: 27 Acres
SITE TYPE: Dump- Structure- Lagoon- Landfill- Treatment Pond-

INSTITUTIONAL/ENGINEERING CONTROLS:
None reported

CROSS REFERENCES:
None reported

SITE OWNER/OPERATOR/REPOSITORY INFORMATION:
CURRENT OWNER(S):

OWNER(S) DURING DISPOSAL:

OPERATOR(S) DURING DISPOSAL:

APPLICANT REQUESTOR(S):

DOCUMENT REPOSITORY(S):
NAME: Peninsula Public Library
ADDRESS: 280 Central Ave
Lawrence, NY 11559-1526

HAZARDOUS WASTE DISPOSAL PERIOD:

SITE DESCRIPTION:
Location: The Inwood Holder site is a 27 acre site located in an urban area. The site is located on the southwest corner of Nassau Avenue and Sheridan Blvd. in Inwood, NY.

Site Features: The majority of the site is undeveloped and overgrown with trees and brush. The concrete foundations of the former gas holder, pump house, boiler house and engine room are visible and located in the northeastern area of the parcel. A natural gas metering and regulation station is in operation and located east of the holder foundation and adjacent to Sheridan Blvd. Motts Basin resides on the southern border of the site. Current Zoning and Land Use: The site is currently inactive, except for the area around the regulator station. Current zoning is commercial. The surrounding parcels are currently used for a combination of commercial and light industrial purposes. The closest residence is located upgradient from the site, along Nassau Avenue approximately 60 feet from the site boundary. Past Use of the Site: The gas holder was constructed between 1923 and 1930, and operated until approximately 1972. The holder was removed in 1993. During an unspecified time period, the central-southern portion of the site was used as a fill area for fly ash, drums and construction debris. This contributed to the petroleum impacts found during a 1993 site investigation. Site Geology and Hydrogeology: The site is underlain by fill consisting of gravels, silty sand and combustion residuals (coal and ash). A two to three foot thick peat layer is encountered at most locations at depths from roughly 7 to 11 feet below ground surface (bgs). Below the peat is a layer of silty sand. Groundwater is encountered between 2 and 13.5 feet bgs with flow to the south and southwest.

CONFIRMED HAZARDOUS WASTE DISPOSED:

TYPE	QUANTITY
COAL TAR	UNKNOWN

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:
Nature and Extent of Contamination: Based upon investigations conducted to date, the primary contaminants of concern at the site include coal tar and petroleum. Soil - The majority of the visually observed impacts were identified south and southwest of the former gas holder and include petroleum and holder related materials. Visually observed impacts were generally above the peat unit. Deep impacts below the peat layer were observed in SB-47, with DNAPL saturation from 23.5 to 35 ft bgs. In above the peat layer, in SB-35, a total BTEX value of 1,820 ppm was detected in the 9.5 to 10 ft bgs interval. In SB-20, a total PAH value of 485 ppm was detected in the 8.5-10 ft bgs interval. In TP-12, a total PAH value of 2,340 ppm was detected in the 6.5-7 ft bgs interval. Below the peat layer, in SB-20, a total PAH value of 3,600 ppm was detected in the 22-23.5 ft bgs interval.

Groundwater - Groundwater is impacted by dissolved phase VOCs emanating from the MGP and petroleum related source area. Total

BTEX from MW-21S, screened from 3-8 ft, within this source area, was initially detected at a level of 63,000 ppb, but has decreased to 5,060 ppb in the third sampling event. Tetrachloroethene (PCE) was detected at 58,000 ppb in SB-6, screened from 24-28 ft, and 12,000 ppb in MW-51I, screened from 18-28 ft, both situated on the northern, upgradient border of the site.

Soil Vapor & Indoor Air - Only soil vapor samples were collected, as there are no occupied buildings on the site. Possible MGP-related compounds detected above guidance values were trimethylbenzenes, 4-Ethyltoluene, carbon disulfide, ethylbenzene, hexane, naphthalene, styrene, toluene, and xylenes. Non MGP-related compounds detected above guidance values were 1,1,1-Trichloroethane, 1,1-Dichloroethane, 2- Butanone, acetone, chloroform, cis-1,2-Dichloroethene, methylene chloride, and tetrachloroethene (PCE).

ASSESSMENT OF HEALTH PROBLEMS:
People who enter the site could contact contaminants in the soil or sediments by walking on the site, digging or otherwise disturbing the soil or sediments. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. People are not expected to come into direct contact with contaminated groundwater unless they dig below the ground surface. Volatile organic compounds in contaminated groundwater or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Additional environmental sampling is necessary to evaluate the potential for soil vapor intrusion to impact on- and off-site buildings.

PROJECT COMPLETIONS:
None reported

The New York State Department of Environmental Conservation has not publicly updated the following fields since 2003:

ANALYTICAL DATA AVAILABLE FOR:	Air-	Surface Water-	Groundwater-	Soil-	Sediment-
APPLICABLE STANDARDS EXCEEDED IN:	Groundwater-	Drinking Water-	Surface Water-	Air-	

GEOTECHNICAL INFORMATION:
SOIL/ROCK TYPE:
GROUNDWATER DEPTH:

LEGAL ACTION:	Type:		State-	Federal-
STATUS:	Negotiation in Progress-		Order Signed-	
REMEDIAL ACTION:	Proposed-	Under Design-	In Progress-	Completed-
NATURE OF ACTION:				

Map Identification Number 2 **175 ROGER AVENUE** **Facility Id: 130164**
175 ROGER AVENUE INWOOD, NY 11096 TT−Id: 120A−0008−559

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (3)
Approximate distance from property: 4156 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

****

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL SITE INFORMATION

SITE CODE: 130164
CLASSIFICATION CODE: 02 REGION: 1 DEC ID: 479943
CLASSIFICATION CODE DESCRIPTION:
Significant threat to the public health or environment - action required.

NAME OF SITE: 175 Roger Avenue
STREET ADDRESS: 175 Roger Avenue TOWN: Hempstead
CITY: Inwood ZIP: 11096 COUNTY: Nassau

ESTIMATED SIZE: 4.85 Acres
SITE TYPE: Dump- Structure-X Lagoon- Landfill- Treatment Pond-

INSTITUTIONAL/ENGINEERING CONTROLS:
None reported

CROSS REFERENCES:
None reported

SITE OWNER/OPERATOR/REPOSITORY INFORMATION:
CURRENT OWNER(S):
NAME: Nassau County Owner Type: PRP - Class 2 HazSubs
Dept of Public Works - Division of Real Estate
ADDRESS: 1 West Street
Room 200
Mineola, NY 11501

OWNER(S) DURING DISPOSAL:

OPERATOR(S) DURING DISPOSAL:

HAZARDOUS WASTE DISPOSAL PERIOD:

SITE DESCRIPTION:
Location: The 175 Roger Avenue site is located at 175 Roger Avenue, Inwood, Town of Hempstead, Nassau County. The Site is bordered to the north by Roger Avenue, with a parking lot (former Shell terminal) to the northwest, a gravel/soil recycling facility and Sony Pictures and Entertainment to the northeast. Further north is the Negro Bar Channel, a waterway to Jamaica Bay. South of the Site are residential properties, followed by Bayview Avenue. The Site is bordered to the east by Gates Avenue, followed by commercial buildings. Immediately west of the Site is a freight and cargo company. Site Features: The site consists of a 4.85 acre parcel of land that is developed with a 155,000 square foot one-story, warehouse building with a partial mezzanine. The remainder of the site consists of asphalt and concrete paved driveway/parking area with limited areas of grass. Current Zoning/Use(s): This site is currently zoned for commercial use in a primarily commercial and residential urban area.

Historic Use(s) and Source(s): Historical site documentation indicates that the Site was built in three stages from 1954 through 1967. The Site was used as a "Sheet Metal Fabrication" factory since at least 1961. Rockaway Metal Products occupied the Site from approximately 1971 until circa 1987. In 1987, Rockaway Metal Products abandoned the Site and left hazardous waste materials improperly stored and disposed of on-Site. On June 15 and 16, 1992, the United States Environmental Protection Agency (USEPA) personnel conducted a site inspection and discovered the following: approximately 240 55-gallon deteriorated and leaking drums, a 5,000-gallon tanker trailer in poor condition, dry wells that appeared to contain sludge materials and USTs that contained potentially flammable liquids. To address the hazardous condition, the EPA conducted an Emergency Removal Action from August 1993 through April 1995. Approximately 240 55-gallon drums of waste materials were removed. The tanker trailer, one 1,000-gallon heating oil UST located in the southeast portion of the Site and UST piping/ dispenser systems were removed. Following the removal action, the Site was used as a warehouse by various tenants from 1990 through 2004, including Gunter Auto Shop, an auto repair shop. The Site was acquired by Nassau County Department of Real Estate in 1995 because of nonpayment of taxes and continues to own the Site. Since 2004 the site has remained vacant. The site building was damaged by a fire in February 2011 and has been condemned and needs to be demolished.

Site Geology/Hydrogeology: The Site ground surface is approximately 10 feet above mean sea level. The Site is generally flat and has a gentle slope towards the northwest. The Site contains no areas classified as wetlands, and is covered with concrete, asphalt and surrounded by paved roadways and sidewalks. Depth to groundwater throughout the Site ranges from 4 to 6 feet bgs and appears to be tidally influenced. A groundwater divide appears to run through the center of the Site, with an apparent groundwater flow direction towards both the northwest and southeast. March 2013: The applicant, Expeditors International, has elected to terminate the Brownfield Cleanup Agreement and cease participating in the BCP. Termination letter was received from Applicant March 8, 2013. Central Office issued withdrawal acceptance letter March 19, 2013. Nassau County currently owns the property. February 2015: Expeditors International is currently considering buying the property from Nassau County. The Department’s attorney assigned to the project is in negotiations with Expeditors regarding executing a Consent Order.

CONFIRMED HAZARDOUS WASTE DISPOSED:

TYPE	QUANTITY
XYLENE (MIXED)	UNKNOWN
ARSENIC	UNKNOWN
ETHYLBENZENE	UNKNOWN
LEAD	UNKNOWN
NAPHTHALENE	UNKNOWN

THALLIUM	UNKNOWN
TETRACHLOROETHYLENE (PCE)	UNKNOWN
CADMIUM	UNKNOWN
MERCURY	UNKNOWN
1,2,4-TRIMETHYLBENZENE	UNKNOWN
VINYL CHLORIDE	UNKNOWN
CHROMIUM	UNKNOWN
TOLUENE	UNKNOWN
TRICHLOROETHENE (TCE)	UNKNOWN
DICHLOROETHYLENE	UNKNOWN
1,1 Dichloroethene	UNKNOWN

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Nature and Extent of Contamination: The primary contaminants of concern at the site at this time include petroleum hydrocarbons, chlorinated volatile organic compound (VOCs), semi-volatile organic compounds (SVOCs) and metals. The media impacted include soil, soil vapor and groundwater.

Site Soils: Soil impacts appear to be limited to the area immediately surrounding the three abandoned USTs in the north central area of the site. Shallow soil samples were found to contain levels of VOCs, including 1,2,4-trimethylbenzene (870,000 micrograms per kilogram, ug/kg), 1,3,5-trimethylbenzene (390,000 ug/kg) and several petroleum related compounds above the commercial SCOs. Site dry wells have been impacted by selected metals, such as cadmium, chromium, lead and mercury. These compounds were detected above protection of groundwater SCOs.

Groundwater: A petroleum hydrocarbon plume is centered along the northeast section of the Site and appears to extend off-site to the northwest and southeast at depths greater than 20 feet below ground surface (bgs). The plume appears to be emanating from the area of the abandoned USTs. A chlorinated VOC plume is widespread throughout the Site, with elevated levels of vinyl chloride (340 micrograms per Liter, ug/L), cis-1,2-dichloroethylene (6,400 ug/L), trichloroethylene (TCE) (6,100 ug/L) and tetrachloroethylene (PCE) (9,800 ug/L)in groundwater. The chlorinated VOC levels increase with depth throughout the Site. The plume appears to extend off-Site to the southeast and northwest. In addition, arsenic (29 ug/L), thallium (55 ug/L) and lead (69 ug/L), were identified in the Site groundwater at levels above the standards.

Soil Vapor: Several VOCs, such as PCE and TCE, were measured in the soil vapor samples collected under the asphalt pavement outside of the site building. VOCs were also measured in sub-slab vapor samples collected beneath the existing Site building. PCE and TCE were detected in sub-slab soil vapor samples at levels ranging up to 4,300 micrograms per cubic meter (ug/m3) to 170 ug/m3. Additionally, acetone, 2-butanone (MEK), ethylbenzene, 4-ethyltoluene, toluene, 1,2,4- trimethylbenzene, 1,3,5-trimethylbenzene, m- and p-xylene, and o-xylene were detected in soil vapor samples. PCE and TCE were not detected in indoor air samples at levels above the New York State Department of Health (NYSDOH) Air Guidance Value (AGV).

Based on an evaluation of the data collected as part of the site investigations, the existence of shallow groundwater at the site (approximately 4 to 6 feet below grade) and the presence of several residential dwellings adjacent to the site property boundary, the Department, in concurrence with the NYSDOH, concluded that the 175 Roger Avenue site poses a significant threat to the environment and public health. Special Resources Impacted: No special resource impacts have occurred on-site. Contaminated groundwater appears to be migrating off-site towards downgradient water bodies.

ASSESSMENT OF HEALTH PROBLEMS:
People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Since the site is fenced and covered by asphalt or concrete, people will not come into contact with site-related soil and groundwater contamination unless they dig below the surface. Volatile organic compounds in the groundwater or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site redevelopment and occupancy. The potential exists for inhalation of site-related contaminants in indoor air via soil vapor intrusion in adjacent off-site buildings.

PROJECT COMPLETIONS:
None reported

The New York State Department of Environmental Conservation has not publicly updated the following fields since 2003:

ANALYTICAL DATA AVAILABLE FOR:	Air-	Surface Water-	Groundwater-	Soil-	Sediment-
APPLICABLE STANDARDS EXCEEDED IN:	Groundwater-	Drinking Water-	Surface Water-	Air-	

GEOTECHNICAL INFORMATION:
SOIL/ROCK TYPE:
GROUNDWATER DEPTH:

LEGAL ACTION:	Type:		State-	Federal-
STATUS:	Negotiation in Progress-		Order Signed-	
REMEDIAL ACTION:	Proposed-	Under Design-	In Progress-	Completed-
NATURE OF ACTION:				

NO RCRA CORRECTIVE ACTION SITES IDENTIFIED WITHIN 1 MILE SEARCH RADIUS

NO CERCLIS SUPERFUND SITES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

NO BROWNFIELDS SITES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

SOLID WASTE FACILITIES IDENTIFIED WITHIN THE 1/2 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 3 **AUTO MAVEN DENT DR INC** **Facility Id: NY40000011865**
1016 BEACH 19TH STREET, FAR ROCKAWAY, NY 11691 TT−Id: 390A−1000−146

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 796 feet to the ESE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Activity Number	Activity Type	Active?	Regulatory Status	Activity Start Date	Activity End Date	Activity Closed Date	Activity Delisted Date
	Vehicle Dismantling	No		02/17/2002			

Map Identification Number 4 **JACK COLETTA INC./COLETTA RECYCLING** **Facility Id: NY00000000355**
1629 REDFERN AVE, FAR ROCKAWAY, NY 11691 TT−Id: 390A−1000−067

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1160 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Activity Number	Activity Type	Active?	Regulatory Status	Activity Start Date	Activity End Date	Activity Closed Date	Activity Delisted Date
41K62	Waste tire storage − permit	No		02/17/2002			

Affiliation	Affiliation Type	Affiliation Start Date	Affiliation End Date
Jack Coletta Inc./Coletta Recycling 1629 Redfern Ave, Far Rockaway, NY, 11691	Owner	02/08/2002	

Map Identification Number 5 **REDFERN RECYCLING LLC** **Facility Id: NY40000116947**
1629 REDFERN AVENUE, FAR ROCKAWAY, NY 11691 TT−Id: 390A−1000−228

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1160 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Activity Number	Activity Type	Active?	Regulatory Status	Activity Start Date	Activity End Date	Activity Closed Date	Activity Delisted Date
41MB2	RHRF − registration	Yes	Registration	01/26/2012			

Affiliation	Affiliation Type	Affiliation Start Date	Affiliation End Date
Vito Dragonetti − President	Owner	01/26/2012	

Map Identification Number 6 **METROPOLITAN RUBBER CO.** **Facility Id: NY00000000356**
1406 AUGUSTINA AVENUE, FAR ROCKAWAY, NY 11691 TT−Id: 390A−1000−068

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1326 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Activity Number	Activity Type	Active?	Regulatory Status	Activity Start Date	Activity End Date	Activity Closed Date	Activity Delisted Date
41K68	Waste tire storage − permit	No		02/17/2002			

Affiliation	Affiliation Type	Affiliation Start Date	Affiliation End Date
CLIFFORD BRAND United States	Contact	02/08/2002	

NO HAZARDOUS WASTE TREATMENT/STORAGE/DISPOSERS IDENTIFIED WITHIN THE 1/2 MILE SEARCH RADIUS

HAZARDOUS MATERIAL SPILLS INTRODUCTION

The Hazardous Material Spills in this section are divided into eight spill cause groupings. These include:

Active Spills Section: Spills with incomplete paperwork that may or may not be cleaned up (See Date Cleanup Ceased)

1) Tank Failures
2) Tank Test Failures
3) Unknown Spill Cause or Other Spill Cause Hazardous Spills
4) Miscellanous Spill Causes: Equipment Failure, Human Error, Tank Overfill, Deliberate Spill, Traffic Accidents, Housekeeping, Abandoned Drum, Vandalism and Storms.

Closed Status Spills Section: Spills with completed paperwork that may or may not be cleaned up (See Date Cleanup Ceased)

5) Tank Failures
6) Tank Test Failures
7) Unknown Spill Cause or Other Spill Cause Hazardous Spills
8) Miscellanous Spill Causes: Equipment Failure, Human Error, Tank Overfill, Deliberate Spill, Traffic Accidents, Housekeeping, Abandoned Drum, Vandalism and Storms.

All spills within each spill cause category are presented in order of proximity to the subject site address.

Please note that spills reported within 0.25 mile (or one−eighth mile in New York City) are mapped and profiled.

Between 0.25 mile (or one−eighth mile in New York City) and 0.5 mile, only the following spills are mapped and profiled:

* Tank Failures;

* Tank Test Failures;

* Unknown Spill Cause or Other Spill Cause;

* Spills greater than 100 units of quantity; and

* Spills reported in the NYSDEC Fall 1998 MTBE Survey.

A table at the end of each section presents a listing of reported Miscellanous Spills with less than 100 units located between 0.25 mile (or one−eighth mile in Manhattan) and 0.5 mile. These spills are neither mapped nor profiled.

NO ACTIVE TANK FAILURES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

ACTIVE TANK TEST FAILURES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 7 **APT BUILDING TTF** **Spill Number: 1304503** **Close Date:**
22−11 NEW HAVEN AVE QUEENS, NY TT−Id: 520A−0288−997

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1243 feet to the SSW

ADDRESS CHANGE INFORMATION
Revised street: 2211 NEW HAVEN AVE
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	PROPERTY OWNER	Spiller Phone:	
Notifier Type:	Other	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	vszhune	Contact for more spill info:	ROB HILL	Contact Person Phone:	7188557272

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/24/2013		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#6 FUEL OIL	PETROLEUM	0	UNKNOWN	0	UNKNOWN	

Caller Remarks:

Tank was cleaned, then failed tank test.

DEC Investigator Remarks:

10/31/13 David Chan from Riteway sent the following email Spill # 1304503 22−11 New Heaven Ave. ˇ I was sub contracted by National Mechanical to perform the work at this site. The tank failed the test but we were not contracted to perform any other work after the tank test failure. We sent a proposal for a new tank, an abandonment and an isolation.

8/13/114 David Chan from Riteway sent the following email 22−11 New Haven − we submitted a proposal for follow up work after the tank failure but received no response. Then a few months later they requested that we abandon the tank, which we did. We did not perform any work for them between the TTF and the abandonment. The property may have given the follow up work to another contractor.

NO ACTIVE UNKNOWN CAUSE SPILLS AND OTHER CAUSE SPILLS IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

NO ACTIVE HAZARDOUS SPILLS − MISC. SPILL CAUSES − EQUIPMENT FAILURE, HUMAN ERROR, TANK OVERFILL, DELIBERATE SPILL, TRAFFIC ACCIDENT, HOUSEKEEPING, ABANDONED DRUM, VANDALISM AND STORMS − IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS.
All spills mapped and profiled within 1/8 mile. Between 1/8 mile and 1/2 mile search radius, spills reported to be greater than 100 units and spills reported in the NYSDEC Fall 1998 MTBE Survey are mapped and profiled. Spills reported to be less than 100 units are listed in a table at the end of this section.

THE FOLLOWING ACTIVE SPILLS FOR THIS CATEGORY WERE REPORTED BETWEEN 1/8 MILE AND 1/2 MILE SEARCH RADIUS FROM THE SUBJECT ADDRESS. THESE SPILLS WERE REPORTED TO BE LESS THAN 100 UNITS IN QUANTITY AND CAUSED BY: EQUIPMENT FAILURE, HUMAN ERROR, TANK OVERFILL, DELIBERATE SPILL, TRAFFIC ACCIDENT, HOUSEKEEPING, ABANDONED DRUM, VANDALISM, OR STORMS. THESE SPILLS ARE NEITHER MAPPED NOR PROFILED IN THIS REPORT.

FACILITY ID	FACILITY NAME	STREET	CITY
1411737	GROUND	13−46 BEACH CHANNEL DRIVE	FAR ROCK AWAY
1300148	PRIVATE RESIDENCE	2385 DICKENS ST	FAR ROCKAWAY
1510837	BEHIND ST JOHNS HOSPITAL	327 BEACH 19TH ST	FAR ROCKAWAY
1404156	MACLEAN NURSING HOME	1711 BROOKHAVEN AVE	FAR ROCKAWAY
0504782	KEYSPAN	1254 AUGUSTINA AVE	QUEENS

CLOSED STATUS TANK FAILURES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 8 **22−88 MOTT AVENUE** **Spill Number: 9809570** **Close Date: 12/07/1998**
22−88 MOTT AVENUE FAR ROCKAWAY, NY TT−Id: 520A−0127−753

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1469 feet to the NW

ADDRESS CHANGE INFORMATION
Revised street: 2288 MOTT AVENUE
Revised zip code: NO CHANGE

Source of Spill:	PRIVATE DWELLING	Spiller:	RUSSELL FURIA − 22−88 MOTT AVENUE	Spiller Phone:	(516) 493−3400
Notifier Type:	Responsible Party	Notifier Name:	RUSSELL FURIA	Notifier Phone:	(516) 493−3400
Caller Name:	RUSSELL FURIA	Caller Agency:	CONSULTING ENGINEER	Caller Phone:	(516) 493−3400
DEC Investigator:	MMMULQUE	Contact for more spill info:	RUSSELL FURIA	Contact Person Phone:	(516) 493−3400

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/30/1998		TANK FAILURE	YES	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

UNDERGROUND TANK BEING REMOVED

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was MULQUEEN DEC WAS NOT NOTIFIED FOR TANK REMOVAL MR. RUSSELL FURIA SAID THE TANK IS 5,000 GAL. CAPACITY (OUR DATABASE SHOWS 3,000) WAS USED FOR #5,6 OIL IS NOW #2 OIL. CONTAMINATED SOIL

CONTAINED #6, NOT #2 CONSULTING FIRM WILL SUBMIT APPLICATION FOR TANK REMOVAL. CONSULTANT REMOVED CONTAMINATED SOILS. ENDPOINT SAMPLES ARE BELOW DETECTION LIMITS. NO FURTHER ACTIONS REQUIRED.

Map Identification Number 9 **12−13 NELSON ST** **Spill Number: 9303657** **Close Date: 06/21/1993**
12−13 NELSON ST QUEENS, NY TT−Id: 520A−0128−670

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1664 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1213 NEILSON ST
Revised zip code: 11691

Source of Spill: PRIVATE DWELLING Spiller: UNK Spiller Phone:
Notifier Type: Local Agency Notifier Name: Notifier Phone:
Caller Name: RICARDO FREYRE Caller Agency: NYC DEP Caller Phone: (718) 595−6777
DEC Investigator: CAMMISA Contact for more spill info: Contact Person Phone:

Category: Possible petroleum release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters, known releases with no potential for damage, or non−petroleum/non−hazardous spills.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
06/15/1993	06/21/1993	TANK FAILURE	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	UNKNOWN	0	UNKNOWN	SOIL

Caller Remarks:

TANK LEAKING IN BASEMENT NYC DEP HAZMAT WAS NOTIFIED (718)595−4670.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 10 **12−13 NEILSON ST** **Spill Number: 9303442** **Close Date: 06/16/1993**
12−13 NEILSON ST FAR ROCKAWAY, NY TT−Id: 520A−0126−063

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1664 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1213 NEILSON ST
Revised zip code: NO CHANGE

Source of Spill: PRIVATE DWELLING
Notifier Type: Responsible Party
Caller Name: GIL GOLD
DEC Investigator: CAMMISA

Spiller: RELATED MGT CO.
Notifier Name:
Caller Agency: RELATED MGT CO.
Contact for more spill info:

Spiller Phone:
Notifier Phone:
Caller Phone: (718) 731−1055
Contact Person Phone:

Category: Possible petroleum release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters, known releases with no potential for damage, or non−petroleum/non−hazardous spills.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
06/15/1993	06/16/1993	TANK FAILURE	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	POUNDS	0	POUNDS	SOIL

Caller Remarks:

SPILL IN BASEMENT − IS CONTAINED − WOULD LIKE CALL BACK. WILL HAVE TANK COMPANY REPAIR SMALL LEAK.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was S. CAMMISA

Map Identification Number 11 **NEXT TO** **Spill Number: 0509035** **Close Date: 02/02/2006**
22−54 NAMEOKE AVE. ROCKAWAY, NY TT−Id: 520A−0125−203

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1822 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: 2254 NAMEOKE AVE.
Revised zip code: NO CHANGE

Source of Spill:	UNKNOWN	Spiller:	CHANDLER DEVELOPMENT CORP	Spiller Phone:	(718) 217−4900
Notifier Type:	Fire Department	Notifier Name:	DISPATCH	Notifier Phone:	( ) −
Caller Name:	MICHAEL MONACO	Caller Agency:	FDNY HAZMAT 1	Caller Phone:	(347) 203−6886
DEC Investigator:	SFRAHMAN	Contact for more spill info:	MICHAEL MONACO	Contact Person Phone:	(347) 203−6886

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.

Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/27/2005		TANK FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	100.00	GALLONS	0.00	GALLONS	GROUNDWATER

Caller Remarks:

50−100 gallons spilled. Some puddling − putting down oil pads 250 gallon tank leaking outside − construction site possibly from previous home that was on the site or someone dumped it here. possibly all the way down to water table Attempted to contact the company − unable to possibly due to the hour.

DEC Investigator Remarks:

10.28.05 Sharif −I spoke with Michael Monaco of FDNY. He said they put speedy dry and soak pad to absorb the oil. It was a tank leaking on a construction site. No responsible party was available at night to start the clean up.An ECO was sent out to hold the PR for clean up and necessary law inforcement. Later today I called the RP’s office and told them to start the clean up immediately. A CSL letter was also sent to Chandler Development Corp 189−07 Jamaica Avenue, Hollis, NY 11423 Ph: 718−217−4900, Fax: 718−217−4929 02/02/06 Sharif//Report from PTC. They pumped out the oil water mix from the site. Contaminated soil was removed for disposal.End point sample result indicated minor presence of VOC/SVOC’S.Waste disposal manifest and lab result were included.NFA required.

CLOSED STATUS TANK TEST FAILURES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 12 **13−11 BAYPORT PLACE** **Spill Number: 8801169** **Close Date: 11/14/1991**
13−11 BAYPORT PLACE NEW YORK CITY, NY TT−Id: 520A−0125−345

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1043 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1311 BAYPORT PLACE
Revised zip code: NO CHANGE

Source of Spill: COMMERCIAL/INDUSTRIAL Spiller: NY TELEPHONE Spiller Phone:
Notifier Type: Tank Tester Notifier Name: Notifier Phone:
Caller Name: ROY BERG Caller Agency: FENLEY & NICHOL Caller Phone: (516) 586−4900
DEC Investigator: BATTISTA Contact for more spill info: Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	PBS # Involved	Meets Cleanup Standards	Penalty Recommended
05/06/1988	11/14/1991	TANK TEST FAILURE	2−343986	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	−1.00	GALLONS	0.00	GALLONS	GROUNDWATER

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
		Unknown	0.00	UNKNOWN

Caller Remarks:

10K TNAK, L R = GROSS VISIBLE LEAK. 5/23 : 10K TANK, #2 FUEL, L R = −0.307 GPH. TANK TEST ONLY.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 13 **101ST POLICE PRECINT** **Spill Number: 9412991** **Close Date: 10/02/1997**
16−12 MOTT AVENUE QUEENS, NY TT−Id: 520A−0128−741

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1184 feet to the ESE

ADDRESS CHANGE INFORMATION
Revised street: 1612 MOTT AVENUE
Revised zip code: NO CHANGE

Source of Spill: NON−MAJOR FACILITY (>1100 GAL) Spiller: NYPD Spiller Phone: (718) 337−5217
Notifier Type: Responsible Party Notifier Name: Notifier Phone:
Caller Name: GREG FASANO Caller Agency: PETROLEUM CONST. Caller Phone: (718) 385−8800
DEC Investigator: GUTIERREZ Contact for more spill info: Contact Person Phone:

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	PBS # Involved	Meets Cleanup Standards	Penalty Recommended
12/22/1994		TANK TEST FAILURE	2−342912	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
GASOLINE	PETROLEUM	0	POUNDS	0	POUNDS	AIR

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
		Unknown	0.00	UNKNOWN

Caller Remarks:

1 − 550 GALLON TANK VAC TESTED BELOW MIN. ALLOWED

DEC Investigator Remarks: DEC INVESTIGATOR REMARKS NOT AVAILABLE FOR THIS SPILL ACCORDING TO THE LAST UPDATE.

The following DEC Investigator Remarks were available prior to 1/1/2002:

550−GALLON GASOLINE TANK CLOSED IN PLACE ON AUGUST 10, 1995. SITE INVESTIGATION DID NOT INDICATE SIGNIFICANT IMPACT TO SOIL NEAR TANK. GROUNDWATER CONTAMINATION AT SITE MAY BE FROM OFF−SITE SOURCE. SEPARATE INVESTIGATION OF POSSIBLE SOURCE (GAS STATION

ACROSS MOTT AVENUE) CONTINUING.

Map Identification Number 14 **CLOSED−LACKOF RECENT INFO** **Spill Number: 8706832** **Close Date: 03/04/2003**
19020 NEW HAVEN AVE. NEW YORK CITY, NY TT−Id: 520A−0130−052

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1189 feet to the SSE

ADDRESS CHANGE INFORMATION
Revised street: 1920 NEW HAVEN AVE.
Revised zip code: NO CHANGE

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER Spiller: ST. MARY'S CHURCH Spiller Phone: (718) 327−1133
Notifier Type: Tank Tester Notifier Name: Notifier Phone:
Caller Name: Caller Agency: Caller Phone:
DEC Investigator: ADMIN. CLOSED Contact for more spill info: Contact Person Phone:

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/11/1987		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	−1.00	POUNDS	0.00	POUNDS	GROUNDWATER

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
		Unknown	0.00	UNKNOWN

Caller Remarks:

5K TANK FAILED WITH A LEAK RATE OF −.151 G/HR.CLOSED DUE TO LACK OF ANY RECENT INFO− DOES NOT MEET ANY CLEAN UP REQUIREMENTS.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was ADMIN.CLOSED 03/04/2003−Closed Due To The Nature / Extent Of The Spill Report

Map Identification Number 15 **CLOSED−LACKOF RECENT INFO** **Spill Number: 8706791** **Close Date: 03/04/2003**
19−20 NEW HAVEN AVENUE FAR ROCKAWAY, NY TT−Id: 520A−0133−470

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1189 feet to the SSE

ADDRESS CHANGE INFORMATION
Revised street: 1920 NEW HAVEN AVENUE
Revised zip code: NO CHANGE

Source of Spill:	INSTITUTIONAL, EDUC, GOV, OTHER	Spiller:	ST.MARY'S STAR OF THE SEA	Spiller Phone:	
Notifier Type:	Tank Tester	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	ADMIN. CLOSED	Contact for more spill info:		Contact Person Phone:	

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/10/1987		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	−1.00	POUNDS	0.00	POUNDS	GROUNDWATER

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
		Unknown	0.00	UNKNOWN

Caller Remarks:

5K TANK SYSTEM,COULDN'T MAINTAIN LEVEL IN STANDPIPE.CLOSED DUE TO LACK OF ANY RECENT INFO−DOES NOT MEET ANY CLEAN UP REQUIREMENTS.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was ADMIN.CLOSED 03/04/2003−Closed Due To The Nature / Extent Of The Spill Report

Map Identification Number 16 **SAINT MARYS STAR OF SEA** **Spill Number: 0307675** **Close Date: 09/14/2004**
19−20 NEW HAVEN AVENUE FAR ROCKAWAY, NY TT−Id: 520A−0133−469

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1189 feet to the SSE

ADDRESS CHANGE INFORMATION
Revised street: 1920 NEW HAVEN AVENUE
Revised zip code: NO CHANGE

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER
Notifier Type: Tank Tester
Caller Name: PHIL FAZIN
DEC Investigator: MXTIPPLE
Spiller: PHIL FAZIN − SAINT MARYS STAR OF SEA
Notifier Name: PHIL FAZIN
Caller Agency: A−1 CROWN LEAK CORPOATION
Contact for more spill info: PHIL FAZIN
Spiller Phone: (516) 375−5890
Notifier Phone: (516) 375−5890
Caller Phone: (516) 375−5890
Contact Person Phone: (516) 375−5890

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/21/2003		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
1	5000	Horner EZ Check I or II	0.00	UNKNOWN

Caller Remarks: NO REMARKS GIVEN FOR THIS SPILL

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was TIPPLE 10/21/03 TJD @ Duty Desk TTF letter sent to facility representative.

11/13/2003 Sangesland spoke with James Menzies (facilities manager for the site). He had not received a prior letter, so Sangesland faxed a new TTF letter to his office. (718−327−3276)

7/9/04 Tipple called James Menzies to inquire on the status of the work to date. Repairs made//line to a boiler that had been removed had not been properly sealed/// James will forward paperwork to DEC.

9/14/04 Tank exposed..as per conversation with J Menzies bld. Mgr. the old lines were on top of the tank, and were exposed and removed at the time of excavation. Visual inspection revealed no contamination// letter received///NFA

Map Identification Number 17 **APARTMENT BUILDING TTF** **Spill Number: 0904364** **Close Date: 10/29/2009**
15−02 MOTT AVENUE FAR ROCKAWAY, NY 11691 TT−Id: 520A−0229−566

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1521 feet to the ESE

ADDRESS CHANGE INFORMATION
Revised street: 1502 MOTT AVENUE
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	UNK	Spiller Phone:	
Notifier Type:	Other	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	JMKRIMGO	Contact for more spill info:	MARLIN JOESPH	Contact Person Phone:	(718) 624−4842

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/14/2009		TANK TEST FAILURE	YES	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	UNKNOWN	0	UNKNOWN	

Caller Remarks:

Tank test failure of two 5,000 gallon tanks at above address. Small leakage in the fuel lines, unk of amount spilled. Will evacuate tanks to detirmine the problem fix lines if needed.

DEC Investigator Remarks:

Sangesland spoke to PTC. Tanks were pumped out, PTC provided a proposal to repair the lines and retest. TTF Letter sent to Property Manager: Related Management Attn: Peter Hoyle 423 West 55th St − 9th Flr New York, NY 10019

8/11/09. John from ATC (consultant) called. 2x5000 gal #2 oil tanks failed test (dry leak). Both tanks encased in concrete and all piping above ground. Tanks were tested isolated from piping. Leak most likely at the top part of tanks. They proposed clean up tanks, breake and remove concrete from the top and visually inspect them form inside. If holes found close to the top, then repair or close tanks. If holes close to the middle of the tanks then concrete encasing should be removed and tanks examined for

evidence of leaks. The proposed scope of work will be submitted before August 27. JK.

1029/09. J.Krimgold reviewed the Closure report submitted by ATC and dated 10/23/09. Based on the data presented, both tanks and associated piping were aboveground. However tanks were incased in the concrete. Both tanks, associated piping and incasement were removed. No evidance of of relese was found. Case closed.

Map Identification Number 18 **APART** **Spill Number: 0800413** **Close Date: 06/18/2008**
10−14 NEILSON STREET FAR ROCKAWAY, NY TT−Id: 520A−0214−413

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1854 feet to the E

ADDRESS CHANGE INFORMATION
Revised street: 1014 NEILSON STREET
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	MANAGER − APART	Spiller Phone:	
Notifier Type:	Tank Tester	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	bkfalvey	Contact for more spill info:	MANAGER	Contact Person Phone:	(212) 873−4919

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
04/10/2008		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
	10000	Horner EZ Check I or II	0.00	UNKNOWN

Caller Remarks:

FAILED TEST: WILL EMPTY TANK

DEC Investigator Remarks:

5/6/08 received call from Bernie of NYC Tank Testing (917)648−5551. Tank to be pulled and endpoint samples to be taken. Will submit PBS closure application. Working with Rene Lewis on tank removal. Will call me when tank is to be removed. bf

5/7/08 bf: sent ttf letter to: Ohad Badani Neilson Gardens, Inc. 155 Riverside Drive New York, NY 10024

5/30/08 Received messages from Rene Lewis (917)214−6670 on 5/28 and 5/29. Tank was removed. He was told that the closure application was submitted. No application received yet as per DEC database. When he arrived on−site, holes were already cut in tank and oil was entering through holes. 65 tons contaminated soil removed. 10 endpoint samples taken. They will be installing new tank. He will tell them they need to supply application. Spill closure report will follow within 10 days. bf

6/18/08 Received hansd delivered closure report from Rene Lewis on 6/13/08. Sampled through tank bottom and tank sides. Removed tank. Excavated approx. 65 tons of contaminated soil. All contaminaants non−detect. Tank closure application and application for new AST attached and sent for processing. Rene called today and requested NFA letter after closure. faxed letter to him at (718)638−3181. Mailed letter to Mr. Badani at the address above. NFA. bf

Map Identification Number 19 **327 BCH 19TH ST** **Spill Number: 9013017** **Close Date: 02/23/1993**
327 BEACH 19TH STREET NEW YORK CITY, NY TT−Id: 520A−0133−471

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1880 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	INSTITUTIONAL, EDUC, GOV, OTHER	Spiller:	ST. JOHN'S HOSPITAL	Spiller Phone:	(718) 868−7680
Notifier Type:	Tank Tester	Notifier Name:		Notifier Phone:	
Caller Name:	ROBERT GANDOLFO	Caller Agency:	TANK TEST INC	Caller Phone:	(718) 789−3770
DEC Investigator:	O'DOWD	Contact for more spill info:		Contact Person Phone:	

Category: Known release which created a fire/explosion hazards (inside or outdoors), drinking water supply contamination, or significant releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
03/21/1991	02/23/1993	TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	−1.00	UNKNOWN	0.00	UNKNOWN	SOIL

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
		Unknown	0.00	UNKNOWN

Caller Remarks:

20K TANK FAILED HORNER EZY CHECK,SYSTEM TEST, VISUAL GROSS LEAK,WILL REPAIR VISUAL LEAK AT PUMP FLANGE IN BASEMENT,WILL RETEST,SPEEDY DRY APPLIED & WILL PICK UP & DISPOSE.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 20 **ST JOHNS EPISCOPAL HOSPIT** **Spill Number: 0204866** **Close Date: 07/11/2006**
327 BEACH 19TH ST FAR ROCKAWAY, NY TT−Id: 520A−0133−468

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1880 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER Spiller: ST JOHNS EPISCOPAL HOSPIT Spiller Phone:
Notifier Type: Tank Tester Notifier Name: JOHN LEDDY Notifier Phone: (631) 321−4670
Caller Name: JOHN LEDDY Caller Agency: PROTEST ENTERPRISES Caller Phone: (631) 321−4670
DEC Investigator: iabeilby Contact for more spill info: Contact Person Phone:

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
08/07/2002		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
1	20000	Alternate Test per 613.5a2v	0.00	UNKNOWN

Caller Remarks:

u/g tank failed vacum test

tank will be uncovered and retested dry leak problem at top of tank

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DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was DEMEO

7/11/06 − iabeilby: closed. Spill due to tank test failure on 8/7/02. Retested and passed tank test on 4/16/03.

Map Identification Number 21 **APARTMENT BLDG.** **Spill Number: 0403513** **Close Date: 10/06/2008**

20−30 ELK DR FAR ROCKAWAY, NY TT−Id: 520A−0125−022

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1915 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: 2030 ELK DR
Revised zip code: NO CHANGE

Source of Spill:	INSTITUTIONAL, EDUC, GOV, OTHER	Spiller:	JIM MELNICK − APARTMENT BLDG.	Spiller Phone: (631) 321−4670
Notifier Type:	Tank Tester	Notifier Name:	ALBERTO LOPEZ	Notifier Phone: (631) 321−4670
Caller Name:	JIM MELNICK	Caller Agency:	PRO TEST	Caller Phone: (631) 321−4670
DEC Investigator:	MJHAGGER	Contact for more spill info:	JIM MELNICK	Contact Person Phone: (631) 321−4670

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

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Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/01/2004		TANK TEST FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#6 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	GROUNDWATER

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
1	4000	Horner EZ Check I or II	0.00	UNKNOWN

Caller Remarks:

Tank Test failure.

DEC Investigator Remarks:

9/15/2005 − Jim Melnick of Pro Test stated that their was a new tank installed at the site about a month ago and they will be removing the existing tank and testing the soils within the next 30−days.

Prior to Sept, 2004 data translation this spill Lead_DEC Field was KRIMGOLD send TTF letter to:

Avi Slansky

20−30 Elk Assoc.

129−09 26th Street, Suite 301

Flushing, NY 11354

07/22/04.Pro Test sent a letter stating that they will EIR the tank by 7/26/04. YK.

9/28/07 − Haggerty − I asked Brian Falvey from our PBS unit in NYC to accompany me to the site for an inspection. I had previously made countless attempts to get Mr. Slansky (718−463−1200), property manager from Wavecrest, to take care of this open spill. Before I took over management of this site in January ’07, Ralph Keating made multiple attempts to get spill addressed over the course a year.

Old tank partially uncovered with boards over it for the past 3 years (located directly in the walkway to the building)
According to the Building Super, nothing has changed since the tank was tested on 7/1/04. The tank should have been closed out before the registration expired. Also, a new tank was installed approximately 2.5yrs ago inside the apartment complex basement. This tank was never registered or Tightness Tested. I attached a picture in edocs showing the tanks condition

PBS Conference scheduled for 10/23/07.

10/23/07 − Haggerty − Met with DEC lawyer Scott Owens, DEC Inspector Brian Falvey, and Property Manager Avi Slansky at PBS conference. Wavecrest Management fined $10,000 and ordered to complete tank removal by the end of the year.

12/28/07 − Haggerty − Excavation and Tank removal begins began the day before. Spoke with John Leddy of Protest (631−321−4670). Over−excavation completed creating a 18*30ft trench. Informed John that for every linear 15ft of trench, 5 grab samples must be collected for analysis. Therefore, a total of 10 samples (2 bottom and 8 sidewall)

10/6/08 − Haggerty − Received Spill Closure Report. All endpoint samples clean. Spill Closed

Map Identification Number 22 **KINGDOM HALL JEHOVA WIT** **Spill Number: 9914058** **Close Date: 11/03/2005**
2360 BROOKHAVEN AVE FAR ROCKAWAY, NY TT−Id: 520A−0128−097

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1924 feet to the SW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: GASOLINE STATION OR PBS FACILITY
Notifier Type: Tank Tester
Caller Name: RICKY ROUFF
DEC Investigator: RHFILKIN

Spiller:
Notifier Name: RICKY ROUFF
Caller Agency: STATE ENV SERVICES
Contact for more spill info: ERROL ST MARIE

Spiller Phone:
Notifier Phone: (718) 265−3355
Caller Phone: (718) 265−3355
Contact Person Phone: (718) 337−5812

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
03/13/2000		TANK TEST FAILURE	NO	NO

NO MATERIAL INFORMATION GIVEN FOR THIS SPILL

TANK TEST INFORMATION

Tank Number	Tank Size	Tank Test Method	Leak Rate	Gross Leak or Failure
1	2500	Horner EZ Check I or II	0.00	UNKNOWN

Caller Remarks:

gross failure

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was SANGESLAND

11/3/05 − Owner says tank failed test but then was retested and passed. He has no documentation though. PBS system has the 3/13/2000 failure, no mention of a retest or replacement, but shows tank passed test 4/4/05. Since tank appears to now pass tests without having been replaced, I'll assume original failure was incorrect and there was no spill. Closed 11/3/05 − Filkins

CLOSED STATUS UNKNOWN CAUSE SPILLS AND OTHER CAUSE SPILLS IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 23 **VEHICLE REPAIR SHOP** **Spill Number: 1304092** **Close Date: 12/20/2013**
10−09 CORNAGA AVE FAR ROCK−A−WAY, NY TT−Id: 520A−0289−022

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (4)
Approximate distance from property: 516 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: 1009 CORNAGA AVE
Revised zip code: NO CHANGE

Source of Spill: COMMERCIAL/INDUSTRIAL
Notifier Type: Other
Caller Name:
DEC Investigator: vszhune
Spiller: FRANK GALDUN − UNKNOWN
Notifier Name:
Caller Agency:
Contact for more spill info: FRANK GALDUN
Spiller Phone:
Notifier Phone:
Caller Phone:
Contact Person Phone: (631) 617−6200

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/16/2013		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
GASOLINE	PETROLEUM	0	UNKNOWN	0	UNKNOWN	GROUNDWATER
GASOLINE	PETROLEUM	0	UNKNOWN	0	UNKNOWN	GROUNDWATER

Caller Remarks:

releases from dry well in pact ground water clean up pending

DEC Investigator Remarks:

7/16/2013 − Feng − Spoke to Frank Galdun (631−617−6200, frankg4@optonline.net). He is doing the work for the interested/potential buyer. The property is to sale. The site is formerly a gasoline station, and now a repair shop. They removed the tanks, dispensers and piping in 1999. For the investigation he has done, no tanks were found during GPR survey. They installed 6−7 soil borings onsite. They did not find any contamination in soil borings, but some groundwater contamination.

They sampled the dry wells sediment and one of them show contamination. High VOCs in groundwater in the soil boring next to the aforementioned dry well, i.e. 1,134 ppb VOCs. The sediment was at 5 feet deep, but believed to be deeper when installed. The investigation report will be forwarded to my attension.

assigned the case to DEC V. Zhune for followup as per DEC J. Vought.

12/20/13−Arthur Baldwin from PAL Environmental Services emailed The Focused Subsurface Site Investigation dated Phase I indicated that nine gasoline USTs were removed in 1999. The site is used solely as a vehicle repair operation. All activities were completed on June 28, 2013. GPR survey identified no subsurface anolmalies at the site. Six soil boring were drilled. Four selected soil borings (B1 through B4)were drilled to the water table.

All soil borings werei nstalled at former UST areas, former dispenser area, at one or two on−site drywells and at a hydraulic upgradient position relative to all site features (B1). One grab soil sample was collected from each of the two drywells at the site. One groundwater sample each ws collected for laboratory analysis from B1 through B4. MECC also collected a shalow soil sample (HA−1 3')from an area north od the site building exterior where one aboveground waste oil storage tank (AST) was observed.

Map Identification Number 24 **UNKNOWN** **Spill Number: 9702230** **Close Date: 10/16/1997**
1210 BEACH CHANNEL DR ROCKAWAY, NY TT−Id: 520A−0133−473

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (5)
Approximate distance from property: 562 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: 11691

Source of Spill:	UNKNOWN	Spiller:	UNKNOWN	Spiller Phone:	
Notifier Type:	Federal Government	Notifier Name:	ANONYMOUS	Notifier Phone:	
Caller Name:	JEFF BRAY	Caller Agency:	USCG	Caller Phone:	(212) 668−7920
DEC Investigator:	WESTERLIND	Contact for more spill info:	ABOVE	Contact Person Phone:	

Category: Investigation indicates there was no spill.
Class: Any Type of RP Including No RP − No DEC Field Response − Corrective Action by Spill Response Not Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
05/21/1997		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
OTHER	OTHER	0	GALLONS	0	GALLONS	SURFACE WATER
The following material(s) was dropped or revised by the NYS DEC. Call Toxics Targeting for more information						
OTHER PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	

Caller Remarks:

ORIGINAL CALLER COMPLAINED OF SHEEN ON WATER IN AREA POSS COMING FROM LOCAL GAS STATIONS

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 25 **PRIVATE HOME−SEWAGE** **Spill Number: 0713846** **Close Date: 04/01/2008**
2254 CORNAGA AVE FAR ROCKAWAY, NY TT−Id: 520A−0214−394

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1034 feet to the WSW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	PRIVATE DWELLING	Spiller:	UNDETERMINED FAULT	Spiller Phone:	
Notifier Type:	Affected Persons	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	smsanges	Contact for more spill info:	GLADIS SKAUR	Contact Person Phone:	(718) 868−0206

Category: Possible petroleum release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters, known releases with no potential for damage, or non−petroleum/non−hazardous spills.
Class: Any Type of RP Including No RP − No DEC Field Response − Corrective Action by Spill Response Not Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
03/31/2008		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
RAW SEWAGE	OTHER	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

ON AND OFF FOR OVER A WEEK; CALLER HAS MADE MANY CALLS INCLUDING EPA AND DEP; ALL HAVE SAID THEY CAN DO NOTHING BUT SHE WANTS TO SPEAK WITH SOMEONE FROM DEC; NEIGHBORS HAVEING SIMILAR PROBLEMS; CALLER STATES THAT MATERIAL USUALLY GOES INTO THE BASMENT BUT THEY BLOCKED OFF THE PIPES SO THEY NO LONGER HAVE USE OF TOILET AND SEWAGE IS OVERFLOWING INTO YARD;

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 26 **HI AUTO SERVICE** **Spill Number: 9707778** **Close Date: 11/21/2008**
18−11 MOTT AVENUE FAR ROCKAWAY, NY TT−Id: 520A−0127−486

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1140 feet to the ESE

ADDRESS CHANGE INFORMATION
Revised street: 1811 MOTT AVENUE
Revised zip code: NO CHANGE

Source of Spill: GASOLINE STATION OR PBS FACILITY
Notifier Type: DEC
Caller Name: JONATHAN KOLLEENY
DEC Investigator: hrpatel
Spiller: MR SAQIB − HI AUTO SERVICE
Notifier Name: JONATHAN KOLLEENY
Caller Agency: NYS DEC
Contact for more spill info: RICHARD PARK
Spiller Phone: (516) 488−2366
Notifier Phone: (718) 482−4933 ext.
Caller Phone: (718) 482−4933 ext.
Contact Person Phone: (718) 327−8776

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Unable or Unwilling RP − DEC Field Response − DEC Corrective Action Required

Spill Date	Date Cleanup Ceased	Cause of Spill	PBS # Involved	Meets Cleanup Standards	Penalty Recommended
03/28/1997		UNKNOWN	2−201286	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	GROUNDWATER

Caller Remarks:

DURING SITE ASSESSMENT OF POLICE PRECINCT ACROSS STREET, WELLS PUT IN AT POLICE STATION AND IN SIDEWALK BY GAS STATION FOUND CONTAMINATED GROUNDWATER. DATA SUGGESTS GAS STATION MAY BE SOURCE. GAS STATION HAS SIX OUT−OF−SERVICE TANKS. NO INFORMATION ON WHEN, HOW OR WHY TANKS WERE CLOSED.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was ROMMEL OWNER OF GAS STATION ASKED TO PERFORM ASSESSMENT OF CLOSED TANKS. YELLOWSTONE WILL DO ASSMT. WILL SUBMIT SITE PLAN SHOWING PROPOSED WELL/BORING LOCATIONS PRIOR TO WORK.

4/12/04−Vought−Spill transferred from Tibbe to Rommel as per Rommel.

11/14/08 − Austin − Transferred from C.O. back to Region − reassigned to Patel for followup − end

11/17/08−Hiralkumar Patel.

PBS #: 2−201286. PBS shows site as waste oil storer and had 275 gal waste oil tank in 2004 and at that time two 2000 gal gasoline tanks and six 550 gal other tanks were closed in place.

visited site. site currently has retails stores.

alternate addresses: 18−03 to 18−17 Mott Avenue, 18−06 to 18−18 Cornaga Ave

spoke to one of the tenants and as per him, there was an abandoned gas station and an active repair shop at the corner of Mott ave and Cornaga Ave about six years ago when he started his business. then owner demolished gas station and repair shop structure and built new retail stores.

gas station/repair shop was located at the corner of Mott Ave and Cornaga AVe: running from 18−03 to 18−07 along Mott ave and from 18−06 to 18−18 along Cornaga Ave.

fill box and vent pipe was observed in front of 18−15 and 18−17 Mott Ave

101st Precinct is located across the subject site on Mott ave. inspected sidewalk along precinct and found two monitoring wells in front of garage entrance.

Lt. Marrow or Sgt. Hartman 101st Precinct Ph. (718) 868−3400

spoke with Mr. Alkaifi, president of Tarik Holdings, building owner. as per him, site was redeveloped in 2005 and they have reports available. asked him to submit reports.

Abdo Alkaifi

site owner President Tarik Holding Corp. 1077 Bay 24th Street Far Rockaway, NY 11691−1801 contact: Khalil Alkaifi

owner's son Ph. (516) 668−7172 email: kalkaifi@aol.com, kalkaifi@yahoo.com

sent email to Khalil Alkaifi requiring submission of all avilable reports regarding cleanup.

11/21/08−Hiralkumar Patel. received fax from Mr. Alkaifi with tank closure report. abstract:

− removed six 550 gal gasoline USTs, two 2000 gal gasoline USTs and one 275 gal waste oil UST − all tanks were single wall steel tanks − tanks found to be in good condition after removal, no holes or pitting were observed − noo PID readings were observed during excavation or in any endpoint sample locations − all ancillary piping was removed and disposed of − total of 12 endpoint samples were taken − groundwater sample was collected from existing monitoring well on site − no contamination found in any endpoint samples or groundwater sample

discussed with DEC Austin. based on findings during tank removal, Austin asked to close the case.

case closed.

Map Identification Number 27 **STREET SPILL?** **Spill Number: 0800735** **Close Date: 05/28/2008**
11−43 MCBRIDE ST QUEENS, NY TT−Id: 520A−0217−590

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1294 feet to the WNW

ADDRESS CHANGE INFORMATION
Revised street: 1143 MC BRIDE ST
Revised zip code: 11691

Source of Spill:	UNKNOWN	Spiller:	UNKNOWN	Spiller Phone:	
Notifier Type:	Local Agency	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	RMPIPER	Contact for more spill info:	SYLVIA CLARK	Contact Person Phone:	(646) 360−4982

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
04/17/2008		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

Caller had no other info.

DEC Investigator Remarks:

Call back number is disconnected No way to confirm what problem is, or how large problem is. Will be assigned as a low priority drive by .

DECPiper performed inspection. Nothing seemed out of the ordinary. Closed.

Map Identification Number 28 **LIRR** **Spill Number: 0100123** **Close Date: 04/02/2002**
NAMEOKE ST/REDFERN AVE FAR ROCKAWAY, NY TT−Id: 520A−0131−886

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 1489 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NAMEOKE AV/REDFERN AVE
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	SAME − LIRR	Spiller Phone:	
Notifier Type:	Responsible Party	Notifier Name:	BILL KEENAN	Notifier Phone:	(718) 558−3081
Caller Name:	BILL KEENAN	Caller Agency:	LI RAILROAD	Caller Phone:	(718) 558−3081
DEC Investigator:	MXTIPPLE	Contact for more spill info:	BILL KEENAN	Contact Person Phone:	(718) 558−3081

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
04/04/2001		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
LUBE OIL	PETROLEUM	20.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

drum found on it’s side and dented − product leaked out − unk further cause − cleanup scheduled tomorrow

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was TIPPLE 04/04/2001 SPOKE WITH BILL KEENAN, TRADEWINDS SCHEDULED TO DO CLEANUP 4/5/2001 WILL RUN STARS ON END PIONT SAMPLES 07/30/2001 04/02/2002 cleanup completed by LIRR

Map Identification Number 29 **15−02 MOTT AVENUE** **Spill Number: 9304779** **Close Date: 06/21/1995**
15002 MOTT AVENUE QUEENS, NY TT−Id: 520A−0128−672

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1521 feet to the ESE

ADDRESS CHANGE INFORMATION
Revised street: 1502 MOTT AVE
Revised zip code: 11691

Source of Spill:	PRIVATE DWELLING	Spiller:	UNK	Spiller Phone:	
Notifier Type:	Citizen	Notifier Name:		Notifier Phone:	
Caller Name:	BETSY	Caller Agency:	NYC DEP	Caller Phone:	(716) 595−6777
DEC Investigator:	CAMMISA	Contact for more spill info:		Contact Person Phone:	

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/16/1993	06/21/1995	UNKNOWN	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	UNKNOWN	0	UNKNOWN	SOIL

Caller Remarks:

LEAKING FROM TANK IN BASEMENT − NYC DEP WILL RESPOND − SLOW LEAK INVAULT 5000 AST CONTACTOR TO REPAIR TANK DISPOSE OF OIL.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 30 **INWOOD STATION − LIRR** **Spill Number: 9802015** **Close Date: 06/28/2005**
RED FERN AVE FAR ROCKAWAY, NY TT−Id: 520A−0131−885

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (3)
Approximate distance from property: 1573 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: REDFERN AVE
Revised zip code: 11691

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	LEWIS WUNDERLICH − LONG ISLAND RR	Spiller Phone:	(718) 558−3252
Notifier Type:	Responsible Party	Notifier Name:	LEWIS WUNDERLICH	Notifier Phone:	(718) 558−3252
Caller Name:	LEWIS WUNDERLICH	Caller Agency:	LONG ISLAND RAILROAD	Caller Phone:	(718) 558−3252
DEC Investigator:	Unassigned	Contact for more spill info:	LEWIS WUNDERLICH	Contact Person Phone:	(718) 558−3252

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
05/15/1998		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
MERCURY	HAZARDOUS MATERIAL	1.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

spill may have occured any time from the mid 1980's till now

caller has already started to make arreangments for clean up

spill is to soil

DEC Investigator Remarks:

06−28−05: Spill transferred to Region 1 from Region 2 because spill is just over the border in Nassau County. The spill is mercury from a LIRR substation. It is being remediated under the VCA program , number V00391−1.

Prior to Sept, 2004 data translation this spill Lead_DEC Field was DEMEO

3/23/05 − Austin − Transferred from DeMeo to Tibbe − end

Map Identification Number 31 **CONSTRUCTION** **Spill Number: 0903973** **Close Date: 05/05/2010**
1152 NEILSON ST QUEENS, NY TT−Id: 520A−0232−164

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1842 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: UNKNOWN
Notifier Type: Citizen
Caller Name:
DEC Investigator: HRAHMED

Spiller: UNK
Notifier Name:
Caller Agency:
Contact for more spill info: UNK

Spiller Phone:
Notifier Phone:
Caller Phone:
Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/06/2009		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#6 FUEL OIL	PETROLEUM	0	UNKNOWN	0	UNKNOWN	

Caller Remarks:

did not see spill..anonymous caller; construction site is removing and cleaning up tank

DEC Investigator Remarks:

07/07/09−HRAHMED−As per DOB records the DDC Plbg $ htg applied for a permit to replace the oil boiler. Spoke to the operator of the contractor (212 391 0887). She said she will contact the plumber and have him call DEC.

5/5/10−HRAHMED−No oil spill observed, called in by anonymous person. due to lack of spill evidence, case closed.

Map Identification Number 32 **HOME** **Spill Number: 0613102** **Close Date: 03/06/2007**
1035 DICKINS STREET FAR ROCKAWAY, NY TT−Id: 520A−0133−575

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1900 feet to the W

ADDRESS CHANGE INFORMATION
Revised street: 1035 DICKENS ST
Revised zip code: 11691

Source of Spill: COMMERCIAL VEHICLE Spiller: RICH − MADISON OIL HEATING OIL P Spiller Phone: (718) 444−3400
Notifier Type: Other Notifier Name: Notifier Phone:
Caller Name: Caller Agency: Caller Phone:
DEC Investigator: smsanges Contact for more spill info: HOMEOWNER Contact Person Phone: (718) 337−5664

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
03/06/2007		OTHER	NO	

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

LESS THEN 1/2 GALLON SPILLED ON THE STREET: AND ALL CLEANED UP

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 33 **1053 DICKENS AVENUE** **Spill Number: 9609624** **Close Date: 12/06/1996**

1053 DICKONS AVENUE
BAYS WATER
FAR ROCKAWAY, NY
TT−Id: 520A−0128−798

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1928 feet to the W

ADDRESS CHANGE INFORMATION
Revised street: 1053 DICKENS ST
Revised zip code: 11691

Source of Spill:	UNKNOWN	Spiller:	UNKNOWN	Spiller Phone:	
Notifier Type:	Affected Persons	Notifier Name:	LUZ EISEMANN	Notifier Phone:	(718) 327−0477
Caller Name:	LUZ EISEMANN	Caller Agency:	CITIZEN	Caller Phone:	(718) 327−0477
DEC Investigator:	O'DOWD	Contact for more spill info:	LUZ EISEMANN	Contact Person Phone:	(718) 327−0477

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/31/1996		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
WASTE OIL/USED OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

CALLER KEEPS GETTING POCKETS OF OIL IN HER BACKYARD

DEC Investigator Remarks: DEC INVESTIGATOR REMARKS NOT AVAILABLE FOR THIS SPILL ACCORDING TO THE LAST UPDATE.

The following DEC Investigator Remarks were available prior to 1/1/2002:

HE SAID 11/04/96 2:25 P.M. FOR LUCIA EISEMAN W/CLAUDIA. BEST TIME CALL HER 9:00 A.M. 12/06/96 SURFACE SPILL CLEANUP DONE BR HOMEOWNER. 12/03/96 2:40 P.M. BUSY. 12/05/96 2:15 P.M. SPOKE TO LUCIA MIKE WILL BE GOING TO SITE TOMORROW WILL SEE.

Map Identification Number 34 **PRIVATE RESD** **Spill Number: 1006122** **Close Date: 09/03/2010**
13−77 GIPSON ST QUEENS, NY TT−Id: 520A−0255−679

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1984 feet to the NW

ADDRESS CHANGE INFORMATION
Revised street: 1377 GIPSON ST
Revised zip code: NO CHANGE

Source of Spill:	PRIVATE DWELLING	Spiller:	BILL PATTELL − PETRO OIL CO	Spiller Phone:	
Notifier Type:	Other	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	hrpatel	Contact for more spill info:	PETRO OIL CO	Contact Person Phone:	(800) 645−4328

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
09/02/2010		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	2.00	GALLONS	0.00	GALLONS	

Caller Remarks:

SPILLED IN CELLAR. NO INDICATION ON CLEANUP YET.

DEC Investigator Remarks:

09/03/10−Hiralkumar Patel. see also spill #: 1006120. spoke with Petro (at 7:50 PM on 09/02/10). about 2 gal oil leaked from oil filter on boiler onto concrete surface. spill cleaned up immediately. but spill happened near drain area and petro was not sure if any oil got into drain. they reported spill to NYC DEP.

case closed.

Map Identification Number 35 **PUBLIC SCHOOL 215** **Spill Number: 0108314** **Close Date: 11/16/2001**
535 BRIAR PL FAR ROCKAWAY, NY TT−Id: 520A−0124−445

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1998 feet to the SW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	INSTITUTIONAL, EDUC, GOV, OTHER	Spiller:	PUBLIC SCHOOL 215	Spiller Phone:	
Notifier Type:	Other	Notifier Name:		Notifier Phone:	
Caller Name:	MARGARET TENTLE	Caller Agency:	METRO OIL	Caller Phone:	(718) 383−1400
DEC Investigator:	JAKOLLEE	Contact for more spill info:		Contact Person Phone:	

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/16/2001		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#4 FUEL OIL	PETROLEUM	10.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

during delivery there was pressure on line that caused product to back up out of fill pipe − clean up crew enroute

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was KOLLEENY KOLLEENY AND VOUGHT VISITED SCENE AT 10:30 AM ON 11/16/01. METRO OIL COMPANY CLEANUP CREW PRESENT (HEADED BY PAUL LENOX), AS WELL AS SCHOOL CUSTODIAN (ROBERT CETINA, 718−327−0339). OIL SPILLED AT FILL PORT ONTO PAVEMENT, CONTAINED WITH SPEEDY DRY. DID NOT IMPACT SEWERS. CAUSE OF SPILL UNCERTAIN; DRIVER SPECULATED VENT MAY BE PARLTLY CLOGGED. ABOUT 3 BAGS OF SPEEDY DRY USED, CLEANUP CREW SHOVELED AND DISPOSED OF IT. DEC OBSERVED NO SIGNIFICANT RESIDUAL IMPACTS.

Map Identification Number 36 **BEHIND THIS ADDRESS** **Spill Number: 0512048** **Close Date: 01/19/2006**
13−25 CAFFREY AVE QUEENS, NY TT−Id: 520A−0133−472

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 2066 feet to the SE

ADDRESS CHANGE INFORMATION
Revised street: 1325 CAFFREY AVE
Revised zip code: NO CHANGE

Source of Spill: PRIVATE DWELLING
Notifier Type: Other
Caller Name: DENNIS HUACON
DEC Investigator: SMSANGES
Spiller: MARY DUNNING − BEHIND THIS ADDRESS
Notifier Name: DENNIS HUACON
Caller Agency: NYCDEP
Contact for more spill info: MARY DUNNING
Spiller Phone: (718) 471−7300
Notifier Phone: (718) 595−4722
Caller Phone: (718) 595−4722
Contact Person Phone: (718) 471−7300

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
01/18/2006		OTHER	NO	

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
RAW SEWAGE	OTHER	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

pvc pipe , under a piece of ply wood in the backyard, is raw sewage running in a pit:

DEC Investigator Remarks:

Sangesland forwarded this to Selvin Southwell in DEC Water. Since there is no impact to surface water or a body of water, not a DEC issue. Ref to city DEP.

Map Identification Number 37 **CANAL** **Spill Number: 0606146** **Close Date: 10/10/2006**
22−55 BATTERY ROAD QUEENS, NY TT−Id: 520A−0122−754

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 2117 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: 2255 BATTERY ROAD
Revised zip code: NO CHANGE

Source of Spill:	UNKNOWN	Spiller:	UNKNOWN − Unknown	Spiller Phone:	
Notifier Type:	Local Agency	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	HRPATEL	Contact for more spill info:	ROBERT HERRIS	Contact Person Phone:	(516) 343−0465

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Unknown RP − DEC Field Response − DEC Corrective Action Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
08/28/2006		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	SURFACE WATER

Caller Remarks:

barge in water and construction of building is in procees next to the canal. clean up not yet in process.

DEC Investigator Remarks:

08/29/06−Hiralkumar Patel. received during off hours duty on 08/28/06. visited site. met Robert Herris. Mr. Herris went at site for fishing during low tide and found oil strip along coast line for about 30 ft. when i reached at site, it was dark and tide was high. found sheen on water body for about 5−6 ft wide from coast line. no odor. spoke with Mr. Crews at Coast Guard (case#: 809524) and they will send someone for investigation.

10/11/06−Hiralkumar Patel. spoke at Coast Guard. person will call back with details. received call from Mr. Sierra from coast guard. he responded site lateron and found nothing. he has closed the case.

based on coast guard’s information, case closed.

Map Identification Number 38 **RESIDENCE** **Spill Number: 0412964** **Close Date: 03/22/2005**
2 WILLIAMS COURT QUEENS, NY TT−Id: 520A−0130−051

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 2153 feet to the SE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	PRIVATE DWELLING	Spiller:	UNKNOWN − UNKNOWN VESSEL	Spiller Phone:	
Notifier Type:	Local Agency	Notifier Name:	SEAN DONOHUHE	Notifier Phone:	(212) 689−1520
Caller Name:	SEAN DONOHUHE	Caller Agency:	NYC DEP	Caller Phone:	(212) 689−1520
DEC Investigator:	MXTIPPLE	Contact for more spill info:	BALUYOT, MRS	Contact Person Phone:	(718) 327−0845

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
03/11/2005		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

OIL SPILLED FROM BOILER WHILE BENG REPLACED. CLEAN UP IS NOT IN PROCESS. LOCATED IN THE BASEMENT.

DEC Investigator Remarks:

spoke with citizen, water from boiler spilled in alley and onto street. one tire on her car got dirty.

NFA//

Map Identification Number 39 **IN ROADWAY** **Spill Number: 9903496** **Close Date: 08/05/1999**
BATTERY RD & MCBRIDE ST QUEENS, NY TT−Id: 520A−0128−418

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 2212 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: MC BRIDE ST / BATTERY RD
Revised zip code: 11691

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	DEP	Spiller Phone:	
Notifier Type:	Responsible Party	Notifier Name:	MR WONG	Notifier Phone:	(917) 769−4005
Caller Name:	DONALD CANNON	Caller Agency:	DEP	Caller Phone:	(718) 595−6777
DEC Investigator:	CAENGELH	Contact for more spill info:		Contact Person Phone:	

Category: Investigation indicates there was no spill.
Class: Any Type of RP Including No RP − No DEC Field Response − Corrective Action by Spill Response Not Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
06/26/1999		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
WASTE OIL/USED OIL	PETROLEUM	40.00	GALLONS	40.00	GALLONS	SOIL

Caller Remarks:

abandond drums leaked − were contained in other drums − not requesting dec contact

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was ENGELHARDT/SANGESLAND Engelhardt was duty officer. Called Donald Cannon of DEP who clarified report saying there was no leak − just abandoned drums.

8/5/99 DRUM RUN PICK UP BY WINSTON PIN # 01036 (ABANDONED DRUM)/SEE SPILL #993008

Map Identification Number 40 **SPILL NUMBER 9903890** **Spill Number: 9903890** **Close Date: 07/08/1999**
13−02 REDFERN AVE QUEENS, NY TT−Id: 520A−0131−880

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING − LARGE SITE
Approximate distance from property: 2377 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: 1302 REDFERN AVE
Revised zip code: 11691

Source of Spill: COMMERCIAL/INDUSTRIAL Spiller: LONG ISLAND POWER AUTHORI Spiller Phone:
Notifier Type: Fire Department Notifier Name: Notifier Phone:
Caller Name: FF TIM REGAN Caller Agency: NYFD Caller Phone: (718) 476−6288
DEC Investigator: MCTIBBE Contact for more spill info: MR CLAUS Contact Person Phone: (516) 792−2643

Category: Known release which created a fire/explosion hazards (inside or outdoors), drinking water supply contamination, or significant releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/05/1999		OTHER	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
TRANSFORMER OIL	PETROLEUM	0	GALLONS	0	GALLONS	SEWER

Caller Remarks:

fdny reporting a transformer fire at above location. a leak resulted from fire and product has gone into sewer, unknown amounts.
long island power authority to clean.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was TIBBE SEE ALSO 99−03887. CLEANED BY LIPA.

Map Identification Number 41 **REDFERN HOUSING −NYCHA** **Spill Number: 9510331** **Close Date: 12/05/2012**
14−68 BEACH CHANNEL DR QUEENS, NY TT−Id: 520A−0131−879

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING − LARGE SITE
Approximate distance from property: 2377 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: 1468 BEACH CHANNEL DR
Revised zip code: 11691

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER
Notifier Type: Responsible Party
Caller Name: ED MALONE
DEC Investigator: jkkann

Spiller: ED MALONE − NYC HOUSING
Notifier Name: MIKE SUSCA
Caller Agency: NYC HOUSING
Contact for more spill info: CALLER

Spiller Phone: (203) 306−8480
Notifier Phone: (203) 289−8631
Caller Phone: (212) 306−8480
Contact Person Phone:

Category: Known or probable release, where, without action, there is a potential for a fire/explosion hazard (indoors or outdoors), contamination of drinking water supplies, or significant release to surface waters.
Class: Unable or Unwilling RP − DEC Field Response − DEC Corrective Action Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/16/1995		UNKNOWN	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#4 FUEL OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

TRC WAS TANK TESTING FOR GROUND WATER MONITORING WELLS AND NOTICED OIL

DEC Investigator Remarks:

12/19/05: This spill transferred from J.Kolleeny to S.Kraszewski.

03/23/06: This spill transferred to K.Tang − SK

09/23/10: J.Kann − spill transferred from K. Tang to J.Kann.

5/29/12: J.kann − assigned priority p0 because little information is available.

07/18/12 − J.Kann − IWP received on 7/16/12.

10/17/12: J.Kann − met with NYCHA on August 16 to discuss possible closure sites. Redfern Houses was presented by NYCHA's consultant, Drew Pardus, for closure. Reviewed files and determined site can be presented for closure to the panel. Visited site on October 17 to observe gauging of existing wells at the site and to inspect the boiler room walls along the tank area. No product was detected in any wells. No indication of petroleum seepage (historic or present) was noted on the boiler room walls. Site will be presented for closure.

12/5/12: J.kann − presented site to spill closure panel today. Spill closure was approved. Edoced summary of presentation and facts related to closure. NFA Closure Letter prepared and sent to NYCHA (also edoced).

Map Identification Number 42 **1130 BEACH 9TH ST** **Spill Number: 9107338** **Close Date: 10/10/1991**

1130 BEACH 9TH ST FAR ROCKAWAY, NY TT−Id: 520A−0125−750

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 2423 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: UNKNOWN
Notifier Type: Citizen
Caller Name: JAN SWEIG
DEC Investigator: SIGONA

Spiller:
Notifier Name:
Caller Agency:
Contact for more spill info:

Spiller Phone:
Notifier Phone:
Caller Phone: (718) 471−4015
Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/08/1991	10/10/1991	UNKNOWN	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
UNKNOWN PETROLEUM	PETROLEUM	0	GALLONS	0	GALLONS	AIR

Caller Remarks:

REFERRED TO DEP ODOR COMPLAINT UNIT & DEC AIR UNIT.

DEC Investigator Remarks: DEC INVESTIGATOR REMARKS NOT AVAILABLE FOR THIS SPILL ACCORDING TO THE LAST UPDATE.

The following DEC Investigator Remarks were available prior to 1/1/2002:

10/10/95: This is additional information about material spilled from the translation of the old spill file: NOXIOUS ODOR.

Map Identification Number 43 **MOTT BASIN** **Spill Number: 9508409** **Close Date: 12/01/1995**
SHERIDAN BLVD INWOOD, NY TT−Id: 520A−0088−516

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (5)
Approximate distance from property: 2493 feet to the N

ADDRESS CHANGE INFORMATION
Revised street: SHERIDAN BLVD / MOTT BASIN
Revised zip code: 11096

Source of Spill:	UNKNOWN	Spiller:	EAGLE OIL	Spiller Phone:	(516) 239−8800
Notifier Type:	Federal Government	Notifier Name:	CITIZEN	Notifier Phone:	
Caller Name:	DOOLEY	Caller Agency:	US COAST GUARD	Caller Phone:	(212) 668−7920
DEC Investigator:	AYLEUNG	Contact for more spill info:	SAME	Contact Person Phone:	

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/10/1995		UNKNOWN	YES	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
GASOLINE	PETROLEUM	0	GALLONS	0	GALLONS	AIR

Caller Remarks:

CITIZEN CALLED THE COAST GUARD TO REPORT A HEAVY SMELL OF GAS

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was LEUNG EAGLE GAS STATION IS DOING TANK WORK ODOR FROM THE GAS STATION, USCG ON SCENE, NO SPILL

ACCORDING TO WORKER ON SITE, TANK WAS CLEANED NOT REPAIRED,NO SPILLAGE NOTED

CLOSED STATUS HAZARDOUS SPILLS − MISC. SPILL CAUSES − EQUIPMENT FAILURE, HUMAN ERROR, TANK OVERFILL, DELIBERATE SPILL, TRAFFIC ACCIDENT, HOUSEKEEPING, ABANDONED DRUM, VANDALISM AND STORMS − WITHIN 1/2 MILE SEARCH RADIUS.
All spills mapped and profiled within 1/8 mile. Between 1/8 mile and 1/2 mile search radius, spills reported to be greater than 100 units and spills reported in the NYSDEC Fall 1998 MTBE Survey are mapped and profiled. Spills reported to be less than 100 units are listed in a table at the end of this section.

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 44 **OPPOSITE 1044 BEACH 21 ST** **Spill Number: 0408292** **Close Date: 12/14/2004**
(MUNICPLE PARKING LOT) QUEENS, NY TT−Id: 520A−0130−062

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (3)
Approximate distance from property: 145 feet to the SE*

ADDRESS CHANGE INFORMATION
Revised street: OPPOSITE 1044 BEACH 21 ST
Revised zip code: 11691

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER
Notifier Type: Local Agency
Caller Name: MAHENDRA RAMNARINE
DEC Investigator: JMKRIMGO

Spiller: UNKNOWN
Notifier Name: MAHENDRA RAMNARINE
Caller Agency: DEP HAZMAT
Contact for more spill info: MAHENDAR RAMNARINE

Spiller Phone:
Notifier Phone: (718) 595−4682
Caller Phone: (718) 595−4682
Contact Person Phone: (718) 595−4784

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/27/2004		ABANDONED DRUM	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
MOTOR OIL	PETROLEUM	0	GALLONS	0	GALLONS	SOIL

Caller Remarks:

TWO DRUMS: 55 GALLON: WILL PLACE TAPE AROUND AREA:

DEC Investigator Remarks:

12/14/04 TJD Drum emptied as part of drum run on 12/10/04. No further action required. Spill closed.

Map Identification Number 45 **DRUM RUN** **Spill Number: 1204054** **Close Date: 08/02/2012**
BEACH 21ST ST AND MOTT AVE AT INTERSECTION − QUEENS, NY TT−Id: 520A−0275−782

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 293 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: BEACH 21ST ST / MOTT AVE
Revised zip code: NO CHANGE

Source of Spill: COMMERCIAL/INDUSTRIAL
Notifier Type: Other
Caller Name:
DEC Investigator: RMPIPER
Spiller: ABANDONED DRUM
Notifier Name:
Caller Agency:
Contact for more spill info: JEREMY HILLER
Spiller Phone:
Notifier Phone:
Caller Phone:
Contact Person Phone: (917)5768040

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
07/25/2012		ABANDONED DRUM	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
WASTEWATER	OTHER	55.00	UNKNOWN	0.00	UNKNOWN	

Caller Remarks:

in parking lot for Train Station − blue 55 gallon plastic drum − not leaking −

DEC Investigator Remarks:

8/1/12− 55 gal pumped. spill closed.

Map Identification Number 46 **FAR ROCKAWAY SHOPPING MALL** **Spill Number: 0809169** **Close Date: 11/14/2008**
MOTT AVE., BETWEEN B. CHANNEL DRIVE & CENTRAL AVE FAR ROCKAWAY, NY TT−Id: 520A−0224−138

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (4)
Approximate distance from property: 326 feet to the N

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL/INDUSTRIAL	Spiller:	COMMUTER BUSES	Spiller Phone:	
Notifier Type:	Citizen	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	RWAUSTIN	Contact for more spill info:		Contact Person Phone:	

Category: Possible petroleum release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters, known releases with no potential for damage, or non−petroleum/non−hazardous spills.

Class: Unable or Unwilling RP − DEC Field Response − DEC Corrective Action Required

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/12/2008		DELIBERATE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
MOTOR OIL	PETROLEUM	−1.00	GALLONS	0.00	GALLONS	

Caller Remarks:

Notifier reported that commuter buses were using parking lot in mall to dump cranksae oil and other materials adjacent to lamp post in the lot. Requested investigation of dumping

DEC Investigator Remarks:

11/13/08 −Austin − Spoke with Mr. Bernard − He indicated that problem had ocurred for some time − cummuter buses use parking lot for pickup point, and were now using this site for dumping oil, trash, and other polluting issues. I indicated that we would investigate the spill, and see if a conservation officer could check periodically at the site to see if we could catch who was doing the dumping. − end

11/14/08 − Austin − I investigated the complaint − shopping mall is in general disrepair, with potholes in parking lot − at least four large commuter buses were in the parking lot, including at least two of them idling. Located the pothole adjacent to the lamp post (see photos in eDocs file), and determined that there was a minor amount of oil in this hole − shallow hole was filled with muddy water and trash. Also, noted large private transformer vaults adjacent to where buses were parked, and they had no oil in them. No evidence of any serious oil dumping in hole or parking lot. Case closed − idling bus observation referred to DLE for investigation. − end

Map Identification Number 47 **SPILL NUMBER 0000082** **Spill Number: 0000082** **Close Date: 04/03/2000**
1920 MOTT AVE FAR ROCKAWAY, NY TT−Id: 520A−0124−122

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 623 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill:	COMMERCIAL VEHICLE	Spiller:	CALLER − FINEST FUEL	Spiller Phone:	
Notifier Type:	Responsible Party	Notifier Name:		Notifier Phone:	
Caller Name:	MARY FINGER	Caller Agency:	FINEST FUEL	Caller Phone:	(718) 782−4523
DEC Investigator:	MXTIPPLE	Contact for more spill info:	CALLER	Contact Person Phone:	

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
04/03/2000		EQUIPMENT FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	5.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

hose broke during fueling. leak is stopped. cleanup started.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was TIPPLE NYC SANITATION DEPARTMENT DID CLEANUP

Map Identification Number 48 **2230−40 MOTT AVENUE** **Spill Number: 9710254** **Close Date: 02/25/2003**
2230−40 MOTT AVENUE FAR ROCKAWAY, NY TT−Id: 520A−0128−828

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1011 feet to the NW

ADDRESS CHANGE INFORMATION
Revised street: 2230 MOTT AVENUE
Revised zip code: 11691

Source of Spill: PRIVATE DWELLING | Spiller: | Spiller Phone:
Notifier Type: Other | Notifier Name: MARVIN MONTGOMERY | Notifier Phone: (718) 932−9075
Caller Name: CHARLIE BOETTIGER | Caller Agency: MYSTIC TRANSPORTATION | Caller Phone: (718) 932−9075
DEC Investigator: TOMASELLO | Contact for more spill info: | Contact Person Phone:

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
12/06/1997		HUMAN ERROR	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#6 FUEL OIL	PETROLEUM	100.00	GALLONS	100.00	GALLONS	SOIL

Caller Remarks:

APARTMENT BUILDING. STICK LINE CAP LEFT OFF OF TOP OF TANK BY SUPERINTENDANT. SPILLED INTO TANK ROOM. NO DRAINS. BEING CLEANED UP.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 49 **NYNEX BUILDING** **Spill Number: 9608080** **Close Date: 10/02/1996**
13−11 BAYPORT PLACE FAR ROCKAWAY, NY TT−Id: 520A−0127−259

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1043 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1311 BAYPORT PLACE
Revised zip code: NO CHANGE

Source of Spill: COMMERCIAL/INDUSTRIAL | Spiller: MIKE COLONE − NYNEX | Spiller Phone: (718) 224−4258
Notifier Type: Other | Notifier Name: MIKE COLONE | Notifier Phone: (718) 224−4258
Caller Name: JOHN OSWALD | Caller Agency: FRED A COOK INC | Caller Phone: (914) 739−3300
DEC Investigator: ADZHITOM | Contact for more spill info: JOHN OSWALD | Contact Person Phone: (914) 739−3300

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
09/27/1996		EQUIPMENT FAILURE	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	150.00	GALLONS	150.00	GALLONS	SOIL

Caller Remarks:

pump malfunctioned and shut down spilling 150 gallons into the containment area spill was cleaned up and john oswall will follow up in days to check the seepage into the area

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was ZHITOMIRSKY/TIBBE

Map Identification Number 50 **1365 CHANDLER ST (HURRICANE SANDY)** **Spill Number: 1213364** **Close Date: 12/03/2012**
1365 CHANDLER ST BAYSWATER, NY TT−Id: 520A−0282−132

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1476 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: PRIVATE DWELLING Spiller: Spiller Phone:
Notifier Type: DEC Notifier Name: Notifier Phone:
Caller Name: Caller Agency: Caller Phone:
DEC Investigator: Contact for more spill info: Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
10/29/2012		STORM		

NO MATERIAL INFORMATION GIVEN FOR THIS SPILL

Caller Remarks: NO REMARKS GIVEN FOR THIS SPILL

DEC Investigator Remarks:

DEC Contractor Miller pumped out 200 gallons on 12/03/2012

Map Identification Number 51 **LIRR** **Spill Number: 9201639** **Close Date: 05/28/1992**
LIRR/INWOOD STA/REDFERN FAR ROCKAWAY, NY TT−Id: 520A−0131−887

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (3)
Approximate distance from property: 1573 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: 11691

Source of Spill: INSTITUTIONAL, EDUC, GOV, OTHER Spiller: Spiller Phone:
Notifier Type: Responsible Party Notifier Name: Notifier Phone:
Caller Name: W KELNER Caller Agency: LIRR Caller Phone: (718) 217−3252
DEC Investigator: SULLIVAN Contact for more spill info: Contact Person Phone:

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
05/11/1992	05/28/1992	VANDALISM	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
NON PCB OIL	PETROLEUM	100.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

CONTAMINATED SOIL.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 52 **K MNGT BUILDINGS** **Spill Number: 8908672** **Close Date: 12/04/1989**
13−22 CAFFREY AVE FAR ROCKAWAY, NY TT−Id: 520A−0133−474

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (3)
Approximate distance from property: 1893 feet to the SE

ADDRESS CHANGE INFORMATION
Revised street: 1322 CAFFREY AVE
Revised zip code: NO CHANGE

Source of Spill: TANK TRUCK
Notifier Type: Fire Department
Caller Name: TOM MITRACKOS
DEC Investigator: TOMASELLO
Spiller: WHALE CO.
Notifier Name:
Caller Agency: WHALE CO.
Contact for more spill info:
Spiller Phone:
Notifier Phone:
Caller Phone: (718) 852−3109
Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
12/01/1989	12/04/1989	HUMAN ERROR	UNKNOWN	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	150.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

CUST ORDERED 1500G OVERFILLED AT 1100G SPILL TEAM TO CLEAN UP.

DEC Investigator Remarks: NO DEC INVESTIGATOR REMARKS GIVEN FOR THIS SPILL.

Map Identification Number 53 **PS253Q** **Spill Number: 0312969** **Close Date: 12/14/2005**
1307 CENTRAL AVE FAR ROCKAWAY, NY TT−Id: 520A−0124−958

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 1922 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: UNKNOWN
Notifier Type: Local Agency
Caller Name: BRAD MULLNER
DEC Investigator: AJWHITE
Spiller: BRAD MULLNER − PS253Q
Notifier Name: BRAD MULLNER
Caller Agency: LOUIS BERGER GROUP
Contact for more spill info: BRAD MULLNER
Spiller Phone: (212) 363−4223 ext. 5
Notifier Phone: (212) 363−4223 ext. 5
Caller Phone: (212) 363−4223 ext. 5
Contact Person Phone: (212) 363−4223 ext. 5

Category: Known petroleum or hazardous material release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters.
Class: Willing RP − No DEC Field Response − Corrective Action Initiated or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
02/18/2004		EQUIPMENT FAILURE	NO	NO

NO MATERIAL INFORMATION GIVEN FOR THIS SPILL

Caller Remarks:

Was doing a test on tank . pulled the tank. Tested the two walls top and bottom and one of the walls came back hot for Benzo(anthracene) 516ppb. chrysene 441ppb, benzo(b,k) fouoranthene 903 ppb, benzo(a) pyrene 445ppb Everything else was non detect.

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was KRIMGOLD 2/27/2004 Sangesland called Mr. Mullner (consultant). They will put together a report showing the tank pull, end point sampling (minor hits), and requesting closure. The report should be submitted within 2 weeks. ISR from BRAD MULLNER LOUIS BERGER GROUP (212) 612−7900− 7957 6/9/04. lEFT MESSAGE 7/2/04 left message. 8/10/04. Message from Brad that ISR is on the way

11/15/2005: Joe White has the lead for this site as part of the Spill initiative

12/8/2005: James Merlo, the coordinator for NYC Schools contacted Joe White with information. Mr. Merlo is trying to located the closure report for this site. If he is unable to locate the report he may send in a certification that the work has been completed to close out the spill.

12/14/2005: A summary of the closure report was provided (copy on eDocs) to Joe White and the site was closed based on the findings of the report.

Map Identification Number 54 **SANDY FOLLOW UP** **Spill Number: 1208861** **Close Date: 11/18/2013**

431 BEACH 122ND ST ROCKAWAY, NY TT−Id: 520A−0278−111

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (4)
Approximate distance from property: 1998 feet to the SSW

ADDRESS CHANGE INFORMATION
Revised street: 431 BEACH 22ND ST
Revised zip code: NO CHANGE

Source of Spill:	PRIVATE DWELLING	Spiller:	ROSENBURG − PRIVATE RESD	Spiller Phone:	
Notifier Type:	Other	Notifier Name:		Notifier Phone:	
Caller Name:		Caller Agency:		Caller Phone:	
DEC Investigator:	RMPIPER	Contact for more spill info:	ROSENBURG	Contact Person Phone:	(718) 474−4571

Category: Possible petroleum release with minimal potential for fire/explosion (indoors or outdoors), drinking water contamination, or releases to surface waters, known releases with no potential for damage, or non−petroleum/non−hazardous spills.
Class: Willing RP − DEC Field Response − Corrective Action Initiated, Taken Over, or Completed by RP or Other Agency

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
11/03/2012		STORM	NO	NO

Material Spilled	Material Class	Quantity Spilled	Units	Quantity Recovered	Units	Resource(s) Affected
#2 FUEL OIL	PETROLEUM	250.00	GALLONS	0.00	GALLONS	SOIL

Caller Remarks:

Inside basement tank rollover. Cleanup pending.

DEC Investigator Remarks:

DEC Piper visited site. Address does not exist.

Spoke with slomins oil and confirmed address is 431 B 122nd. This is a duplicate spill. house removed tank and converted to gas.
Spill closed.

Map Identification Number 55 **MEK BUTTERY RD** **Spill Number: 8600474** **Close Date: 04/19/1986**
BATTERY RD FAR ROCKAWAY, NY TT−Id: 520A−0137−525

MAP LOCATION INFORMATION
Site location mapped by: MANUAL MAPPING (3)
Approximate distance from property: 2120 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Source of Spill: UNKNOWN Spiller: UNKNOWN Spiller Phone:
Notifier Type: Local Agency Notifier Name: Notifier Phone:
Caller Name: Caller Agency: Caller Phone:
DEC Investigator: UNASSIGNED Contact for more spill info: Contact Person Phone:

Spill Date	Date Cleanup Ceased	Cause of Spill	Meets Cleanup Standards	Penalty Recommended
04/18/1986	04/19/1986	ABANDONED DRUM	UNKNOWN	NO

NO MATERIAL INFORMATION GIVEN FOR THIS SPILL

Caller Remarks:

WILL REMOVE MONDAY

DEC Investigator Remarks:

Prior to Sept, 2004 data translation this spill Lead_DEC Field was

10/10/95: This is additional information about material spilled from the translation of the old spill file: SLUDG−MEK.

THE FOLLOWING CLOSED SPILLS FOR THIS CATEGORY WERE REPORTED BETWEEN 1/8 MILE AND 1/2 MILE FROM THE SUBJECT ADDRESS. THESE SPILLS WERE REPORTED TO BE LESS THAN 100 UNITS IN QUANTITY AND CAUSED BY: EQUIPMENT FAILURE, HUMAN ERROR, TANK OVERFILL, DELIBERATE SPILL, TRAFFIC ACCIDENT, HOUSEKEEPING, ABANDONED DRUM, VANDALISM OR STORMS. THESE SPILLS ARE NEITHER MAPPED NOR PROFILED IN THIS REPORT.

FACILITY ID	FACILITY NAME	STREET	CITY
0611066	DRY CLEANERS	1159 BEACH CHANNEL DRIVE	ROCKAWAY
8708024	B 22ND ST&CORNEGA AV/QUNS	BCH 22ND ST & CORNEGA AVE	NEW YORK CITY
0105269	POLE 13	MOTT AV AND B18TH ST	FAR ROCKAWAY
1000860	ON EMPTY LOT	17−25 17−27 REDFERN AVENUE	FAR ROCKAWAY
9608090	MYCO GAS STATION	18−11 MOTT AVENUE	FAR ROCKAWAY
9413260	NYCPD 101ST PRECINT	16−12 MOTT AVENUE	FAR ROCKAWAY
9301017	1612 MOTT AVE	1612 MOTT AVE	FAR ROCKAWAY
1213266	1316 MCBRIDE (HURRICANE SANDY)	1316 MCBRIDE	BAYSWATER
1211220	SANDY FOLLOW UP	13−16 MCBRIDE ST	FAR ROCKAWAY
1006366	PRIVATE RESIDENCE	1320 MCBRIDE ST	FAR ROCKAWAY
9610306	22−11 NEW HAVEN AVENUE	22−11 NEW HAVEN AVENUE	FAR ROCKAWAY
0000598	SPILL NUMBER 0000598	22−11 NEW HAVEN AVENUE	FAR ROCKAWAY
1406840	TRANSFORMER POLE 7	604 BEACH 19TH ST	FAR ROCKAWAY
0801281	MULTI FAMILY HOME	22−79 MOTT AVE.	FAR ROCKAWAY
9802746	SPILL NUMBER 9802746	11−41 MCBRIDE ST	FAR ROCKAWAY
9415199	11−41 MCBRIDE ST	11041 MCBRIDE ST	FAR ROCKAWAY
9413371	1141 MCBRIDE ST	1141 MCBRIDE ST	FAR ROCKAWAY
0907678	SOIL	1450 GATEWAY BLVD	FAR ROCKAWAY
0405250	MANHOLE #30199	1450 GATEWAY ST	FAR ROCKAWAY
9507061	1323 MCBRIDE STREET	1323 MCBRIDE STREET	QUEENS
1213350	1360 CHANDLER ST (HURRICANE SANDY)	1360 CHANDLER ST	BAYSWATER
1211678	1360 CHANDLER STREET	1360 CHANDLER STREET	BAYSWATER
1210332	HURBERT SOREL	13−60 CHANDLER ST	FAR ROCKAWAY
9701441	NEW SURFSIDE NURSING HOME	22−41 NEW HAVEN AVE	FAR ROCKAWAY
1211674	1347 CHANDLER STREET	1347 CHANDLER STREET	BAYSWATER
9603802	1401 CENTRAL AVENUE	1401 CENTRAL AVENUE	FAR ROCKAWAY
1208634	HOUSE AND SOIL	1362 CHANDLER STREET	FAR ROCKAWAY

1411592	NAT GRID	1402 AUGUSTINA AVE	FAR ROCKAWAY
1404083	POLE 2	1024 GIPSON STREET	FAR ROCKAWAY
1211681	1372 CHANDLER STREET	1372 CHANDLER STREET	BAYSWATER
1212888	ROMEO PROPERTY	1365 CHANDLER ST	FAR ROCKAWAY
9903887	POLE 15	REDFERN AVE/NANEOK AVE	FAR ROCKAWAY
9304570	1502 MOTT AVENUE	1502 MOTT AVENUE	FAR ROCKAWAY
1211680	1367 CHANDLER STREET	1367 CHANDLER STREET	BAYSWATER
9512756	ETWARU RESIDENCE	2122 NAMEOKE AVE	FAR ROCKAWAY
9806143	MANHOLE 30277	BEACH 21ST ST	FAR ROCKAWAY
1211682	1381 CHANDLER STREET	1381 CHANDLER STREET	BAYSWATER
1208364	TRANSFORMER POLE #2 − LIPA	13−24 CENTRAL AVE	FAR ROCKAWAY
1211683	1382 MCBRIDE STREET	1382 MCBRIDE STREET	BAYSWATER
1104054	POLE TOP TRANSFORMER−POLE #12	2308 MOTT AVE	FAR ROCKAWAY
0907677	SOIL	1409 GATEWAY BLVD	FAR ROCKAWAY
0605532	RADMAR MEAT CORP	CENTRAL AVE/NELSON STREET	FAR ROCKAWAY
1406310	HOME	22−53 NAMEOKE	FAR ROCKAWAY
1404504	PRIVATE RESIDENCE	2253 NAMEOKE AVE	QUEENS
9506679	11−16 NELSON STREET	11−16 NELSON STREET	QUEENS
9712205	DICKENS ST/CORNEGA AVE	DICKENS ST/CORNEGA AVE	FAR ROCKAWAY
9612224	APARTMENT COMPLEX	439 BEACH 22ND STREET	FAR ROCKAWAY
1004677	ON SIDE OF ROAD	1019 DICKENS AVE	FAR ROCKAWAY
9203729	BEACH 19TH ST/ST JOHNS	BEACH 19TH ST/HOSPITAL	FAR ROCKAWAY
0501798	ST. JOHNS HOSPITAL	BEACH 19TH STREET	FAR ROCKAWAY
1010730	WAVECREST APARTMENTS	20−30 ELK DRIVE	FAR ROCKAWAY
1006120	BASEMENT ON A SLAB	13−77 GIPSON STREET	QUEENS
0807842	IJEOMA UWAZURIKE	1377 GIPSON STREET	QUEENS
9705994	2101 ELK DR	2101 ELK DR	FAR ROCKAWAY
0505262	1711 BROOKHAVEN AVE.	1711 BROOKHAVEN AVE	FAR ROCKAWAY
0306895	MANHOLE #30592	1715 BROOKHAVEN AV	QUEENS
9207826	BROCKHAVEN BLVD./B 17 ST	BROCKHAVEN BLVD/B 17 ST	FAR ROCKAWAY
9409758	BATTERY RD & CHANDLER ST	BATTERY RD & CHANDLER ST	ROCKAWAY
9402559	1390 DAVIS ROAD	EMPTY LOT 1390 DAVIS ROAD	QUEENS
1404402	MANHOLE 30170	1261 CENTRAL AVE	FAR ROCKAWAY
0011037	SPILL NUMBER 0011037	1261 CENTRAL AVE	FAR ROCKAWAY
0302872	MANHOLE #14382	12−79 REDFERN AVE	QUEENS
1211700	1440 GIPSON STREET	1440 GIPSON STREET	BAYSWATER
0905503	I/F/O 1341 DICKENS ST	1341 DICKENS ST	FAR ROCKAWAY
1211856	2314 ENRIGHT ROAD	2314 ENRIGHT ROAD	BAYSWATER
1211858	2335 ENRIGHT ROAD	2335 ENRIGHT ROAD	BAYSWATER
9708614	FOOT OF GIPSOM ST	GIPSON ST NEAR RIVER	FAR ROCKAWAY
1211859	2337 ENRIGHT ROAD	2337 ENRIGHT ROAD	BAYSWATER
0503153	POLE MOUNTED TRANSFORMER	1209 BEACH 9TH STREET/IFO	FAR ROCKAWAY
0212660	SPILL NUMBER 0212660	2394 MOTT AVE	QUEENS
1213351	515 BEACH 12TH ST (HURRICANE SANDY)	515 BEACH 12TH ST	FAR ROCKAWAY

1211860	2346 ENRIGHT ROAD	2346 ENRIGHT ROAD	BAYSWATER
0204616	N OF MOTT AV	BAY 24TH ST	QUEENS

NO OIL STORAGE FACILITIES LARGER THAN 400,000 GALLONS IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

PETROLEUM BULK STORAGE FACILITIES LESS THAN 400,000 GALLONS IDENTIFIED WITHIN THE 1/8 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 56 **NOBO CORPORATION** **Facility Id: 2−602577** **Source: NYS DEC**
10−74 BEACH 22ND STREET FAR ROCKAWAY, 11691 TT−Id: 640A−0047−266

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 124 feet to the NW*

ADDRESS CHANGE INFORMATION
Revised street: 1074 BEACH 22ND STREET
Revised zip code: NO CHANGE

Facility Type: Other
Site Status: Active
Expiration Date of the facility's registration certificate: 12/28/2000
Operator Name: ANDREW BONNOT
Operator Phone #: (718) 471−1264
Owner Name: −
Owner Company: NOBO CORPORATION
Owner Type: Corporate or Commercial
Owner Address: 10−74 BEACH 22ND STREET, FAR ROCKAWAY, NY 11691

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	Tank Converted to Non−Regulated Use	#2 Fuel Oil	275	Aboveground − In Contact with Soil	05/01/1995		08/01/1996
002	Temporarily Out of Service	Waste Oil/Used Oil	275	Aboveground − In Contact with Soil	05/01/1995		

TANK NUMBER: 001
TANK EXT. PROTECTION: Painted/Asphalt Coating
PIPING EXT. PROTECTN: Painted/Asphalt Coating
PIPING TYPE: Galvanized Steel
OVERFILL PROTECTION: Float Vent Valve
TANK TYPE: Steel/Carbon Steel/Iron
TANK LEAK DETECTN: None
PIPING LEAK DETECTN:
PIPING LOCATION: Aboveground
SPILL PREVENTION:
TK INT. PROTECTION: None
TK SEC. CONTAINMNT: Other
PIPE SEC. CONTAINMNT:
DISPENSER METHOD: Suction

TANK NUMBER: 002
TANK EXT. PROTECTION: Painted/Asphalt Coating
PIPING EXT. PROTECTN: Painted/Asphalt Coating
PIPING TYPE: Galvanized Steel
OVERFILL PROTECTION: Float Vent Valve
TANK TYPE: Steel/Carbon Steel/Iron
TANK LEAK DETECTN: None
PIPING LEAK DETECTN: Exempt Suction Piping
PIPING LOCATION: Aboveground
SPILL PREVENTION:
TK INT. PROTECTION: None
TK SEC. CONTAINMNT: Other
PIPE SEC. CONTAINMNT:
DISPENSER METHOD: Suction

Map Identification Number 57 **BAYMART (RETAIL STORE)** **Facility Id: 2−607761** **Source: NYS DEC**
1057 BEACH 20TH STREET FAR ROCKAWAY, 11691 TT−Id: 640A−0049−418

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 223 feet to the E

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Facility Type: Other Wholesale/Retail Sales
Site Status: Active
Expiration Date of the facility's registration certificate: 05/14/2007
Operator Name: JOSEPH DWECK
Operator Phone #: (718) 327−1568
Owner Name: −
Owner Company: D−MART INC C/O RAINES
Owner Type: Corporate or Commercial
Owner Address: 2047 HIGH RIDGE RD, BOYNTON BEACN, FL 33426

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
0001	In Service	#2 Fuel Oil	1500	Aboveground on Crib Rack or Cradle			

TANK NUMBER: 0001
TANK EXT. PROTECTION: None
PIPING EXT. PROTECTN: None
PIPING TYPE: No Piping
OVERFILL PROTECTION: Vent Whistle
TANK TYPE: Steel/Carbon Steel/Iron
TANK LEAK DETECTN: None
PIPING LEAK DETECTN: Exempt Suction Piping
PIPING LOCATION: Aboveground
SPILL PREVENTION:
TK INT. PROTECTION: None
TK SEC. CONTAINMNT: None
PIPE SEC. CONTAINMNT:
DISPENSER METHOD: Suction

Map Identification Number 58 **D−MART INC** **Facility Id: NY03001** **Source: NYC FIRE DEPT**
1057 BEACH 20 ST QUEENS, NY 11691 TT−Id: 660A−0009−156

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 223 feet to the E

ADDRESS CHANGE INFORMATION
Revised street: 1057 BEACH 20TH ST
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: FO #2 1500G

Map Identification Number 59 **SY YOUNG BAY** **Facility Id: NY09596** **Source: NYC FIRE DEPT**
20−11 MOTT AVE QUEENS, NY 11691 TT−Id: 660A−0008−814

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 263 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: 2011 MOTT AVE
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: FUEL OIL 2000 GLS

Map Identification Number 60 **OWEN AUTO SERVICE** **Facility Id: 2−604688** **Source: NYS DEC**
1017 BEACH 21ST STREET FAR ROCKAWAY, 11691 TT−Id: 640A−0047−401

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 319 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Facility Type: Retail Gasoline Sales
Site Status: Unregulated/Closed
Expiration Date of the facility's registration certificate:
Operator Name: OWEN BRERETON Operator Phone #: (718) 327−5927
Owner Name: −
Owner Company: OWEN BRERETON Owner Type: Corporate or Commercial
Owner Address: 14−30 GIPSON STREET, FAR ROCKAWAY, NY 11691

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
01	Closed − Removed	Gasoline	550	Underground			08/01/2000
02	Closed − Removed	Gasoline	550	Underground			08/01/2000
03	Closed − Removed	Gasoline	550	Underground			08/01/2000
04	Closed − Removed	Gasoline	550	Underground			08/01/2000
05	Closed − Removed	Gasoline	550	Underground			08/01/2000

Map Identification Number 61 **O & L AUTO REPAIRS** **Facility Id: NY07570** **Source: NYC FIRE DEPT**
1017 BEACH 21 ST QUEENS, NY 11691 TT−Id: 660A−0009−513

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 319 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: 1017 BEACH 21ST ST
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: 5−550 GAL TKS/TESTDUE 9/1998
AIR COMP OV 100P
MVRS HANDTOOLS ONLY

Map Identification Number 62 **ROCKAWAY CO** **Facility Id: 2−309060** **Source: NYS DEC**
19−31 MOTT AVENUE FAR ROCKAWAY, 11691 TT−Id: 640A−0049−421

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 396 feet to the E

ADDRESS CHANGE INFORMATION
Revised street: 1931 MOTT AVENUE
Revised zip code: NO CHANGE

Facility Type: Apartment Building/Office Building
Site Status: Active
Expiration Date of the facility's registration certificate: 10/02/2017
Operator Name: ROBERT ROTHENBERG
Operator Phone #: (718) 327−1132
Owner Name: CHARLES E. REID − AGENT
Owner Company: ROCKAWAY CO
Owner Type: Corporate or Commercial
Owner Address: 450 SEVENTH AVE, NEW YORK, NY 10123

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	Closed − In Place	#2 Fuel Oil	2000	Underground			05/01/1992
002	In Service	#2 Fuel Oil	2000	Aboveground on Crib Rack or Cradle	05/01/1992		

Map Identification Number 63 **RCL SERVICE CENTER** **Facility Id: 2−604080** **Source: NYS DEC**
1009 BEACH 21ST STREET FAR ROCKAWAY, 11691 TT−Id: 640A−0044−286

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 514 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

Facility Type: Retail Gasoline Sales
Site Status: Unregulated/Closed
Expiration Date of the facility's registration certificate:
Operator Name: BASSER−KAUFMAN
Operator Phone #: (516) 569−3700
Owner Name: −
Owner Company: BASSER−KAUFMAN
Owner Type: Corporate or Commercial
Owner Address: 335 CENTRAL AVENUE, LAWRENCE, NY 11559

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	Closed − Removed	Gasoline	4000	Underground			03/01/1999
002	Closed − Removed	Gasoline	500	Underground			03/01/1999
003	Closed − Removed	Gasoline	500	Underground			03/01/1999
004	Closed − Removed	Gasoline	500	Underground			03/01/1999
005	Closed − Removed	Gasoline	500	Underground			03/01/1999
006	Closed − Removed	Gasoline	500	Underground			03/01/1999
007	Closed − Removed	Gasoline	500	Underground			03/01/1999
008	Closed − Removed	Gasoline	500	Underground			03/01/1999
009	Closed − Removed	Gasoline	500	Underground			03/01/1999

Map Identification Number 64 **D.J.S.SERVICE CORP.** **Facility Id: NY03011** **Source: NYC FIRE DEPT**
1009 BEACH 21 ST QUEENS, NY 11691 TT−Id: 660A−0008−899

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 514 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: 1009 BEACH 21ST ST
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: ASS 1 −4000GALBTLT 6/88 NRP
MVRS COMB MIX C OF F'S X 3/31/92
AIR COMPRESSOR ACLT 5/90

Map Identification Number 65 **ENGINE 328 AND ENGINE 264** **Facility Id: 2−358037** **Source: NYS DEC**
16−15 CENTRAL AVENUE FAR ROCKAWAY, 11691 TT−Id: 640A−0049−425

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 560 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: 1615 CENTRAL AVENUE
Revised zip code: NO CHANGE

Facility Type: Other
Site Status: Unregulated/Closed
Expiration Date of the facility's registration certificate:
Operator Name: COMPANY OFFICER
Operator Phone #: (718) 476−6264
Owner Name: −
Owner Company: FIRE DEPARTMENT
Owner Type: Local Government
Owner Address: 9 METROTECH, BROOKLYN, NY 11201−3857

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	In Service	Diesel	550	Aboveground on Crib Rack or Cradle	01/01/1976		
002	Closed − Removed	#2 Fuel Oil	2550	Aboveground − In Contact with Soil	01/01/1980		09/20/2007

Map Identification Number 66 **2206 REALTY CORP** **Facility Id: 2−117773** **Source: NYS DEC**
22−06 CORNAGA AVENUE QUEENS, 11691 TT−Id: 640A−0045−458

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 593 feet to the SW

ADDRESS CHANGE INFORMATION
Revised street: 2206 CORNAGA AVENUE
Revised zip code: NO CHANGE

Facility Type: Apartment Building/Office Building
Site Status: Active
Expiration Date of the facility's registration certificate: 07/19/2017
Operator Name: JOSE MELENDEZ
Operator Phone #: (917) 376−9141
Owner Name: EGOR EDELMAN − OWNER
Owner Company: 2206 REALTY CORP
Owner Type: Corporate or Commercial
Owner Address: 895 MAMARONECK AVE, MAMARONECK, NY 10543

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	In Service	#2 Fuel Oil	10000	Underground	09/13/1983	05/15/2012	

Map Identification Number 67 **INT.PENTECOSTAL MISSION** **Facility Id: NY04986** **Source: NYC FIRE DEPT**
16−18 CENTRAL AVE QUEENS, NY 11691 TT−Id: 660A−0008−544

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 613 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1618 CENTRAL AVE
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: FO #2 1500GAL

Map Identification Number 68 **ACTION CENTER FOR DEUCATION & COMMUNITY DEV.** **Facility Id: 2−610219** **Source: NYS DEC**
16−12 CENTRAL AVENUE QUEENS, 11691 TT−Id: 640A−0049−417

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 651 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: 1612 CENTRAL AVENUE
Revised zip code: NO CHANGE

Facility Type: Other
Site Status: Unregulated/Closed
Expiration Date of the facility's registration certificate:
Operator Name: OREA DOL
Operator Phone #: (718) 337−5040
Owner Name: MITCHELL KURK − V. PRES
Owner Company: JUDD LLC
Owner Type: Corporate or Commercial
Owner Address: 497 BEACH 20TH STREET, QUEENS, NY 11691

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
03	Closed − Removed	#2 Fuel Oil	275	Aboveground − In Contact with Soil	04/01/2000		04/01/2000
02	Closed − Removed	#2 Fuel Oil	275	Aboveground − In Contact with Soil	04/01/2000		04/01/2000
01	Closed − Removed	#2 Fuel Oil	2000	Aboveground − In Contact with Soil	05/01/2006		05/01/2006

Map Identification Number 69 **SEAGRIT BAR & GRILL INC.** **Facility Id: NY08938** **Source: NYC FIRE DEPT**
1612 CENTRAL AVE QUEENS, NY 11691 TT−Id: 660A−0008−785

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 651 feet to the NE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

NOTE: This is an archived database

Comments: FILE NO F9655 FUEL OIL 2000GALS

Map Identification Number 70 **ROCKAWAY COMPANY** **Facility Id: 2−159263** **Source: NYS DEC**
19−20 MOTT AVENUE FAR ROCKAWAY, 11691 TT−Id: 640A−0049−420

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 655 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: 1920 MOTT AVENUE
Revised zip code: NO CHANGE

Facility Type: Apartment Building/Office Building
Site Status: Active
Expiration Date of the facility's registration certificate: 08/26/2017
Operator Name: KAUFMAN REALTY
Operator Phone #: (718) 327−1132
Owner Name: −
Owner Company: ROCKAWAY COMPANY
Owner Type: Corporate or Commercial
Owner Address: 450 SEVENTH AVE, NEW YORK, NY 10123

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	In Service	#2 Fuel Oil	2000	Aboveground on Crib Rack or Cradle	08/07/1958		

Map Identification Number 71 **JP MORGAN CHASE** **Facility Id: 2−612280** **Source: NYS DEC**
19−12 MOTT AVENUE FAR ROCKAWAY, 11691 TT−Id: 640A−0090−911

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 655 feet to the ENE

ADDRESS CHANGE INFORMATION
Revised street: 1912 MOTT AVENUE
Revised zip code: NO CHANGE

Facility Type: Apartment Building/Office Building
Site Status: Active
Expiration Date of the facility's registration certificate: 08/20/2019
Operator Name: MAURIZIO BERTOLOTTI
Operator Phone #: (646) 772−9339
Owner Name: MAURIZIO BERTOLOTTI − FACILITY MANAGER
Owner Company: ROCKAWAY KB COMPANY LLC
Owner Type:
Owner Address: 450 SEVENTH AVE., PENTHOUSE N, NEW YORK, NY 10123

TANK NUMBER	TANK STATUS	TANK CONTENT	CAPACITY GALLONS	TANK LOCATION	INSTALL DATE	TEST DATE	CLOSE DATE
001	In Service	#4 Fuel Oil	1100	Underground	01/01/1955	11/05/2013	

Map Identification Number 72 **ROCKAWAY CO** **Facility Id: NY08576** **Source: NYC FIRE DEPT**
19−14 MOTT AVE QUEENS, NY 11358 TT−Id: 660A−0009−876

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 655 feet to the ENE

NOTE: This is an archived database

Comments: FUEL OIL 2000G

ADDRESS CHANGE INFORMATION
Revised street: 1914 MOTT AVE
Revised zip code: 11691

HAZARDOUS WASTE GENERATORS/TRANSPORTERS IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

PLEASE NOTE: * Compass directions can vary substantially for sites located very close to the subject property address.

Map Identification Number 73 **NYSDEC Name:** **MTA NYCT − MOTT AVENUE STATION − A** **Facility Id: NYR000150961**

NYSDEC Address: MOTT AVE & BEACH 22ND ST FAR ROCKAWAY, NY 11691 TT−Id: 740A−0060−751
EPA (RCRA) Name: MTA NYCT − MOTT AVENUE STATION − A
EPA (RCRA) Address: MOTT AVE & BEACH 22ND ST FAR ROCKAWAY, NY 11691

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 326 feet to the N

ADDRESS CHANGE INFORMATION
Revised street: MOTT AVE / BEACH 22ND ST
Revised zip code: NO CHANGE

US EPA RCRA Type: SMALL QUANTITY GENERATOR
Notification date: 08/17/2007
Land Disposal: Receives offsite waste: Incinerator:
Storer: Treatment facility: Transporter:
Contact Name: LUMINITA MARINESCU Source Type: Implementer Contact Phone: 646−252−3506 Contact Info Date: 08/16/2007
Contact Name: LUMINITA MARINESCU Source Type: Notification Contact Phone: 646−252−3506 Contact Info Date: 08/17/2007

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
D008	Lead	100	POUNDS	GENERATED	2012	2500	2010
D006	Cadmium	100	POUNDS	GENERATED	2011		

Map Identification Number 74 **NYSDEC Name:** **SNOW WHITE CLEANERS** **Facility Id: NYD982180663**

NYSDEC Address: 2088 MOTT AVENUE FAR ROCKAWAY, NY 11691 TT−Id: 740A−0041−636
EPA (RCRA) Name: SNOW WHITE CLEANERS
EPA (RCRA) Address: 20−88 MOTT AVE FAR ROCKAWAY, NY 11691

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (5)
Approximate distance from property: 330 feet to the NNE

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

US EPA RCRA Type: GENERATOR TYPE NOT GIVEN Notification date: 04/27/1987
Land Disposal: Receives offsite waste: Incinerator:
Storer: Treatment facility: Transporter:
Contact Name: BUN KUN MOON Source Type: Notification Contact Phone: 718−471−3770 Contact Info Date: 04/27/1987

Historically listed as the following USEPA RCRA Generator Size(s) as well:
SMALL QUANTITY GENERATOR
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
F002	Spent halogenated solvents	943	POUNDS	GENERATED	2003	2445	1988

Map Identification Number 75 **NYSDEC Name:** **GEORGE L CHRIS CLEANERS** **Facility Id: NYD077444206**
NYSDEC Address: 2140 MOTT AVENUE FAR ROCKAWAY, NY 11691 TT−Id: 740A−0041−637
EPA (RCRA) Name: GEORGE & CHRIS CLEANERS INC
EPA (RCRA) Address: 2140 MOTT AVE FAR ROCKAWAY, NY 11691

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 531 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: NO CHANGE
Revised zip code: NO CHANGE

US EPA RCRA Type: CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR Notification date: 11/30/1987
Land Disposal: Receives offsite waste: Incinerator:
Storer: Treatment facility: Transporter:
Contact Name: GEORGE MARKIDES Source Type: Implementer Contact Phone: 718−327−4813 Contact Info Date: 01/01/2007
Contact Name: GEORGE MARKIDES Source Type: Notification Contact Phone: 718−327−4813 Contact Info Date: 11/30/1987

Historically listed as the following USEPA RCRA Generator Size(s) as well:
SMALL QUANTITY GENERATOR

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
F002	Spent halogenated solvents	340	POUNDS	GENERATED	2006	1635	1996

Map Identification Number 76 **NYSDEC Name:** **NYNEX** **Facility Id: NYP000932921**
NYSDEC Address: CORNAGA AVE & BEAD 21ST QUEENS, NY TT−Id: 740A−0038−618

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 600 feet to the S

ADDRESS CHANGE INFORMATION
Revised street: CORNAGA AV / BEACH 21ST ST
Revised zip code: 11691

US EPA RCRA (Resource Conservation and Recovery Act) information not reported; Site information reported by NYS DEC.

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
D008	Lead	1200	POUNDS	GENERATED	1997		

Map Identification Number 77 **NYSDEC Name:** **BELL ATLANTIC−NY** **Facility Id: NYP000940486**
NYSDEC Address: MOTT AVE & BEACH CHANNEL DR MH QUEENS, NY TT−Id: 740A−0061−052

MAP LOCATION INFORMATION
Site location mapped by: ADDRESS MATCHING
Approximate distance from property: 617 feet to the NNW

ADDRESS CHANGE INFORMATION
Revised street: MOTT AVE / BEACH CHANNEL DR
Revised zip code: 00000

US EPA RCRA (Resource Conservation and Recovery Act) information not reported; Site information reported by NYS DEC.

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
NONE	No hazardous waste activity reported by NYS up to 4/22/2016.						

Map Identification Number 78 **NYSDEC Name:** **MYLES CLEANER** **Facility Id: NYD981141468**

NYSDEC Address: 11−59 BEACH CHANNEL DRIVE FAR ROCKAWAY, NY 11691 TT−Id: 740A−0037−886
EPA (RCRA) Name: MYLES FRENCH CLEANERS
EPA (RCRA) Address: 11−59 BEACH CHANNEL DR FAR ROCKAWAY, NY 11691

MAP LOCATION INFORMATION
Site location mapped by: PARCEL MAPPING (1)
Approximate distance from property: 650 feet to the NW

ADDRESS CHANGE INFORMATION
Revised street: 1159 BEACH CHANNEL DRIVE
Revised zip code: NO CHANGE

US EPA RCRA Type: CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR Notification date: 09/04/1997
Land Disposal: Receives offsite waste: Incinerator:
Storer: Treatment facility: Transporter: No current info −− Previously reported
Contact Name: SUN PARK Source Type: Implementer Contact Phone: 718−327−8053 Contact Info Date: 01/01/2007
Contact Name: SUN PARK Source Type: Notification Contact Phone: 718−327−8053 Contact Info Date: 10/05/2001

NYS DEC Manifested Waste Summary:
Waste Codes, Waste Units, and Transaction Types are only shown for the most recently reported year.

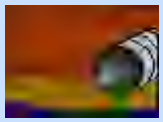
WASTE CODE	WASTE DESCRIPTION	WASTE AMOUNT	WASTE UNITS	TRANSACTION TYPE	YEAR	HISTORIC MAXIMUM AMOUNT	HISTORIC MAXIMUM YEAR
F002	Spent halogenated solvents	555	POUNDS	GENERATED	2005	2050	1988

NO CHEMICAL STORAGE FACILITIES IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

NO HISTORIC UTILITY SITES IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

NO HAZARDOUS SUBSTANCE WASTE DISPOSAL SITES IDENTIFIED WITHIN 1/2 MILE SEARCH RADIUS

NO TOXIC AIR, LAND AND WATER RELEASES IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS



NO WASTEWATER DISCHARGES IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

NO AIR DISCHARGE FACILITIES IDENTIFIED WITHIN 1/8 MILE SEARCH RADIUS

NO CIVIL & ADMINISTRATIVE ENFORCEMENT DOCKET FACILITIES IDENTIFIED WITHIN THE 1/8 MILE SEARCH RADIUS

NO NYC ENVIRONMENTAL QUALITY REVIEW REQUIREMENTS − "E" DESIGNATION SITES IDENTIFIED WITHIN 250 FT SEARCH RADIUS

U.S. EPA EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) SPILLS
AT THE LOCATION OR POTENTIALLY AT THE LOCATION OF
1037-1059 Beach 21st Street
Queens, NY 11691

* Any ERNS Spills listed below are NOT mapped in this report *

ONSITE ERNS (A count of these spills can be found in the distance interval table):
THIS SITE IS NOT FOUND IN THE ERNS DATABASE

POTENTIALLY ONSITE ERNS:
THIS SITE IS NOT FOUND IN THE ERNS DATABASE

 May 17, 2016 '1037-1059 Beach 21st Street'

Unmappable facilities for 'Queens' County

Solid Waste Facilities

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
30S19	BEECHWOOD			UNKNOWN
41D01	NY NEWS GRAVURE PLANT			UNKNOWN
41D03	CAPITAL PROJECT SE-43A			UNKNOWN
41D04	MTA DEMO SITE			UNKNOWN
41D17	ELARDO GEN CONSTRUCION CO			UNKNOWN
41T43	SALVATORE RUSSO INC.			UNKNOWN
41T58	BERLIN WRECKING			11412
41T63	LIZZA, LIZZA, HOCHREITER			UNKNOWN
41W94	ST JOHN ENTERPRISES INC			UNKNOWN
41W96	FAR ROCKAWAY EQUIPMENT CO			UNKNOWN
		TOLEDO ST.	QUEENS	UNKNOWN
		STANLEY AVE. & 131 ST.	QUEENS	UNKNOWN
NY00000000004	D&R CARTING	UNKNOWN	HEMPSTEAD	UNKNOWN
NY00000002581	NY NEWS GRAVURE PLANT	UNKNOWN	UNKNOWN	UNKNOWN

Hazardous Spills - MISC. SPILL CAUSES - Active

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
1510829	IN THE ROADWAY	BOLTON ROAD	FAR ROCKAWAY	11691
0807597	BUCKEYE PIPELINE	STAKE 145+00	JAMAICA BAY	UNKNOWN

Hazardous Spills - UNKNOWN CAUSE OR OTHER CAUSES - Closed

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
9210559	SPILL NUMBER 9210559			UNKNOWN
8606300	SPILL NUMBER 8606300			UNKNOWN
8504598	HOWARD BEACH QUEENS	HOWARD BEACH QUEENS		UNKNOWN
1410484	QUEENS COUNTY EM. RES.	ONE HUNTERS POINT PLAZA		UNKNOWN
0811777	VARIOUS SITES	VARIOUS SITES		UNKNOWN
0209904	VARIOUS DEP -BWSO SITES	MISC.	BRONX/QUEENS/MANHATTAN	UNKNOWN
9712210	SILKEBORG VESSEL	BERTH 5	BROOKLYN	UNKNOWN
9313968	SHELL BANK CHANNEL	SHELL BANK CHANNEL	BROOKLYN	UNKNOWN
9302379	EUGENE THOMAS	GURITZON BASIN	BROOKLYN	UNKNOWN
8503081	BROOKLYN	BROOKLYN	BROOKLYN	UNKNOWN
0503008	TRUCK LEAK	N SIDE MERIDIAN RD/60' E	BROOKLYN	UNKNOWN
9406300	BEACH 9TH STREET	BEACH 9TH STREET	FAR ROCKAWAY	11691
8200682	SMITH RESIDENCE	SMITH RESIDENCE	FAR ROCKAWAY	UNKNOWN
0804000	EAST ROCKAWAY INLET	BEACH 15TH ST	FAR ROCKAWAY	11691
9405847	SHELL BANK BASIN CANAL	SHELL BANK BASIN CANAL	HOWARD BEACH	UNKNOWN
9805404	MARKETSPAN	SHERIDAN BLVD	INWOOD	11696
9514529	MOTT BASIN	MOTT BASIN	INWOOD	UNKNOWN
9406271	LILCO	SHERIDAN BLVD/NASSAU AVE	INWOOD	UNKNOWN
9307234	LILCO	WEST SIDE SHERIDAN BLVD	INWOOD	UNKNOWN
9201001	LILCO	SHERIDAN BLVD	INWOOD	UNKNOWN
8301607			INWOOD	UNKNOWN
0125124	SPILL NUMBER 0125124	MARINA AT END BURNSIDE AV	INWOOD	11696
0025193	UNKNOWN	MOTT AVENUE	INWOOD	UNKNOWN
8901624	UNKNOWN	MOTT BASIN (NEAR LILCO)	INWOOD/FAR ROCKAWAY	UNKNOWN
9103713	JAMAICA BAY/ROCKAWAY BLVD	JAMAICA BAY/ROCKAWAY BLVD	JAMAICA	UNKNOWN
0613564	JAMAICA 3 REGULATOR	120 3RD PLACE/150	JAMAICA	UNKNOWN
9516749	GRASSHASSOCK CHANNEL	GRASSHASSOCK CHANNEL	NEW YORK	UNKNOWN
9102463	JAMAICA BAY/BCH CHNNEL DR	JAMAICA BAY/BCH CHNNEL DR	NEW YORK CITY	UNKNOWN
9100508	ARVERNON BASIN/QUEENS	ARVERNON BASIN	NEW YORK CITY	UNKNOWN
8909963	RULERS BAR HASSOCK/QUEENS	RULERS BAR HASSOCK	NEW YORK CITY	UNKNOWN
8903791	MOTT BASIN/BETW 3&5 BUOYS	MOTT BASIN/BETW 3&5 BUOYS	NEW YORK CITY	UNKNOWN

8803758	BREEZY POINT BEACH/QUEENS	BREEZY POINT BEACH	NEW YORK CITY	11697
8800235	FLATBUSH AVE/DEAD HORSE	DEAD HORSE BAY/FLATBUSH	NEW YORK CITY	UNKNOWN
8707497	NAMEOKE PUMP STATION/B'KL	NAMEOKE PUMP STATION	NEW YORK CITY	UNKNOWN
0310131	LOWER LAYEL BLVD	LOWER LAYEL BLVD	NEW YORK CITY	UNKNOWN
0209218	COLEMAN ISLAND REG #30	COLEMAN ISLAND	NEW YORK CITY	UNKNOWN
9705198	JAMAICA BAY	BOUY 23 MILE MAN PARK	QUEENS	UNKNOWN
9502637	UNK	7 MIDLAND GARDEN	QUEENS	UNKNOWN
9411488	# 5 ROCKAWAY INLET	# 5 ROCKAWAY INLET	QUEENS	UNKNOWN
9402440	GRASSY BAY	GRASSY BAY	QUEENS	UNKNOWN
9312485	BACELLENA PT. LIGHT #7.	BACELLENA PT. LIGHT #7.	QUEENS	UNKNOWN
9305134	ON JAMAICA BAY	ON JAMAICA BAY	QUEENS	UNKNOWN
9305130	VERNON BASIN	VERNON BASIN	QUEENS	UNKNOWN
9206327	DOCK FOR COMMUTER III	DOCK FOR COMMUTER III	QUEENS	UNKNOWN
8504706	FAR ROCKAWAY, QUEENS	FAR ROCKAWAY QUEENS	QUEENS	UNKNOWN
8503726	QUEENS	QUEENS	QUEENS	UNKNOWN
8000260	SPILL NUMBER 8000260		QUEENS	UNKNOWN
7801404	MIDLAND TAXI,SBWY-MIDLND.	MIDLAND TAXI,SBWY-MIDLND.	QUEENS	UNKNOWN
7800519	DREDGE PENNSYLVANIA	DREDGE PENNSYLVANIA	QUEENS	UNKNOWN
1401574	SHEEN IN JAMAICA BAY	LATITUDE 40N34.430 LONGITUDE 73W52.033	QUEENS	UNKNOWN
1306184	FEEDER LINE	JAMAICA TO CORONA SUB STATIONS	QUEENS	UNKNOWN
1104351	TRENCH	FRONT OF 59-21 TALLAWAY	QUEENS	UNKNOWN
0910003	STREET	911 CHAD CREEK ROAD-OFF OF POLE 67248	QUEENS	UNKNOWN
0908879	ROCKAWAY WATER POLLUTION CONTROL PLANT	UNK	QUEENS	UNKNOWN
0803582	RAIN CAUSED DRIP PAN TO OVERFLOW	CORONA SUBSTATIONS 1&2.	QUEENS	UNKNOWN
0609105	CITGO STATION	WALDEN /SOUTH VANDORN	QUEENS	UNKNOWN
0500534	MAN HOLE 14954	CARWELL AVE	QUEENS	UNKNOWN
0330035	FRESH MEADOWS RESIDENTIAL	COMMUNITY & COMMERCIAL	QUEENS	UNKNOWN
0112087	MANHOLE 8309	EAST SIDE SERVICE ROAD	QUEENS	UNKNOWN
0010608	BUILDING	4051 TENMAN ST	QUEENS	UNKNOWN
0004925	NYC DEPT OF DESIGN/CONST.	360 BEECH ST	QUEENS	UNKNOWN
9705649	ROCKAWAY BEACH	BEWTEEN BEACH 3RD ST/149T	ROCKAWAY	UNKNOWN
9515851	241 BEACH CHANNEL DR /119	241 BEACH CHANNEL DR/119	ROCKAWAY	UNKNOWN
1103087	TEST	TEST	TEST	UNKNOWN

Hazardous Spills - MISC. SPILL CAUSES - Closed

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
8709858	NAMEOKE PUMPING STATION	NAMEOKE PUMPING STATION		UNKNOWN
1208365	ALL OF QUEENS	ALL STREETS		UNKNOWN
1211923	3132 WATERLOO STREET	3132 WATERLOO STREET	BAYSWATER	11691
1211679	1366 ENRIGHT ROAD	1366 ENRIGHT ROAD	BAYSWATER	11691
1211669	1318 ENRIGHT ROAD	1318 ENRIGHT ROAD	BAYSWATER	11691
9613013	NEW YORK HARBOR	NY HARBOR 1 MI.W ROCKAWAY	BROOKLYN	UNKNOWN
9001315	JAMAICA BAY/FLATBUSH/BKLY	JAMAICA BAY/FLATBUSH	BROOKLYN	UNKNOWN
1110867	DRILL DRILL DRILL	DRILL DRILL DRILL	DRILL DRILL DRILL	UNKNOWN
9411398	JAMAICA BAY MANOR	BEACH CHANNEL RR-JAMAICA	EAST ROCKAWAY	UNKNOWN
9605752	MAN HOLE	REDFERN AVE	FAR ROCKAWAY	11691
9516350	BAYSWATER PUMP STATION	BAYSWATER AVENUE	FAR ROCKAWAY	11691
9401819	18TH STREET	18TH STREET	FAR ROCKAWAY	11691
8600444	LILCO	BAY 24TH ST. OFF MOTT AVE	FAR ROCKAWAY	11691
1406807	MAN HOLE 30384	BEACH 20 ST	FAR ROCKAWAY	UNKNOWN
1002570	POLE # 8	222 143RD ST	FAR ROCKAWAY	UNKNOWN
0010103	423 PINSON ST	423 PINSON ST	FAR ROCKAWAY	11691
1401936	PARKING SPOT ZA	CENTRAL TERMINAL	FLUSHING	UNKNOWN
9605946	BAILEY RESIDENCE	157A ELMWOOD ROAD	INWOOD	11696
9313146	LILCO	SHERIDAN BLVD	INWOOD	11696
8909389	LILCO	SHERIDAN BLVD	INWOOD	11696
8803939	LILCO	SHERIDAN BLVD	INWOOD	UNKNOWN
8710904	RGR TRANSPORTATION	91 DIXON AVENUE	INWOOD	11696
1111240	ROADWAY	MEADOW LANE	INWOOD	11696
0108417	SPILL NUMBER 0108417	SHERIDAN BLVD	INWOOD	11696

9416626	LIRR	DUNTON SHOPS	JAMAICA	UNKNOWN
9305966	JAMAICA BAY #30	JAMAICA BAY #30	JAMAICA	UNKNOWN
9208885	BEACH CHANNEL DRIVE	BEACH CHANNEL DRIVE	JAMAICA	UNKNOWN
8606664	MOTT BASIN JAMACIA BAY /K	MOTT BASIN	JAMAICA BAY	UNKNOWN
1407456	TRACK	LOOP 2	LONG ISLAND CITY	UNKNOWN
1301782	ON TRACKS NEAR	QUEEN ST	LONG ISLAND CITY	UNKNOWN
1215892	PRIVATE DWELLING	53-09 663 ST	MASPETH	UNKNOWN
9707611	LIRR	5505 E OF 37 SIGNAL BRIDG	NEW YORK CITY	UNKNOWN
9703543	JAMICA BAY	NO CHANNEL BRIDGE/TRESSEL	NEW YORK CITY	UNKNOWN
9100148	LIRR	QNS VILLGE/HILLSIDE/LN#1	NEW YORK CITY	UNKNOWN
9000243	VAN GRUNT PUMP STATION	VAN GRUNT PUMP STATION	NEW YORK CITY	UNKNOWN
8911180	GARITSON CANAL/BKLYN	GARITSON CNAL	NEW YORK CITY	UNKNOWN
8807017	422 SOUTHERN BLVD/QUEENS	422 SOUTHERN BLVD	NEW YORK CITY	UNKNOWN
8803149	POLE TOP TRNSFRMER	CROSS ST & BEACH CHNNL DR	NEW YORK CITY	UNKNOWN
8709860	BYPASS/BKLYN	BKYLN	NEW YORK CITY	UNKNOWN
8706687	REG #D-23/B`KLYN/BCH CHAN	REG #D-23/BCH CHANNEL DR	NEW YORK CITY	UNKNOWN
9312483	RUNWAY CHANNEL	RUNWAY CHANNEL	QUEENS	UNKNOWN
9311790	1/4 NORTH SUBWAY BR IN	1/4 NORTH SUBWAY BR IN	QUEENS	UNKNOWN
9301896	NORWEGIAN "ARILE"	2 MILES N.E.OFF AMBROS LH	QUEENS	UNKNOWN
9211109	PAEDEGATE PS	PAEDEGATE PS	QUEENS	UNKNOWN
9210540	99 CEDARLAWN AVE	99 CEDARLAWN AVE	QUEENS	11691
1508054	ROADWAY- EXIT RAMP FROM ILE	CHRISTINA BLVD	QUEENS	UNKNOWN
1506774	18002 FEEDER ROUTE	FROM JAMACIA SUBSTATION TO CORONA SUBSTA	QUEENS	UNKNOWN
1405972	TO ROADWAY	262 COUNDRY RD	QUEENS	UNKNOWN
1206208	TO ROADWAY - SEWAGE	41ST EAST OF LAUREN ST	QUEENS	UNKNOWN
1009223	JAMAICA WATER PLANT	JAMAICA WATER PLANT	QUEENS	UNKNOWN
1007778	CON ED	261-09 EAST WILKSON AVE	QUEENS	UNKNOWN
1003227	OVERHEAD TRANS. POLE 34022	98-10 FARRAGUT	QUEENS	UNKNOWN
0913760	LIE	BP GAS STATION	QUEENS	UNKNOWN
0514525	3RD WARD FUELING STATION	PECK AVE	QUEENS	UNKNOWN
0008411	POTHEAD TRANSFORMER	ROCKAWAY SUB STATION	QUEENS	UNKNOWN
0006934	RIVLAB TRANSPORTATION	6202 ALVINA AVE	QUEENS	UNKNOWN
1011791	TANK TEST FAILURE	223-45 102ND AVE	QUEENS VILLAGE	UNKNOWN
0908116	SIMPSON RESIDENCE	103-0218 PLACE	QUEENS VILLAGE	UNKNOWN
1402798	AMTRAK LINE #3 TUNNEL HYDRAULIC OIL SPILL	MILE POST 1.89	QUEENS?	UNKNOWN
1500183	LB SUPER CHIEF	ROCK AWAY BAY	ROCK AWAY	UNKNOWN
9613950	USCG STATION ROCKAWAY	UNKNOWN	ROCKAWAY	UNKNOWN
9303067	49 BEACH CHANNEL DR.	49 BEACH CHANNEL DR.	ROCKAWAY	11691
9206809	1 NORTILLE	1 NORTILLE	ROCKAWAY	UNKNOWN
0600665	US COAST GUARD	BEACH CHANNEL DRIVE	ROCKAWAY	UNKNOWN
0508516	BAYS WATER	BAYS WATER	ROCKAWAY	UNKNOWN
9213738	BEACH CHANNEL DRIVE	BEACH CHANNEL DRIVE	ROCKAWAY BEACH	UNKNOWN
1113245	DALDEO RESIDENCE	149-17-120 PLACE	SOUTH OZONE PARK	UNKNOWN
0503782	NEAR ATLANTIC BEACH	BEACH 22ND ST/BEACH 7TH S	THE ROCKAWAYS	UNKNOWN

Hazardous Waste Generation or Transport Facilities

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
NYP004001798	CONSOLIDATED EDISON CO	BOWY V5925		UNKNOWN
NYP004018982	CONSOLIDATED EDISON CO	MH9627 HARRISON STA		UNKNOWN
NYP004019275	CONSOLIDATED EDISON CO	MH51217		UNKNOWN
NYP004019899	CONSOLIDATED EDISON CO	V909 VARL & JACKSON		UNKNOWN
NYP004020129	CONSOLIDATED EDISON CO	MAIN BODY - OAKWOOD S/S		UNKNOWN
NY0000097337	NYSDOT	MEADOW LANE	FLUSHING	UNKNOWN
NYD000953018	LONG ISLAND RAILROAD CONT #25-0-008	DB BRIDGE	LONG ISLAND CITY	UNKNOWN
NY0000010363	NYCDOT	N/S	N/S	UNKNOWN
NY0000243261	NYSDOT	BOATBASIN /WSE	QUEENS	UNKNOWN
NYP000930321	CONSOLIDATED EDISON	N/S	QUEENS	UNKNOWN
NYP000930529	CONSOLIDATED EDISON CO	V1099-1685 FRANHOLM AVE	QUEENS	UNKNOWN
NYP004000121	CONSOLIDATED EDISON	V10829-2255 MENAUTO BLVD	QUEENS	UNKNOWN
NYP004000634	CONSOLIDATED EDISON	V7176-WEST HILL APARTMENTS	QUEENS	UNKNOWN

NYP004004677	CONSOLIDATED EDISON		N/S	QUEENS	UNKNOWN
NYP004004925	CONSOLIDATED EDISON		VAULT #0442 - 1548	QUEENS	UNKNOWN
NYP004006003	CONSOLIDATED EDISON		#5289 - 275 KENSTO DR	QUEENS	UNKNOWN
NYP004006318	CONSOLIDATED EDISON		V5014 - W.F. ADMIN BLDG	QUEENS	UNKNOWN
NYP004006847	CONSOLIDATED EDISON		V5034 - MASTERS	QUEENS	UNKNOWN
NYP004006904	CONSOLIDATED EDISON		V1903 - ALLINGTON	QUEENS	UNKNOWN
NYP004007290	CONSOLIDATED EDISON		46251 -	QUEENS	UNKNOWN
NYP004008248	CONSOLIDATED EDISON		N/S	QUEENS	UNKNOWN
NYP004008785	CONSOLIDATED EDISON		MH 2631	QUEENS	UNKNOWN
NYP004009320	CONSOLIDATED EDISON		TRANSP F/O 17 & 34ST	QUEENS	UNKNOWN
NYP004012514	CONSOLIDATED EDISON		16 - SHERWOOD PARK	QUEENS	UNKNOWN
NYP004023016	CONSOLIDATED EDISON		MH184490-	QUEENS	UNKNOWN
NYP004002709	CONSOLIDATED EDISON			T/A450	UNKNOWN
NYP004665485	CON EDISON		40-07 75 ST OPP	WOODSIDE	UNKNOWN

Chemical Bulk Storage Facilities

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
2-000438	ALBERT HOWELL RELIAB LE AUTO PARTS	20-14 BEACH 21 ST	FAR ROCKAWAY	11691

Wastewater Discharges

FACILITY ID	FACILITY NAME	STREET	CITY	ZIP
NYG995193				UNKNOWN
NYU000079	BEST CONCRETE MIX CORP.			UNKNOWN
NYU900062	FEDERAL EXPRESS			UNKNOWN
NYU900079	BEST CONCRETE MIX CORP			UNKNOWN

Air Releases

FACILITY ID	FACILITY NAME		STREET	CITY	ZIP
3608100612	ALERT METAL FINISH		991 PECONIC AVE	GLENDALE	UNKNOWN
3608102022	ALERT METAL FINISHING		991 PECONIA AVENUE	GLENDALE	UNKNOWN
3688800011	USCG-LIGHT STATION		AMBROSE	NEW YORK	UNKNOWN
NY081X1L5	CRYDER ASSOCIATES LTD	QUEENS	NO STREET ADDRESS	NO CITY NAME	UNKNOWN
NY081X4KU	COSMOPOLITAN ASSOC	QUEENS	NO STREET ADDRESS	NO CITY NAME	UNKNOWN
NY081X72J	A & K REALTY	QUEENS	NO STREET ADDRESS	NO CITY NAME	UNKNOWN
3608100139	NY JOB CORPS CENTER		NO STREET ADDRESS	QUEENS	UNKNOWN
3608100140	NAVY RESRVE TRAINING		NO STREET ADDRESS	QUEENS	UNKNOWN
3608100692	PARIS KNITTING		NO STREET ADDRESS	QUEENS	UNKNOWN
3608100693	ASTORIA AL & BR		NO STREET ADDRESS	QUEENS	UNKNOWN
NY0813893	NEWTOWN REFINING CO INC		1	QUEENS	UNKNOWN

Hazardous waste codes presented in individual Toxic Information Profiles are defined below.

D006 Cadmium

D008 Lead

F002 The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1−trichloroethane, chlorobenzene, 1,1,2−trichloro−1,2,2−trifluoroethane, ortho−dichlorobenzene, trichlorofluoromethane, and 1,1,2−trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. (T)

Source: U. S. Environmental Protection Agency

How Toxic Site Locations Are Mapped

Toxics Targeting maps toxic site locations on a digital version of the U. S. Census map or those used by local authorities using addresses and map coordinates provided by site owners/operators or government agencies. In order to allow site locations to be verified independently, the information used to map each site is presented in the first section of each Toxic Site Profile, along with a description of the mapping technique used and any address corrections that were made in order to locate toxic sites with incomplete or inadequate site location information. The mapping process is explained below.

Map Identification Number: 12 Site Name: Acme World Manufacturing, Inc.

Site Address: 55 Main Street Anytown, NY 11797

MAP LOCATION INFORMATION

Site location mapped by:

Address Matching

1) Most toxic sites are mapped by matching addresses provided by site owners/operators or government agencies with locations on a digital version of the street or parcel map. These site locations are identified with the method used to map them.

Note: Some sites have an address match location and a map coordinate location. Both locations are mapped because they can be equally correct.

or Map Coordinate

2) Some toxic sites are located using map coordinates provided by site owners/ operators or government agencies. These site locations are identified "map coordinate." Map coordinates for Toxic Wastewater Discharges, Toxic Release Inventory sites and Major Oil Storage Facilities should be considered suspect.

or Manual Mapping

or Site Visit

3) Incomplete addresses or map coordinates require some site locations to be determined by commercial street maps (manual mapping), site visits, map coordinates from other databases and address location services. Application of any of these methods is identified accordingly.

ADDRESS CHANGE INFORMATION

Revised Street: NO CHANGE

Revised zip code: NO CHANGE

4) Site addresses are sometimes corrected to eliminate obvious errors that prevent sites from being mapped. All address corrections are noted here.

Information Source Guide

Toxics Targeting's Environmental Reports contain government and other information compiled on 21 categories of reported known or potential toxic sites. Each toxic site database is described below with information detailing a) the source of the information, b) the date when each database is covered to and c) when *Toxics Targeting* obtained the information..

1) **National Priority List for Federal Superfund Cleanup:** Toxic sites nominated for cleanup under the Federal Superfund program. Annual compilation of special two-page detailed profiles of NPL sites. Also includes delisted NPL sites.
ASTM required.* Fannie Mae required.** Source: U. S. Environmental Protection Agency.[1]
Data attributes updated from: 9/9/2015. Data obtained by Toxics Targeting: 9/9/2015.
New Facilities updated through: 9/9/2015. Data obtained by Toxics Targeting: 9/9/2015.

2) **Inactive Hazardous Waste Disposal Site Registry:** New York State database that maintains information and aids decision making regarding the investigation and cleanup of toxic sites. The Registry's data includes two-page profiles noting site name, ID number, description, classification, cleanup status, types of cleanup, owner information, types and quantities of contaminants, and assessment of health and environmental problems. Also included are sites that qualify for possible inclusion on the Registry. These Registry Qualifying sites may or may not be on the Site Registry.
ASTM required.* Fannie Mae required.** Source: New York State Department of Environmental Conservation.[2]
Data attributes updated through: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.
New Facilities updated to: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.

3) **Federal & State Corrective Action Activity (CORRACTS):** New York State and Federal databases of hazardous facilities regulated pursuant to the Resource Conservation and Recovery Act (RCRA).
ASTM required.* Fannie Mae required.**

Federal Data Source: U. S. Environmental Protection Agency[1]
Data attributes updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.
New facilities updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.

State Data Source: New York State Department of Environmental Conservation.[2]
Data attributes updated through: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.
New facilities updated through: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.

4) **CERCLIS:** Toxic sites listed in the Federal Comprehensive Environmental Response, Compensation and Liability Information System. Includes Active and No Further Remedial Action Planned (NFRAP) sites.
ASTM required.* Fannie Mae required.** Source: U. S. Environmental Protection Agency.[1]
Data attributes updated through: 10/25/2013. Data obtained by Toxics Targeting: 1/07/2014.
New Facilities updated through: 1/11/2016. Data obtained by Toxics Targeting: 1/23/2016.

5) **Brownfield Programs:** NYS & NYC programs for sites that are abandoned, idled or under-used industrial and/or commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.
ASTM required.*

(a) **NYS DEC Brownfield Programs**: Source: New York State Department of Environmental Conservation.[2]
includes: **Brownfield Cleanup Program (BCP), Voluntary Cleanup Program (VCP), and Environmental Restoration Program (ERP)**
Data attributes updated through: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.
New Facilities updated to: 3/09/2016. Data obtained by Toxics Targeting: 3/09/2016.

(b) **NYC Voluntary Cleanup Program:** Source: NYC Office of Environmental Remediation
Data attributes updated through: 11/30/15. Data obtained by Toxics Targeting: 12/10/2015.
New Facilities updated to: 11/30/15. Data obtained by Toxics Targeting: 12/10/2015.

6) **Solid Waste Facilities:** a compilation of the following 2 databases:

(a) **NYS Solid Waste Registry:** which includes, but is not limited to, landfills, incinerators, transfer stations, recycling centers.
ASTM required.* Fannie Mae required.** Source: New York State Dept. of Environmental Conservation.[2]
Data updated to: 4/1/2013. Data obtained by Toxics Targeting: 4/1/2013.

(b) **1934 Solid Waste Disposal Site in New York City:** which includes sites operated by municipal authorities circa 1934. Source: City of New York Department of Sanitation (1984). The Waste Disposal Problem in New York City: A Proposal For Action.

7) **RCRA Hazardous Waste Treatment, Storage or Disposal Facility Databases:**

(a) **Manifest Information:** New York State database of hazardous waste facilities and shipments regulated by the DEC's Division of Environmental Remediation pursuant to NYS Law and the Resource Conservation and Recovery Act (RCRA).
ASTM required.* Fannie Mae required.** Source: New York State Department of Environmental Conservation.[2]

New facilities updated through: 4/22/2016. New facilities obtained by Toxics Targeting: 4/22/2016.
Manifest transactions data updated to: 4/22/2016. Manifest transactions data obtained by Toxics Targeting: 4/22/2016.

(b) **RCRA Notifier & Violations Information:** U. S. Environmental Protection Agency database of hazardous facilities regulated pursuant to the Resource Conservation and Recovery Act (RCRA).
ASTM required.* Fannie Mae required.** Source: U. S. Environmental Protection Agency[1]
New facilities updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.
Data attributes updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.

8) **Spills Information Database:** Spills reported to the DEC as required by one or more of the following: Article 12 of the Navigation Law, 6 NYCRR Section 613.8 (from Petroleum Bulk Storage Regulations) or 6 NYCRR Section 595.2 (from Chemical Bulk Storage Regulations). This database includes both *active* and *closed* spills.
ASTM required.* Fannie Mae.** Source: NYS Department of Environmental Conservation.[2]

New spills through: 2/13/2016 New spills data obtained by Toxics Targeting: 2/13/2016
Spill attribute data through: 2/13/2016 Spill attribute data obtained by Toxics Targeting: 2/13/2016

Active spills: paperwork not completed. Closed spills: paperwork completed.
Both active and closed spills may or may not have been cleaned up (see Date Cleanup Ceased in spill profiles).

9) **Major Oil Storage Facilities:** NYS database of facilities licensed pursuant to Article 12 of the Navigation Law, 6NYCRR Parts 610 and 17NYCRR Part 30, such as onshore facilities or vessels, with petroleum storage capacities equal to or greater than four hundred thousand gallons. **Tank & other data withheld by NYSDEC as of 4/1/2002**.
ASTM required.* Fannie Mae required.** Source: New York State Department of Environmental Conservation.[2]

Data updated through: 3/5/2016. Data obtained by Toxics Targeting: 3/5/2016.

10) **Petroleum Bulk Storage Facilities:** a compilation of local and state databases of aboveground and underground petroleum storage tank facilities.

(a) **NYS Petroleum Bulk Storage Database:** This includes all New York State counties except Cortland, Nassau, Rockland, Suffolk, and Westchester. ASTM required.* Fannie Mae required.**
Source: NYS Department of Environmental Conservation.[2]
New facilities updated through: 3/5/2016. Data obtained by Toxics Targeting: 3/5/2016.
Tank data updated through: 3/5/2016. Data obtained by Toxics Targeting: 3/5/2016.

(b) **New York City Fire Department Tank Data:** **Data has been withheld by the NYC Fire Dept.**
Source: New York City Fire Department. Data obtained by Toxics Targeting: 2/18/1997

11) **RCRA Hazardous Waste Generators and/or Transporters Databases:**

(a) **Manifest Information:** New York State database of hazardous waste facilities and shipments regulated by the NYS Department of Environmental Conservation's Division of Environmental Remediation pursuant to New York State Law. ASTM required.* Fannie Mae required.** Source: New York State Department of Environmental Conservation.[2]

New facilities updated through: 4/22/2016. New facilities obtained by Toxics Targeting: 4/22/2016.
Manifest transactions data updated to: 4/22/2016. Manifest transactions data obtained by Toxics Targeting: 4/22/2016.

(b) **RCRA Notifier & Violations Information:** U. S. Environmental Protection Agency database of hazardous facilities regulated pursuant to the Resource Conservation and Recovery Act (RCRA).
ASTM required.* Fannie Mae required.** Source: U. S. Environmental Protection Agency[1]

New facilities updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.
Data attributes updated through: 4/11/2016. Data obtained by Toxics Targeting: 4/19/2016.

12) **Chemical Bulk Storage Facilities:** New York State database of facilities compiled pursuant to 6NYCRR Part 596 that store regulated substances listed in 6NYCRR Part 597 in aboveground tanks with capacities greater than 185 gallons and /or in underground tanks of any size. **Tank & other data withheld by NYSDEC as of 4/1/2002**.
ASTM required.* Fannie Mae required.** Source: New York State Department of Environmental Conservation.[2]
Data updated through: 3/5/2016. Data obtained by Toxics Targeting: 3/5/2016.

13) **Historic New York City Utility Facilities (1898 to 1950):** An inventory of selected power generating stations, manufactured gas plants, gas storage facilities, maintenance yards and other gas and electric utility sites identified in various historic documents, maps and annual reports of New York utility companies, including: Sanborn Fire Insurance Maps of NYC (1898-1950); Consolidated Edison Co. Annual Reports (1922-1939); Consolidated Edison Co. Map: "Boroughs of Manhattan and the Bronx Showing Distribution Mains of the New York Edison Co.," (1922); and Consolidated Edison document: "Generating and Annex Stations," (1911).

14) **Hazardous Substance Waste Disposal Site Study:** NYS database of waste disposal sites that may pose threats to public health or the environment, but could not be remediated using monies from the Hazardous Waste Remedial Fund.
Source: New York State Department of Environmental Conservation.[2]
Data updated to: 5/16/2000. Data obtained by Toxics Targeting: 5/16/2000.

15) **Toxic Release Inventory (TRI):** Federal database of manufacturing facilities required under Section 313 of the Federal Emergency Planning and Community Right-to-Know Act to report releases to the air, water and land of any specifically listed toxic chemical. See Fannie Mae requirement** below.
Source: U. S. Environmental Protection Agency.[1] / NYS Department of Environmental Conservation[2]
Data updated through: 3/8/2004. Data obtained by Toxics Targeting: 3/25/2004

16) **Toxic Wastewater Discharges (Permit Compliance System):** Federal database of discharges of wastewater to surface waters and groundwaters. See Fannie Mae requirement** below. Source: U. S. Environmental Protection Agency.[1]
Data updated through: 6/17/2004. Data obtained by Toxics Targeting: 7/19/2004.

17) **Air Discharge Facilities:** EPA AIRS database containing address information on each air emission facility and the type of air pollutant emission it is. Compliance information is also provided on each pollutant as well as the facility itself.
See Fannie Mae requirement** below. Source: U. S. Environmental Protection Agency[1]
Data updated through: 11/24/1999. Data obtained by Toxics Targeting: 1/6/2000

18) **Civil Enforcement & Administrative Docket:** This database is the U. S. EPA's system for tracking administrative and civil judiciary cases filed on behalf of the agency by the Department of Justice. Fannie Mae required.**
Source: U. S. Environmental Protection Agency.[1]
New Sites through: 10/14/1999.
Data updated through: 10/14/1999. Data obtained by Toxics Targeting: 11/18/1999.

19) **New York City Environmental Quality Review (CEQR) – E Designation Sites:** These sites are parcels assigned a special environmental ("E") designation under the CEQR process. E designation requires specific protocols that must be followed. Source: New York City Department of Planning[3]
Data updated through: 4/28/2015. Data obtained by Toxics Targeting: 5/24/2015.

20) **Emergency Response Notification System (ERNS):** Federal database of spills compiled by the Emergency Response Notification System. On-site searches only.
ASTM required.* See Fannie Mae requirement** below. Source: U. S. Environmental Protection Agency.[1]
Data updated through: 1/31/2000. Data obtained by Toxics Targeting: 2/15/2000

21) **Remediation Site Borders:** Remediation site borders reported by NYSDEC.
Source: New York State Department of Environmental Conservation.[2]
Updated through: 4/8/2009. Data obtained by Toxics Targeting: 7/21/2009.

* American Society of Testing Materials: Standard Practice on Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-05).

** Fannie Mae's Part X Environmental Hazards Management Procedures specify 1.0 mile searches for "any state or Federal list of hazardous waste sites (e.g. CERCLIS, HWDMS etc.)." Searches for the property and adjacent properties are specified for "chemical manufacturing plants," "obvious high risk neighbors engaging in storing or transporting hazardous waste, chemicals or substances" and "...any documented or visible evidence of dangerous waste handling... (e.g. stressed vegetation, stained soil, open or leaking containers, foul fumes or smells, oily ponds, etc." Searches for property and adjacent properties can include sites up to a quarter mile away (W. Hayward, Director, Multi-Family Business Planning and Control, Fannie Mae, personal communication, 5/94).

[1]U. S. Environmental Protection Agency, 290 Broadway, NY, NY 10007-1866.

[2]NYS Department of Environmental Conservation, 625 Broadway, Albany, NY 12233.

[3]New York City Department of City Planning, 22 Reade St, New York, NY 10007-1216

APPENDIX D
LOCAL RECORDS

000

B Form 54C (Rev. 11-71-10M 7827-6-71) THE CITY OF NEW YORK

HOUSING AND DEVELOPMENT ADMINISTRATION

DEPARTMENT OF BUILDINGS

CERTIFICATE OF OCCUPANCY

BOROUGH QUEENS DATE: 1/29/79 NO. Q 1[illegible]

This certificate supersedes C.O. No. ZONING DISTRICT C8-1 & R5

THIS CERTIFIES that the ~~new~~ ~~altered~~ ~~existing~~ building premises located at Block 15705 Lot 59

1039 B. 21st St.

CONFORMS SUBSTANTIALLY TO THE APPROVED PLANS AND SPECIFICATIONS AND TO THE REQUIREMENTS OF ALL APPLICABLE LAWS, RULES AND REGULATIONS FOR THE USES AND OCCUPANCIES SPECIFIED HEREIN

PERMISSIBLE USE AND OCCUPANCY

Alt. 1226/76

STORY	LIVE LOAD LBS. PER SQ. FT.	MAXIMUM NO. OF PERSONS PERMITTED	ZONING DWELLING OR ROOMING UNITS	BUILDING CODE HABITABLE ROOMS	ZONING USE GROUP	BUILDING CODE OCCUPANCY GROUP	DESCRIPTION OF USE
1st	O.G.				8		Public parking lot for 54 cars. Dept. of traffic jurisdiction and transit authority bus stop.

OPEN SPACE USES _____
(SPECIFY—PARKING SPACES, LOADING BERTHS, OTHER USES, NONE)

NO CHANGES OF USE OR OCCUPANCY SHALL BE MADE UNLESS A NEW AMENDED CERTIFICATE OF OCCUPANCY IS OBTAINED

THIS CERTIFICATE OF OCCUPANCY IS ISSUED SUBJECT TO FURTHER LIMITATIONS, CONDITIONS AND SPECIFICATIONS NOTED ON THE REVERSE SIDE.

BOROUGH SUPERINTENDENT COMMISSIONER

OFFICE COPY—DEPARTMENT OF BUILDINGS

APPENDIX E

CITY DIRECTORIES

1049 Beach 21st St
1037-1059 Beach 21st St
Far Rockaway, NY 11691

Inquiry Number: 4621844.1
May 18, 2016

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2013. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 100 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2013	Cole Information Services	-	X	X	-
2008	Cole Information Services	-	X	X	-
2005	Hill-Donnelly Information Services	-	X	X	-
2000	Cole Information Services	-	X	X	-
1996	NYNEX	-	-	-	-
1991	NYNEX Information Resource Company	-	-	-	-
1983	New York Telephone	-	-	-	-
1976	New York Telephone	-	-	-	-
1970	New York Telephone	-	-	-	-
1967	New York Telephone	-	-	-	-
1962	New York Telephone Directory	-	X	X	-
	New York Telephone Directory	X	X	X	-
1950	New York Telephone	-	X	X	-
	New York Telephone	X	X	X	-
1945	New York Telephone	-	-	-	-
1939	New York Telephone Company	-	X	X	-
1934	R. L. Polk & Co.	-	X	X	-
	R. L. Polk & Co.	X	X	X	-
1922	H.C. Morris	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	*Type*	*Findings*
1037 Beach 21st St	Client Entered	X
1039 Beach 21st St	Client Entered	
1041 Beach 21st St	Client Entered	
1043 Beach 21st St	Client Entered	
1045 Beach 21st St	Client Entered	
1053 Beach 21st St	Client Entered	
1055 Beach 21st St	Client Entered	
1057 Beach 21st St	Client Entered	X
1059 Beach 21st St	Client Entered	X
1049 Beach 21st St	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

1037-1059 Beach 21st St
Far Rockaway, NY 11691

FINDINGS DETAIL

Target Property research detail.

BEACH 21 ST

1037 BEACH 21 ST

Year	Uses	Source
1962	Walker & Son Luisbr Corp	New York Telephone Directory

BEACH 21ST ST

1037 BEACH 21ST ST

Year	Uses	Source
1934	Beegle Publishing Co RTN Mary P Urban pres A E Beegle Publshr & genl mgr newspaper publrs	R. L. Polk & Co.
	Courtney John slsmn Bugle Pub Co	R. L. Polk & Co.
	De Persia Arth slsmn Bugle Pub Co	R. L. Polk & Co.
	Far Rockaway Journal TN A E Beegle publr and genl mgr	R. L. Polk & Co.
	Jorgensen Arth W cotnr	R. L. Polk & Co.
	Maza Anthony prsmn Beegle Pub Co	R. L. Polk & Co.
	Maza Thos prsmn Beegle Pub Co	R. L. Polk & Co.
	Mazza Michl mach opr Beegle Pub Co	R. L. Polk & Co.
	Urban May P pres Boegle Publishing Co	R. L. Polk & Co.
	Zito John prsmn Beegle Pub Co	R. L. Polk & Co.

Beach 21st St

1037 Beach 21st St

Year	Uses	Source
1934	Beegle Publishing Co RTN Mary P Urban pres A E Beegle Publshr & genl mgr newspaper publrs	R. L. Polk & Co.
	Courtney John slsmn Bugle Pub Co	R. L. Polk & Co.
	De Persia Arth slsmn Bugle Pub Co	R. L. Polk & Co.

FINDINGS

Year	Uses	Source
1934	Far Rockaway Journal TN A E Beegle publr and genl mgr	R. L. Polk & Co.
	Jorgensen Arth W cotnr	R. L. Polk & Co.
	Maza Anthony prsmn Beegle Pub Co	R. L. Polk & Co.
	Maza Thos prsmn Beegle Pub Co	R. L. Polk & Co.
	Mazza Michl mach opr Beegle Pub Co	R. L. Polk & Co.
	Urban May P pres Boegle Publishing Co	R. L. Polk & Co.
	Zito John prsmn Beegle Pub Co	R. L. Polk & Co.

1039 Beach 21st St

Year	Uses	Source

1041 Beach 21st St

Year	Uses	Source

1043 Beach 21st St

Year	Uses	Source

1045 Beach 21st St

Year	Uses	Source

BEACH 21ST ST

1047 BEACH 21ST ST

Year	Uses	Source
1934	Mullen & Buckley Screen Co Inc Chas M Kearns pres Vestry Sterns v pres Albert A Richey sec treas screen mfrs	R. L. Polk & Co.
	Roebuck S Co A Richey sec screen mfrs	R. L. Polk & Co.

Beach 21st St

1049 Beach 21st St

Year	Uses	Source

FINDINGS

1053 Beach 21st St

Year	*Uses*	*Source*

1055 Beach 21st St

Year	*Uses*	*Source*

1057 Beach 21st St

Year	*Uses*	*Source*
1934	Hickey Chas lab	R. L. Polk & Co.
	Klein Miklos Dora uphol	R. L. Polk & Co.
	Lang Saml furn rms	R. L. Polk & Co.
	Lang Saml truck driver	R. L. Polk & Co.
	Queens Roffing Works RTN A Donner	R. L. Polk & Co.

1059 Beach 21st St

Year	*Uses*	*Source*
1934	Elsen Lena wid Leo furn rms	R. L. Polk & Co.
	Van Clief Geo lab	R. L. Polk & Co.

BEACH 21ST ST

10-57 BEACH 21ST ST

Year	*Uses*	*Source*
1950	BROWN W J	New York Telephone
	GENL ROOFING & SHEET METAL COTRACTOR	New York Telephone
	LEHRER HAROLD ROOFNG & SHEET METL	New York Telephone

10-59 BEACH 21ST ST

Year	*Uses*	*Source*
1950	FEW ODESSA	New York Telephone

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

BEACH 21

1063 BEACH 21

Year	Uses	Source
1939	Zucker H leathr findgs	New York Telephone Company

1067 BEACH 21

Year	Uses	Source
1939	Peoples Market meats	New York Telephone Company
	Koestner Anthony meats	New York Telephone Company

1069 BEACH 21

Year	Uses	Source
1939	Kampner Wm weldng svce	New York Telephone Company
	Far Rockaway Welding Svce	New York Telephone Company

1075 BEACH 21

Year	Uses	Source
1939	Cohn Henry reprs	New York Telephone Company
	Henrys Repr Svce	New York Telephone Company
	Lande Isadore plmbng supls	New York Telephone Company

BEACH 21 ST

1011 BEACH 21 ST

Year	Uses	Source
1962	Gladys Beauty Salon	New York Telephone Directory

1015 BEACH 21 ST

Year	Uses	Source
1962	Clark Lunchnet	New York Telephone Directory

1017 BEACH 21 ST

Year	Uses	Source
1962	Wavecrest Svce Sta Inc	New York Telephone Directory

FINDINGS

1031 BEACH 21 ST

Year	Uses	Source
1962	Branch	New York Telephone Directory
	Verby H Co Inc bldg matl	New York Telephone Directory

1034 BEACH 21 ST

Year	Uses	Source
1962	May Jay Mfg Co Inc	New York Telephone Directory

1040 BEACH 21 ST

Year	Uses	Source
1962	Gothic Creations Inc ofc	New York Telephone Directory
	Gothic Creations Inc fcty	New York Telephone Directory
	Dawson Minnie	New York Telephone Directory
	Crawford Mary Mrs	New York Telephone Directory
	Hymes Sallie	New York Telephone Directory

1046 BEACH 21 ST

Year	Uses	Source
1962	Sapperstein Murray Inc elctrons	New York Telephone Directory

1050 BEACH 21 ST

Year	Uses	Source
1962	Malvito Armett	New York Telephone Directory
	Kleins Uphlstrg & Interior Decoratg	New York Telephone Directory

1061 BEACH 21 ST

Year	Uses	Source
1962	Kurtz Antiqs	New York Telephone Directory

BEACH 21ST

1050 BEACH 21ST

Year	Uses	Source
1934	Schoen Max kate clo prsr	R. L. Polk & Co.

BEACH 21ST ST

1011 BEACH 21ST ST

Year	Uses	Source
1934	Dole Steph T Eva doormn	R. L. Polk & Co.
	Dole Steph T jr truck driver	R. L. Polk & Co.

FINDINGS

Year	Uses	Source
1934	Waag Electric Co N H B Waag battery service	R. L. Polk & Co.
	Dole Evelyn	R. L. Polk & Co.

1012 BEACH 21ST ST

Year	Uses	Source
1934	Henshaw Harry E gen mdse	R. L. Polk & Co.

1016 BEACH 21ST ST

Year	Uses	Source
1934	Albore Gust Avo v pres Arcade Beauty Shop Inc	R. L. Polk & Co.
	Paladino Salvatore sec treas Arcade Beauty Shop Inc	R. L. Polk & Co.
	Arcade Beauty Shop Inc NY Michl Miles pres Gust Avo Albore v pres Salvatore Paladino sec treas	R. L. Polk & Co.
	Miles Michl pres Arcade Beauty Shop Inc	R. L. Polk & Co.

1017 BEACH 21ST ST

Year	Uses	Source
2005	Gordons Auto Svc & Repair Inc	Hill-Donnelly Information Services
	Dynamic Performance Is	Hill-Donnelly Information Services
2000	Rodriguez Auto Bdy	Cole Information Services
	Owen Auto Svce	Cole Information Services

1029 BEACH 21ST ST

Year	Uses	Source
1934	Erb Robt Caroline restr	R. L. Polk & Co.

1031 BEACH 21ST ST

Year	Uses	Source
1934	Verby H Co Inc NY Harry Verby pres Sophie Verby v pres treas Helen Verby sec bldg material	R. L. Polk & Co.

1032 BEACH 21ST ST

Year	Uses	Source
2008	OWEN AUTO SERVICE	Cole Information Services
2005	Owen Auto Svc	Hill-Donnelly Information Services

FINDINGS

1040 BEACH 21ST ST

Year	Uses	Source
2005	Anderson Sharon V	Hill-Donnelly Information Services
	h Simmonds Sherdon v 718 868 0583 oi	Hill-Donnelly Information Services

1046 BEACH 21ST ST

Year	Uses	Source
2013	CARIB MARKET NET	Cole Information Services
2008	CARIB MARKET NET	Cole Information Services
2005	Carib Market Net	Hill-Donnelly Information Services
1934	Kadlec The Tailor TN Henry Gold	R. L. Polk & Co.

1048 BEACH 21ST ST

Year	Uses	Source
2013	MIKES BEAUTY COMPLEX	Cole Information Services
2008	MIKES BEAUTY COMPLEX	Cole Information Services
2005	Mikes Beauty Complex Is	Hill-Donnelly Information Services
2000	Mikes Bty Complex	Cole Information Services
1934	Eitelberg Bertha	R. L. Polk & Co.
	Miskovsky Louis Amelia tailor	R. L. Polk & Co.
	Brinkman Jas A Brinkmans Quality Shoe Shop	R. L. Polk & Co.
	Eitelberg Andrew Alice	R. L. Polk & Co.

1050 BEACH 21ST ST

Year	Uses	Source
2008	ALIVE MINISTRY	Cole Information Services
2005	No Current Listing	Hill-Donnelly Information Services
2000	Try Me	Cole Information Services
1934	Shur Anna M Mrs	R. L. Polk & Co.
	Shur Building	R. L. Polk & Co.
	World Sign Service RTN: Danl S Shur	R. L. Polk & Co.
	Shur Danl S World Sign Service	R. L. Polk & Co.

1052 BEACH 21ST ST

Year	Uses	Source
1934	Taylor Georgia	R. L. Polk & Co.
	Smith Wm lab	R. L. Polk & Co.
	Smith Henry T Mattie chauf	R. L. Polk & Co.
	Scott Irene Mrs dom	R. L. Polk & Co.
	Robertson Virginia	R. L. Polk & Co.

FINDINGS

Year	Uses	Source
1934	Holmes Alex Filmore lab	R. L. Polk & Co.
	Harris Leonia fctywkr	R. L. Polk & Co.
	Fields Harry restr	R. L. Polk & Co.
	Bunney Jas lab	R. L. Polk & Co.
	Robertson Sylvester lab	R. L. Polk & Co.

10-61 BEACH 21ST ST

Year	Uses	Source
1950	GRANT FLOOR WAXING	New York Telephone
	ART METAL LAMP MOUNTING CO	New York Telephone

10-63 BEACH 21ST ST

Year	Uses	Source
1950	BRINSON GEO	New York Telephone
	HARRIS HENRY K	New York Telephone
	ARROW EMPLOY AGCY	New York Telephone
	ORTNER SAML	New York Telephone
	SHAPIRO MAYBELLA C EMPLOY AGCY	New York Telephone
	LEWIS HENRY K	New York Telephone

10-65 BEACH 21ST ST

Year	Uses	Source
1950	LANDE ISADORE PLMBNG SUPLS	New York Telephone

10-67 BEACH 21ST ST

Year	Uses	Source
1950	VICTORY WINE LIQUOR STORE	New York Telephone
	SHAPIRO JOHN J WINES & LIQRS	New York Telephone
	HEIMS HOWARD WINES & LIQRS	New York Telephone

10-69 BEACH 21ST ST

Year	Uses	Source
1950	KAMPNER WM WELDNG SVCE	New York Telephone

10-77 BEACH 21ST ST

Year	Uses	Source
1950	EDWARDS SHOE STORE SUPL CO	New York Telephone
	ZUCKER H LEATHR FLNDNGS	New York Telephone

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
1037-1059 Beach 21st St	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1945, 1939, 1922

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
10-61 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
10-63 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
10-65 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
10-67 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
10-69 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
10-77 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1945, 1939, 1934, 1922
1011 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1011 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1012 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1015 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1016 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1017 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1017 BEACH 21ST ST	2013, 2008, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1029 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1031 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1031 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1032 BEACH 21ST ST	2013, 2008, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922

FINDINGS

Address Researched	Address Not Identified in Research Source
1032 BEACH 21ST ST	2013, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1034 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1040 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1040 BEACH 21ST ST	2013, 2008, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1046 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1046 BEACH 21ST ST	2013, 2008, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1046 BEACH 21ST ST	2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1048 BEACH 21ST ST	2013, 2008, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1048 BEACH 21ST ST	2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1050 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1050 BEACH 21ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1050 BEACH 21ST ST	2013, 2008, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1050 BEACH 21ST ST	2013, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1934, 1922
1052 BEACH 21ST ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1939, 1922
1061 BEACH 21 ST	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1950, 1945, 1939, 1934, 1922
1063 BEACH 21	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1934, 1922
1067 BEACH 21	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1934, 1922
1069 BEACH 21	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1934, 1922
1075 BEACH 21	2013, 2008, 2005, 2000, 1996, 1991, 1983, 1976, 1970, 1967, 1962, 1950, 1945, 1934, 1922

PHASE I ENVIRONMENTAL SITE ASSESSMENT

for

Beach 21st Street Development
Queens, New York

Prepared For:

Beach 21st Limited Partnership
c/o The Community Builders, Inc.
8 West 38th Street, Suite 1102
New York, NY 10018

Prepared By:

Langan Engineering, Environmental, Surveying,
Landscape Architecture, and Geology, D.P.C.
21 Penn Plaza
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New York, New York 10001

Michael Burke, PG, CHMM
Principal/Vice President

September 19, 2018
Langan Project No. 170540601

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EXECUTIVE SUMMARY

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) was retained by Beach 21st Limited Partnership (the User) to prepare this Phase I Environmental Site Assessment (ESA) for the property on Beach 21st Street in the Far Rockaway neighborhood of Queens, New York (the Subject Property). The 42,500-square-foot (±0.98 acre) Subject Property is identified as Queens Borough Tax Block 15705, Lot 69 and a portion of Lot 59. Configuration of the property is rectangular with a frontage of about 300 feet along Beach 21st Street. No permanent structures are located at the Subject Property, which is used as a parking lot and bus stop. The Subject Property is located mid-block, on the city block bound by Beach 21st Street to the east, Cornaga Avenue to the south, Beach 22nd Street to the west, and Mott Avenue to the north.

According to the United States Geological Survey (USGS) Far Rockaway, N.Y.-N.J. 7.5-minute Series Topographic Quadrangle Map, the Subject Property is at an elevation of approximately9 20 feet above mean sea level (relative to North American Vertical Datum of 1988 [NAVD88]). The Subject Property was observed to gently slope down to the northwest.

This Phase I ESA was conducted in accordance with ASTM International (ASTM) E1527-13 (Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process) and the United States Environmental Protection Agency (USEPA) All Appropriate Inquiry (AAI) Rule for the purpose of identifying recognized environmental conditions (RECs), historical RECs (HRECs), controlled RECs (CRECs) and business environmental risks (BERs). The Subject Property had no HRECs or CRECs and the others are summarized below.

Recognized Environmental Conditions

A REC is defined by ASTM E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property due to any release to the environment, under conditions indicative of a release to the environment, or under conditions that pose a material threat of a future release to the environment. The Phase I ESA identified the following RECs:

<u>REC 1 – Historical Use of the Subject Property</u>

Historical uses of the Subject Property include:

- Long Island Rail Road (LIRR) railroad tracks (1886 to 1996)
- Coal/lumber yard (1890 to 1933)

- Manufacturing facilities (1912 to 1951)
- Woodworking (1912 to 1962)
- Carpet cleaning (1912)
- A tin shop (1951)
- Painting facilities (1912 to 1951)

Inadvertent releases of petroleum products, solvents, or other hazardous substances related to these former site uses may have impacted soil, groundwater, and soil vapor.

REC 2 – Historical UST at the Subject Property

The 1912 Sanborn Map shows an underground storage tank (UST) on the Subject Property. Additional records related to the tank were not available; therefore, it is possible that the tank is still in place. Potential undocumented petroleum releases may have adversely impacted soil, groundwater, and/or soil vapor.

REC 3 – Current and Historical Use of Adjoining and Surrounding Properties

Current and historical use of adjoining and surrounding up- and cross-gradient properties included:

- gasoline filling stations, including one on southern adjoining property with registered petroleum bulk storage tanks (1933 and 2006)
- dry cleaners (1951 to 1981)
- auto repair facilities (1933-present)
- a manufacturing company (1950 to 1970)
- battery service (1934)

Inadvertent releases of petroleum products, solvents, and/or or other hazardous substances related to these uses may have migrated and impacted groundwater and/or soil vapor at the Subject Property. Langan observed monitoring wells south of the Subject Property that are indicative of previous environmental investigation. Contaminants investigated on these neighboring sites may have migrated and impacted groundwater and/or soil vapor at the Subject Property.

Business Environmental Risk

A BER is defined by ASTM 1527-13 as a risk that can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice.

The following BERs were identified:

- Geotechnical evaluations completed nearby indicate that the Subject Property is likely underlain by a layer of historic fill material. Historic fill material can include brick, concrete, cinders, coal, slag, and ash and may contain several types of contamination at concentrations above applicable regulatory levels, including semivolatile organic compounds (SVOCs), pesticides, and metals. The presence of historic fill would not trigger a regulatory reporting obligation, but may result in premium costs for handling and disposal during redevelopment.
- Three on-site storm drains were not observed to have obvious effluent pipes, suggesting they may be dry wells that allow surficial contaminants to percolate into the subsurface. These drains do not trigger a regulatory reporting requirement, but soil the vicinity of these tanks may contain contaminants at higher concentrations than typical historic fill material or soil, and may be associated with a cost premium for disposal.
- The Subject Property was assigned an E-designation (E-415) for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation. The E-designation requires the owner to satisfy New York City (NYC) Office of Environmental Remediation (OER) protocols prior to and during redevelopment and new building occupancy which may add additional costs for investigation and remediation compared to other properties.

De Minimis Condition

Langan observed localized black staining on concrete pavement throughout Subject Property during the site reconnaissance. Concrete in these areas appeared to be in fair condition.

1.0 INTRODUCTION

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology D.P.C. (Langan) was retained by Beach 21st Limited Partnership (the "User") to prepare a Phase I Environmental Site Assessment (ESA) for the Beach 21st Street Development in the Far Rockaway neighborhood of Queens, New York ("Subject Property"). The 42,500-square-foot (±0.98 acre) Subject Property is identified as Queens Borough Tax Block 15705, Lot 69 and a portion of Lot 59.

This Phase I ESA was performed in general accordance with ASTM International (ASTM) Standard E1527-13 (Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process) and the guidelines set forth in the United States Environmental Protection Agency's (USEPA) All Appropriate Inquiries (AAI) Rule, 40 Code of Federal Regulations (CFR) Part 312.

1.1. Purpose

The purpose of this Phase I ESA is to accomplish the following:

> (1) Identify Recognized Environmental Conditions (RECs) in connection with the Subject Property, as defined in ASTM E1527-13, which states: The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (a) due to any release to the environment; (b) under conditions indicative of a release to the environment; or (c) under conditions that pose a material threat of a future release to the environment. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.
>
> (2) Satisfy the criteria of USEPA AAI Rule.

1.2. Scope of the ESA

This Phase I ESA was conducted using a standard of good commercial and customary practice that is consistent with the ASTM E1527-13. Any significant scope-of-work additions, deletions, or deviations to ASTM E1527-13 are noted in Section 8.0 of this report. In general, the scope of this assessment consisted of obtaining information from the User, reviewing reasonably ascertainable information and environmental data relating to the Subject Property, reviewing maps and records maintained by federal, state, and local regulatory agencies, interviewing

persons knowledgeable about the Subject Property, and conducting a site inspection. The specific scope of this assessment included the following:

1. A site reconnaissance to characterize conditions and assess the Subject Property's location with respect to adjoining and surrounding property uses and natural surface features. The reconnaissance included the surrounding roads and observations of surrounding properties from public rights-of-way to identify obvious potential environmental conditions on neighboring properties. The site reconnaissance was conducted in a systematic manner focusing on the spatial extent of the Subject Property and then progressing to adjoining and surrounding properties. Photographs taken as part of the site reconnaissance are provided in Appendix A.
2. A review of the responses to the User/Client Questionnaire. The completed questionnaire is provided in Appendix B.
3. A review of available previous environmental reports completed for the Subject Property. Copies of the reports are included in Appendix C.
4. A review of environmental databases maintained by the USEPA, state, and local agencies within the approximate minimum search distance. The environmental database report was provided by Environmental Data Resources, Inc. (EDR), and is included in Appendix D.
5. Filing of Freedom of Information Act (FOIA) requests with federal, state, and local agencies. Copies of the FOIA requests and responses are included in Appendix E.
6. A review of NYC Department of Buildings (DOB) records and a Planning Commission Zoning Map. Available DOB records and the Zoning Map are included in Appendices F and G, respectively.
7. A review of physical characteristics of the Subject Property through a review of referenced sources for topographic, geologic, soils and hydrologic data.
8. A review and interpretation of aerial photographs, Sanborn Fire Insurance Maps (Sanborn Maps), historical topographic maps, and city directories to identify previous activities on and in the vicinity of the Subject Property. Copies are included in Appendices H, I, J, and K respectively.
9. A review of environmental lien searches for the lots at the Subject Property. A copy of the environmental lien search report is included as Appendix L.
10. A review of published radon occurrence maps to evaluate whether the Subject Property is located in an area with a propensity for elevated radon levels.

1.3. Assumptions, Limitations, and Exceptions

This Phase I ESA was prepared for Beach 21st Limited Partnership for the Subject Property on Beach 21st Street (as defined in Section 1.0) in the Far Rockaway neighborhood of Queens, New York. The report is intended to be used in its entirety. Excerpts taken from this report are not necessarily representative of the assessment findings. Langan cannot assume responsibility for use of this report for any property other than the Subject Property addressed herein, or by any other third party without a written authorization from Langan.

Langan's scope of services, which is described in Section 1.2, was limited to that agreed to with the User and no other services beyond those explicitly stated are implied. The services performed and agreed upon for this effort comports to those prescribed in the ASTM E1527-13. Intrusive sampling (e.g. soil borings and groundwater sampling) was not performed as part of this Phase I ESA.

This Phase I ESA was not intended to be a definitive investigation of possible environmental impacts at the Subject Property. The purpose of this investigation was limited to determining if there is reason to suspect the possibility of RECs. It should be understood that even the most comprehensive Phase I ESA may fail to detect environmental liabilities at a particular Subject Property. Therefore, Langan cannot "insure" or "certify" that the Subject Property is free of environmental impacts. No expressed or implied representation or warranty is included or intended in this report, except that our services were performed, within the limits prescribed by our client, with the customary standard of care exercised by professionals performing similar services under similar circumstances within the same jurisdiction.

The conclusions, opinions, and recommendations provided in this report are based solely on the specific activities as required for the performance of ASTM E1527-13 and are intended exclusively for the purpose stated herein, at the specified Subject Property, as it existed at the time of our site visit.

2.0 SITE DESCRIPTION

2.1 Location and Description

The rectangular-shaped, 42,500-square-foot (±0.96 acre) Subject Property is located on Beach 21st Street in Far Rockaway, Queens, New York, and is identified on the Queens Borough Tax Map as Block 15705, Lot 69 and portion of Lot 59. The Subject Property is located mid-block, on the city block bound by Beach 21st Street to the east, Cornaga Avenue to the south, Beach 22nd Street to the west, and Mott Avenue to the north. Current use of the Subject Property includes a bus station and parking lot with no permanent structures. A site location map is included as Figure 1.

The Subject Property is located in an urban area characterized by commercial, industrial, and residential uses. According to the United States Geological Survey (USGS) Far Rockaway 7.5-minute Series Topographic Quadrangle Map, the Subject Property is at an elevation of about 20 feet above mean sea level (NAVD88). Site reconnaissance photographs are provided in Appendix A. Surrounding property usage is summarized in the following table:

Direction	Adjoining Properties			Surrounding Properties
	Block No.	Lot No.	Description	
North	15705	59	Portion of Lot 59 not included in Subject Property that includes the remainder of the bus station and parking facility	Auto service facility followed by Mott Avenue
East	15704	26, 30, 36, 53, 57, 60, 66	Mixed use commercial and residential lots	Beach 21st Street followed by commercial businesses
South	15705	81	Land under development	Parking and auto repair shop followed by Cornaga Avenue
West	15705	30 through 37, 140	1 & 2 family residential buildings and multi-family residential building	Mixed use residential and commercial lots, vacant land, Beach 22nd Street and MTA Mott Avenue – Far Rockaway Subway station

2.2 Description of Subject Property Improvements

Improvements at the Subject Property are summarized in the following table:

SUBJECT PROPERTY DESCRIPTION	
Size of the Subject Property	42,500 square feet (about 0.98 acres)
Buildings/Spaces/Structures	No structures except temporary bus shelter. Most of the property is paved with concrete and asphalt.
Surface Water	None
Potable Water Source	N/A
Sanitary and Storm Sewer Utilities	City of New York
Electrical Utilities	Consolidated Edison Company of New York, Inc. (for street lights)
Construction Completion Date	N/A
General Construction Type	N/A
Heating/Cooling System Type	N/A
Emergency Power	N/A

2.3 Title Records

Langan researched ownership records through the New York City Department of Finance (NYCDOF), Office of the City Register Automated City Register Information System (ACRIS) website at http://a836-acris.nyc.gov/CP/; however, deed information was not available. A lien search provided by EDR stated that the Subject Property is owned by the New York City Department of Transportation. Langan's review of ownership records did not identify RECs.

3.0 USER PROVIDED INFORMATION

3.1 User Questionnaire

Per ASTM E1527-13, a questionnaire was provided to the User/Owner to inquire about specialized information related to the Subject Property. The user questionnaire was completed by Jesse Batus, of Beach 21st Limited Partnership, and returned to Langan on September 26, 2018. Mr. Batus indicated that he was aware of obvious indications of documented or potential releases at the Subject Property, as documented in a previous Phase I ESA. A copy of the completed questionnaire is included in Appendix B.

3.2 Previous Environmental Reports

June 2016 Phase I Environmental Site Assessment (ESA) for Far Rockaway Municipal Parking Field - Queens, New York, prepared by AKRF, Inc.

AKRF completed a Phase I ESA of the Subject Property and adjacent portions of Lot 59 in 2016. The Phase I ESA identified the following RECs:

- Two underground storage tanks (UST), including one in the western part of the Subject Property on 1912 map. The second UST was shown in the portion of Lot 59 north of the Subject Property from 1933 to 1951. The status of the tanks is unknown and additional tanks may have been associated with other historical structures.
- Historical Property uses included a coal and wood yard; a furniture factory; auto repair; paint storage; a tin shop; an upholsterer; a lumber yard; a screen manufacturer; a publishing company; a roofing works; and a sheet metal works.
- A Rail spur was historically located along the west part of the Subject Property and may have been associated with spills and the use of creosote and/or other oils.
- Historical and current uses of surrounding properties included nearby rail tracks; auto repair shops; filling stations; factories; paint and oil shops; printers; a sign painter; dry cleaners; registered Petroleum Bulk Storage (PBS) facilities; and a vacant, and an unpaved lot with an abandoned 55-gallon drum.
- Potential dry wells as a survey provided by NYC Department of Transportation indicated some on-site storm drains may not be connected to the municipal sewer system and may discharge into the subsurface.

The Phase I ESA also identified Spill No. 0408292 (October 2004), regarding two 55-gallon drums that were abandoned on the property, as a de minimis condition. It is not clear if this incident happened within the limits of the Subject Property or the larger city-owned area. The spill was closed in December 2004.

A subsurface investigation was recommended prior to redevelopment as well as proper closure of any encountered USTs in accordance with applicable regulations. AKRF also stated that without testing of the on-site fluorescent lighting fixtures, they should be disposed of in accordance with applicable regulations assuming they contain PCBs and/or mercury. Suspect demolition debris, possibly containing ACM, LBP or PCB containing material, should be handled and disposed of in accordance with applicable regulations.

The prior Phase I ESA is included in Appendix C.

4.0 RECORDS REVIEW

4.1 Environmental Records

Regulatory database information was provided by EDR and is included in Appendix D. The EDR report is a listing of sites identified on select federal and state standard source environmental databases within the approximate search radius specified by ASTM E1527-13. Langan reviewed each environmental database on a record-by-record basis to determine if certain sites identified in the report are suspected to represent a potential impact to the Subject Property. Langan also reviewed "Orphan Sites" listed within the report. Orphan Sites are those sites that could not be mapped due to inadequate address information. Five Orphan Sites were identified, and three were determined to be located outside of the ASTM search radii. One Orphan Site, listed as "Far Rockaway MGP," was determined to be within the ASTM search radii and is discussed below in the appropriate sub-sections. All distances are measured from the perimeter of the Subject Property unless noted otherwise.

The following table lists the number of sites by database within the prescribed search radius appearing in the EDR Report.

DATABASE RECORD SUMMARY			
Database Reviewed (Date of government version)	**Minimum Search Area**	**Subject Property listed**	**Number of Sites Within Minimum Search Area**
USEPA DATABASES			
National Priorities List (NPL) (05/13/2018)	1 Mile Radius	No	0
Delisted NPL (05/13/2018)	1 Mile Radius	No	0
Superfund Enterprise Management System (SEMS, formerly CERCLIS) and SEMS-Archive (formerly known as CERCLIS-NFRAP) (05/18/2018)	1/2 Mile Radius	No	0
Resource Conservation and Recovery Act (RCRA) Corrective Reports (CORRACTS) (03/01/2018)	1 Mile Radius	No	0
RCRA Treatment, Storage, and Disposal Facilities (TSDF) (03/01/2018)	1/2 Mile Radius	No	0

DATABASE RECORD SUMMARY			
Database Reviewed (Date of government version)	**Minimum Search Area**	**Subject Property listed**	**Number of Sites Within Minimum Search Area**
USEPA DATABASES (Continued)			
RCRA Generators (Large Quantity Generator [LQG], Small Quantity Generator [SQG], Conditionally Exempt Small Quantity Generator [CESQG], Non-Generators [NonGen]) (03/01/2018)	Subject Property and Adjoining	No	0
Facility Index System (FINDS) (02/21/2018)	Subject Property	Yes	N/A
Environmental Response Notification System (ERNS) (03/19/2018)	Subject Property	No	N/A
Federal Engineering Controls (US ENG CONTROLS) Sites Lists (02/13/2018)	Subject Property	No	N/A
Federal Institutional Controls (US INST CONTROLS) Sites Lists (02/13/2018)	Subject Property	No	N/A
US Brownfields (03/19/2018)	1/2 Mile Radius	No	0
NYSDEC DATABASES			
Inactive Hazardous Waste Disposal Site (NY SHWS) (08/09/2018)	1 Mile Radius	No	1
Hazardous Substance Waste Disposal Site Inventory (NY HSWDS) (01/01/2003)	1/2 Mile Radius	No	0
Solid Waste or Landfill Facilities (NY SWF/LF) (12/08/2017)	1/2 Mile Radius	No	4
Registered Recycling Facility (NY SWRCY) (12/08/2018)	1/2 Mile Radius	No	1
New York Leaking Storage Tank Incident Reports (NY LTANKS) (05/14/2018)	1/2 Mile Radius	No	21
SPILLS Information Database (NY SPILLS) (05/14/2018)	1/8 Mile Radius	Yes	5
Voluntary Cleanup Program (NY VCP) (03/26/2018)	1/2 Mile Radius	No	1
NY Brownfields (08/09/2018)	1/2 Mile Radius	No	1
New York Engineering Controls Sites List (NY ENG CONTROLS) (05/14/2018)	Subject Property	No	0

DATABASE RECORD SUMMARY			
Database Reviewed (Date of government version)	**Minimum Search Area**	**Subject Property listed**	**Number of Sites Within Minimum Search Area**
NYSDEC DATABASES (Continued)			
New York Institutional Controls Sites List (NY INST CONTROLS) (05/14/2018)	Subject Property	No	0
Chemical Bulk Storage (CBS) Underground Storage Tank (UST) and Aboveground Storage Tank (AST) (06/25/2018)	Subject Property and Adjoining	No	0
Major Oil Storage Facilities (NY MOSF) UST and AST Databases (06/25/2018)	Subject Property and Adjoining	No	0
Registered Drycleaners (NY DRYCLEANERS) (03/07/2018)	1/4 Mile Radius	No	5
Petroleum Bulk Storage Facilities (PBS) UST and AST Databases (06/25/2018)	Subject Property and Adjoining	No	2
EDR (PROPRIETARY) DATABASES			
EDR Former Manufactured Gas Plant (MGP) Sites (N/A)	1 Mile Radius	No	2
EDR US Historical Auto Stations (N/A)	¼ Mile Radius	No	1
EDR US Historical Cleaners (N/A)	¼ Mile Radius	No	6

N/A: Not Applicable; databases with a "N/A" Minimum Search Radius are databases reviewed as part of the Phase I ESA but not required as per ASTM E1527-13.

A summary of the Subject Property database listing and listings for other sites identified in one or more of the reviewed databases within the prescribed search area is presented below.

4.1.1 Federal Agency Database Findings

The Subject Property and/or sites within their respective minimum search distances as specified by ASTM E1527-13 were not listed in the following federal agency databases: Proposed NPL, NPL, Delisted NPL, SEMS, SEMS Archive, RCRA CORRACTS, RCRA-TSDF, FINDS, ERNS, RCRA Generators, US ENG CONTROLS, US INST CONTROLS, and US BROWNFIELDS.

4.1.2 State Agency Database Findings

The Subject Property and/or sites within their respective minimum search distances as specified by ASTM E1527-13 were not listed in the following state agency databases: NY ENG CONTROL, NY INST CONTROL, NY HSWDS, NY CBS, and NY MOSF.

SHWS Database

The SHWS database is a comprehensive listing of sites that are the state's equivalent to SEMS. These consist of priority sites planned for cleanup using state funds (state equivalent of Superfund) and or potentially responsible parties. The Subject Property was not listed in the SHWS database. One SHWS site was listed, but is located more than 3,800 feet from the Subject Property in a hydraulically cross-gradient direction, and is not considered a REC.

SWF/LF

The SWF/LF database is a comprehensive listing of State permitted/recorded solid waste facilities. The EDR report did not identify the Subject Property in the SWF/LF database. Four surrounding sites were identified within the minimum search radius; however, they are located more than 600 feet from the Subject Property at a cross-gradient direction or more than 1,000 feet from the Subject Property at cross- to down gradient locations. Based on distance from the site and presumed hydraulic gradient, the listed SWF/LF sites do not represent RECs.

LTANKS Database

The LTANKS database contains an inventory of reported leaking storage tank incidents, including leaking USTs and ASTs. The minimum search radius for the LTANKS database includes the Subject Property and any sites within a 1/2-mile radius. The Subject Property was not listed in the LTANKS database; however, 21 sites were listed within the search radius. The listed incidents were primarily caused by tank test failures, tank failures, and tank overfills. Spill numbers associated with 20 of the 21 sites have been granted closed status by the NYSDEC and are not considered RECs. The one open listing is located about 750 feet south of the Subject Property and was reported after a tank test failure in 2017. The tank was ordered to be drained and retested and no impacts were reported. Due to the nature of this LTANK listing and distance, it is not expected to have impacted the Subject Property.

Spills Database

The NY Spills database is an inventory of sites where spills have been identified and reported to the NYSDEC. The search radius for the Spills database includes the Subject Property and any sites within a 1/8-mile radius. Five incidents listed in the Spills database were identified at sites within the minimum search radius. Although the EDR report did not indicate a SPILL listing on-site, one spill (No. 0408292) describes two abandoned 55-gallon drums in the municipal lot across from 1044 Beach 21st Street, and is reasonably assumed to be associated with the Subject Property or the portion of Lot 59 to the north. The drums were emptied and removed, and had no report of damage or leaking; therefore, this spill case does not represent a REC. The remaining four spill sites listed have been granted closed status by the NYSDEC and are not considered RECs.

NY PBS TANKS, UST and AST Database

The PBS TANKS UST and AST database contains records of registered USTs and/or ASTs. A registered tank, UST and/or AST does not constitute a REC, in and of itself. However, properties listed on the TANKS, UST and/or AST lists with a reported leak, spill, or release could constitute a REC with respect to the Subject Property. As per ASTM E1527-13, the minimum search distance required for USTs and ASTs is the Subject Property and adjoining properties. The Subject Property was not listed in the PBS database. Two adjoining properties were listed in the PBS UST database and are described below:

Site Name: NOBO Corporation
Site Address: 10-74 Beach 22nd Street
Site Location: Northwest-adjoining property (hydraulically down-gradient)
Description: PBS ID No. 2-602577 corresponds to an active (non-regulated use) 275-gallon steel No. 2 fuel oil AST and a temporarily out of service 275-gallon steel waste oil AST. These tanks are above ground, were installed in 1995, are not associated with LTANKs or spills, and are not considered a REC.

Site Name: Owen Auto Service
Site Address: 1017 Beach 21st Street
Site Location: Southern adjoining property (hydraulically up-gradient)
Description: PBS ID No. 2-604688 corresponds to 5 closed and removed 550-gallon steel gasoline USTs. The tanks were removed in 2000, but an install date was not reported. No LTANK or SPILLS listings are recorded in association with this facility, but based on the age of the tanks, proximity to the Subject Property, and up-gradient location, potential groundwater and soil vapor impacts related to unreported leaks from these tanks are considered a REC.

VCP Databases

The Voluntary Cleanup Program (VCP) uses private funds to remediate contaminated sites to levels allowing for the sites' productive use. The program covers virtually any kind of site and contamination. The Subject Property is not listed in the VCP database; however, one VCP site was identified within a ½-mile radius of the Subject Property. The site is listed in the EDR as an orphan site and is named "Far Rockaway MGP." Further details could not be located about this site on any public sources. The site is located more than 2,500 feet from the Subject Property to the north, northeast (down-gradient) and not considered a REC.

Brownfield Sites

Brownfield sites are properties at which redevelopment or re-use may be complicated by the presence or potential presence of hazardous substances, pollutants, or contamination. The Subject Property was not listed as a NY Brownfield site; however, one NY Brownfield site was identified within a ½-mile radius of the Subject Property. The site is listed in the EDR as an orphan site and is named "Far Rockaway MGP." As discussed above, this site is not considered a REC.

Registered and Historical Drycleaners (DRYCLEANERS)

The DRYCLEANERS database is a listing of registered dry cleaning facilities. Dry cleaning facilities are associated with the use of tetrachloroethene (PCE), a solvent that has the potential to infiltrate groundwater and can readily migrate to surrounding properties. The Subject Property was not listed in the DRYCLEANERS database; however, five DRYCLEANERS were identified within 1/4 mile of the Subject Property. Six historical DRYCLEANERS sites were identified within 1/8 mile of the Subject Property

The following cleaner/historic cleaners are considered RECs as inadvertent releases of solvents could have impacted groundwater and or soil vapor at the Subject Property:

- Nassau Beach Cleaners at 2105 Cornaga Ave (about 430 feet south/up- to cross-gradient)
- Budget Dry Cleaners at 2122 Cornaga Avenue (about 350 feet south/up- to cross-gradient)

Other listed cleaners are either listed as drop shops (do not dry clean on site), are located 500 or more feet at down-gradient locations, or appear to be misclassified as a historical cleaner; therefore, are not considered RECs.

4.1.3 Other Database Findings

Manufactured Gas Plant Sites

The MGP sites database is a proprietary database that includes records of historical manufactured coal gas plants compiled by EDR. The Subject Property was not listed in the MGP database. Two sites were identified within the search criteria. The sites, Far Rockaway MGP and Inwood Holder, are located over 2,500 feet north/northeast (cross-gradient) from the Subject Property. No further information was available for either listing. Based on distance and relative gradient, these sites are not considered RECs.

Historical Auto

The Historical Auto database is a proprietary database that lists potential gas station/filling station/service station sites based on review of national collections of business directories that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The Subject Property was not listed in the EDR Historical Auto database. One site within the minimum search distance is discussed below:

Site Name: Three Vic Corporation
Date: 1971-2011
Site Address: 1009 Beach 21st Street; about 200 feet south of the Subject Property; hydraulically up-gradient
Description: This former gasoline/service station is associated with RCL Service Center PBS UST ID # 2-604080. As discussed under PBS records, this facility and related petroleum storage represents a REC.

4.1.4 Local Regulatory Agency Findings

FOIA Requests

FOIA requests were submitted on September 6, 2018 to the following federal, state, and local agencies via written correspondence:

- NYC Department of Environmental Protection (DEP)
- NYC Department of Health (DOH)
- FDNY
- New York State Department of Health (NYSDOH)
- NYSDEC

- USEPA, Region 2

Responses have not yet been received. Should pending responses alter the conclusions provided within this report, we will issue the modified conclusions as an addendum. Copies of the FOIA requests are included in Appendix E.

New York City Department of Buildings (DOB)

Langan conducted a records search through the DOB online query system on September 5, 2018. No records were available for Block 15705, Lot 69. The following table summarizes DOB records for Block 15705, Lot 59:

Building Identification Number (BIN)	NYCDOF Classification	Actions	Total Jobs	DOB Violations		Environmental Control Board (ECB) Violations	
				Total	Open	Total	Open
4817352	V8-Vacant Land	4	0	0	0	0	0

No certificates of occupancy were available for either lot at the Subject Property. A copy of the DOB findings is included in Appendix F.

Zoning Department

According to the NYC Planning Commission Zoning Map 31a, the Subject Property is zoned as R6 (Residential) within a Special Purpose District known as the Special Downtown Far Rockaway District and described in the NYC City Planning Commission Zoning Resolution Article 13 Chapter 6 (https://www1.nyc.gov/assets/planning/download/pdf/zoning/zoning-text/art13c06.pdf). This district was created to strengthen the commercial area on vacant and underutilized sites near mass transit and primary corridors. A copy of the zoning map is included in Appendix G.

'E'-Designation Status

The NYC Department of City Planning (DCP) coordinated a program identifying properties for special environmental concerns based on documented historical use, neighborhood noise concerns, and neighborhood air quality issues. These properties are identified as E-Designated sites on zoning maps and in the DOB Building Information System (BIS) database. The DOB is restricted from issuing building permits for the property until the NYC Mayor's Office of Environmental Remediation (OER) has reviewed information prepared by an environmental professional and made a determination to issue a "Notice-of-No-Objection" or a "Notice-to-

Proceed" to the DOB. Prior to OER's creation in 2008, the DEP conducted these reviews. Langan reviewed information available on the planning commission's website and found the Subject Property was listed as an E-Designated for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation. The E-designation is a Business Environmental Risk (BER) as it will result in extra costs to prepare and implement a Remedial Action Plan under OER oversight.

4.2 Physical Setting Sources

4.2.1 Topography

According to the USGS Far Rockaway, N.Y.-N.J. 7.5-minute Series Topographic Quadrangle Map, the Subject Property is at an elevation of approximately 20 feet above mean sea level (NAVD88). The topography at the Subject Property was observed to gently slope down to the northwest. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) effective November 16, 1983 and revised September 5, 2007, (Map Number 3604970382F) and the Preliminary FIRM dated January 30, 2015 (Map Number 3604970382G), the Subject Property is located within the area of minimal flood hazard.

4.2.2 Geology

Geological surface features (e.g., rock outcroppings) were not observed at the Subject Property. Based on a review of the Geologic Map of New York Lower Hudson Sheet, by Donald W. Fisher, Yngvar W. Isachsen, and Lawrence V. Rickard, dated 1970 and reprinted in 1995, the Subject Property is underlain by coastal plain deposits of the Monmouth Group, Matawan Group, and Magothy Formation. This formation is generally comprised of silty clay, glauconitic sandy clay, sand, gravel. Based on the USGS Map of Western Part of Long Island, N.Y (showing probable depth of bedrock), bedrock at the Subject Property is estimated to be greater than 300 feet below grade.

4.2.3 Hydrology

Groundwater flow is typically hydraulically influenced, as shallow groundwater tends to originate in areas of topographic highs and flow toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeologic 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 extent of impervious cover. Other factors influencing groundwater include depth to bedrock, the presence of artificial fill, and variability in local geology and groundwater sources or sinks.

Based on the regional topography, groundwater in the area is expected to flow to the west/northwest toward the Motts Basin and Jamaica Bay. Groundwater in Far Rockaway is not used as a potable source. Drinking water throughout New York City is derived from surface reservoirs in the Catskills.

4.3 Historical Use Information

Langan reviewed available historic resources (including aerial photographs, Sanborn and topographic maps, and city directories) dated between 1896 and 2017. Findings from the review are presented below.

4.3.1 Aerial Photographs

Langan reviewed aerial photographs of the Subject Property and surrounding areas for the years 1951, 1954, 1961, 1966, 1975, 1980, 1985, 1994, 2006, 2009, and 2017. Copies of aerial photographs are included in Appendix H.

In the 1951 aerial photograph, the Subject Property and surrounding properties are within a densely developed urban area. The 1951 photo shows multiple multi-story buildings on the Subject Property while the western perimeter remains vacant and apparently used for storage. Between 1954 and 1961, all but one of the buildings were removed from the Subject Property and it was mostly covered by asphalt; the remaining building is located on Lot 69. From 1966 to 1975, the Subject Property is primarily used for parking. Between 1975 and 1980, the on-site building is no longer present, and a bus terminal is built that has no structures but covers the northeastern portion of the property with asphalt.

Surrounding properties were improved with various commercial and industrial buildings since as early as 1951. The neighboring MTA subway station is built between 1954 and 1961. In 2017, the southern adjoining property and northwestern adjoining property appear to be under construction.

4.3.2 Sanborn Fire Insurance Maps

Langan reviewed Sanborn Fire Insurance Maps (Sanborn Maps) for the years 1886, 1890, 1895, 1901, 1912, 1933, 1951, 1981, 1983, 1985 to 1988, 1990 to 1993, 1995, 1996, 1999, and 2001 through 2006. Sanborn Maps constitute a database of prior site uses for real properties located in many cities and towns across the United States. Copies of the maps are included in Appendix I.

Langan's Sanborn Map review revealed that a Long Island Railroad (LIRR) right of way traversed the western portion of the Subject Property from 1886 to 1996. Other Subject Property uses include a coal/lumber yard (1890 to 1933), paint shop/storage (1912 to 1951), manufacturing facilities (1912 to 1951), woodworking (1912 to 1962), carpet cleaning (1912), and a tin shop (1951). The 1912 map reveals a 100-gallon underground gasoline tank on the Subject Property that is not called out on subsequent maps. The aforementioned prior uses of the Subject Property are considered RECs, based on the potential for inadvertent releases of petroleum, solvents, creosote, and/or other hazardous substances that may have impacted soil, groundwater, and/or soil vapor. No documentation of tank removal was obtained, so a historical/potentially abandoned in place UST is a REC based on the potential for undocumented leaks.

Adjoining and surrounding properties generally contained low-rise industrial and residential structures between 1886 and 2007. Potential impacts from the following properties were identified as RECs:

- 1017-1031 Beach 21st Street adjoins the Subject Property to the south (up-gradient) and was occupied by an auto repair facility with gasoline tank/filling station (1951 to 2006);
- 1009 Beach 21st Street is located approximately 180 feet to the south (up- to cross-gradient) of the Subject Property and was occupied by an auto repair facility (1933 to present), with two gasoline tanks shown from 1933 to 1951, and a filling station (1981 to 1988);
- 1063, 1065, and 1067 Beach 21st Street adjoin the Subject Property to the north/down-gradient (portion of Lot 59 not included in Subject Property) and were occupied by an auto repair facility with a gasoline tank (1933 to 1951);
- 46 White Street (currently known as 1060 Beach 21st Street) adjoins the Subject Property to the east (cross- to up-gradient) and was occupied by an auto facility in 1912;
- 2014-2016 Cornaga Avenue/1002-1010 Beach 21st Street is located approximately 210 feet southeast (up- to cross-gradient) of the Subject Property and was occupied by an auto repair facility (1933 to 2006) and filling station with four gasoline tanks (1933 to 1951);
- 1068 Beach 22nd Street adjoins the Subject Property to the northwest (down-gradient) and was occupied by an auto repair facility (1999 to 2006); and
- 2103 Cornaga Avenue is located approximately 390 feet south (up- to cross-gradient) of the Subject Property and was occupied by a dry cleaner (1951 to 1981).

The above uses may have resulted in inadvertent releases of petroleum products, solvents, and/or other hazardous substances that could have migrated and impacted groundwater and/or

soil vapor at the Subject Property. Copies of Sanborn Fire Insurance Maps are included in Appendix I.

4.3.3 Historical USGS Topographic Quadrangles

Langan reviewed historical USGS Topographic Quadrangles obtained from EDR for information regarding past uses of the Subject Property. Quadrangle maps were available for the Subject Property for the years 1897, 1898, 1899, 1900, 1947, 1954, 1966, 1969, 1979 (partial coverage), and 2013. In the 1897, 1898, and 1900 maps, the Subject Property is within a developed urban area and is traversed by a railway along the western perimeter. Historical on-site railroad tracks are considered a REC, based on the potential for impacts from petroleum products, creosote, and hydraulic oil releases. Copies of the topographic maps are provided in Appendix J.

4.3.4 City Directories

The City Directory Abstract obtained from EDR is a review of available business directories, including city, cross-reference, and telephone directories, at approximately five-year intervals for the years spanning 1922 through 2014. A copy of the City Directory Abstract is included in Appendix K.

The Subject Property, identified as 10-37 Beach 21st Street, was listed in the City Directory Abstract with various uses including a lumber corporation (1939 to 1962) and various auto service stations (2000 to 2005). 10-57 Beach 21st Street is listed in the EDR as an adjoining property, although the Sanborn maps reveal that this address corresponds to the Subject Property. A roofing and sheet metal contractor (1950) previously occupied this address. Historical use of the Subject Property for auto repair, sheet metal works, and woodworking is a REC as inadvertent releases of petroleum products or other hazardous substances may have impacted soil, groundwater, and/or soil vapor.

Adjoining and surrounding properties were listed in the City Directory Abstract under multiple residential and commercial listings. The following RECs were identified:

- 10-09 Beach 21st Street is located approximately 180 feet to the south (up- to cross-gradient) of the Subject Property and was listed as a gas station (1934), service station (1962 to 1991) and auto works (2005 to 2010);
- 10-11 Beach 21st Street is located approximately 120 feet to the south (up- to cross-gradient) of the Subject Property and was listed as a service station (1939) and battery service (1934);

- 10-17 Beach 21st Street is located approximately 90 feet to the south (up- to cross-gradient) of the Subject Property and was listed as a service station (1962 to 2005) and auto repair (2000 to 2005); and
- 10-32 and 10-34 Beach 21st Street are located approximately 45 feet to the southeast (up-gradient) of the Subject Property and was listed as a manufacturing company (1950 to 1970) and auto service (2005).

The above listed historical uses of adjoining and/or surrounding properties are considered a REC due to the potential for undocumented releases of petroleum, solvents, and/or other hazardous materials that may have impacted groundwater and/or soil vapor at the Subject Property.

4.3.5 Title Records, Environmental Liens, and Use Limitations

Reasonably ascertainable recorded land title records and lien records that are filed under federal, tribal, state, or local law should be reviewed to identify environmental liens or AULs, if any, that are currently recorded against the property. Any environmental liens or AULs must be reported to the Environmental Professional conducting the ESA per ASTM E1527-13.

An environmental lien and AUL search was provided by EDR to confirm whether environmental liens or AULs (engineering or institutional controls) existed for the property. Environmental liens and AULs were not identified for the Subject Property. Deed records identified during the search list the current owner of the Subject Property as NYC Transit. A copy of the report is included in Appendix L.

5.0 SITE RECONNAISSANCE

5.1 Methodology and Limiting Conditions

The site reconnaissance was conducted in a systematic manner focusing on the spatial extent of the Subject Property and progressing to the adjacent and surrounding properties. The assessment of the adjacent and surrounding properties was limited to identifying, if possible, any indications of past or current use that may involve the use, storage, disposal, or generation of hazardous substances or petroleum products, noting the general type of current use, the general topography of the surrounding area, and providing a general description of adjoining or adjacent structures.

5.1.1 Date and Time of Inspections

The site reconnaissance was performed on September 5, 2018 by Elizabeth Burgess of Langan. The weather at the time of inspection was clear and about 80 degrees Fahrenheit.

5.1.2 General Site Setting and Reconnaissance Observations

The Subject Property is rectangular, includes Lot 69 and part of Lot 59, and has about 304 feet of frontage on Beach 21st Street. An asphalt-paved parking lot (about 50 spaces) was observed on the western and southern portions of the Subject Property, and a concrete paved (outdoor) bus stop is in the northeast quadrant. Parked vehicles limited ground visibility at the time of the site reconnaissance.

All surfaces except for an approximately 2,000 square foot vegetated area in the southwest corner are covered with pavement. Concrete and asphalt surfaces were in fair condition with some localized cracking.

There are no buildings present, but a temporary bus shelter is located in the northeast quadrant. Seven light poles and six storm drains were observed throughout the paved areas. Fencing is located along the southern and western perimeters, otherwise the site has open access.

Pits, Ponds, Lagoons

No pits, ponds or lagoons were observed.

Pools of Liquid

No pools of liquid were observed.

Drains, Wells, and Cisterns

Six storm drains were observed. Three of the drains are located in the asphalt parking lot along the western end of the property and had visible effluent pipes in them that appeared to connect to the adjacent sewer line. The remaining three drains are within in the concrete paved bus driveway did not have visible effluent pipes and may be dry wells that would allow surficial contaminants to travel into the subsurface after storm events.

Polychlorinated Biphenyl (PCB) Transformers and/or Hydraulic Equipment

Transformers and hydraulic equipment were not observed.

Storage Containers and Drums

No storage containers or drums were observed.

Waste Generation, Storage, and Disposal

One public trash container is located next to the bus shelter and is maintained by the city.

Air Emissions or Wastewater Discharges

Air emissions or wastewater discharges were not observed.

Sumps

Sumps were not observed.

USTs or ASTs

ASTs or evidence of USTs were not observed.

Monitoring Wells or Remedial Activities

Monitoring wells or other evidence of remedial activities (e.g., patched borings) were not observed at the Subject Property.

Stained or Discolored Surfaces (Soil, Asphalt, Concrete, etc.)

Localized black staining was observed on concrete pavement throughout Subject Property; however, impacts appeared minimum, concrete in these areas appeared to be in fair condition, so impacts to the sub-surface are unlikely. The observed staining is considered de minimis.

Leachate or Seeps

Leachate and seeps were not observed.

Adjoining and Surrounding Property Uses

The bus station and parking lot extend for approximately 80 feet north beyond the Subject Property boundary. The Subject Property is adjoined to the east by Beach 21st Street followed by commercial buildings, to the south by residential construction in progress, and to the west by multiple single and multi-family residential units followed by Beach 22nd Street. Beyond adjoining properties, the surrounding area is comprised of a mix of commercial and residential properties and a subway station with aboveground tracks.

A fuel oil fill port was observed in the sidewalk of Beach 21st Street, outside the delivery entrance for 10-57 Beach 20th Street (an eastern adjoining property). Two monitoring wells were observed south of the Subject Property in the sidewalk outside of DMV Autoworks on Beach 21st Street.

Site Reconnaissance Conclusions

- Black staining on concrete is considered a de minimis condition.
- Three on-site storm drains may be dry wells that allow surficial contaminants to percolate into the subsurface. These drains do not trigger a regulatory reporting requirement, but soil the vicinity of these drains may contain contaminants at higher concentrations than typical historic fill material or soil, and may be associated with a cost premium for disposal. They are considered a BER.
- The observed monitoring wells north and south of the Subject Property are indicative of environmental investigation. Contaminants investigated on these neighboring sites, especially to the south, may have migrated and impacted groundwater and/or soil vapor at the Subject Property; therefore, they represent a REC.

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6.0 INTERVIEWS

6.1 Subject Property Owner

The Subject Property Owner was not available for interview as part of this Phase I ESA.

6.2 Owners/Tenants of Adjacent Properties

Owners/tenants of adjacent properties were not available for interview as part of this Phase I ESA.

7.0 ADDITIONAL SERVICES

7.1 Radon

Radon is a colorless, odorless radioactive gas that results from the natural breakdown of uranium minerals in soil, rock, and water and subsequently, enters the atmosphere. It can concentrate in buildings by entering through cracks and/or other penetrations of a building foundation. Some areas are more likely to have elevated concentrations of radon than others, which is reflective of subsurface lithological conditions.

The USEPA's "Map of Radon Zones for New York State" indicates that the Subject Property is located in a Zone 3 radon risk area, which is associated with a low radon risk potential. Zone 3 risk areas are those where the predicted average indoor screening level is less than 2.0 picocuries per liter (pCi/L). The NYSDOH maintains a database of radon test results on a local and county level. According to the database (updated October 30, 2017), 545 and 113 radon tests were conducted in the cellar and first floors of homes, respectively, in Queens County. The average radon levels in cellars and first floors were 1.24 pCi/L and 0.61 pCi/L, respectively. Based on available data, elevated radon concentrations at the Subject Property are not expected.

7.2 Asbestos-Containing Material, Lead-Based Paint, and PCBs

Buildings are not present at the Subject Property.

8.0 DEVIATIONS AND DATA GAPS

8.1 Deviations

Langan has performed a Phase I ESA of the Subject Property using a standard of good commercial and customary practice that is consistent with the ASTM E1527-13 and the USEPA AAI Rule. Significant deviations were not made to the above referenced standards.

8.2 Data Gaps

According to ASTM E1527-13, Section 8.3.2.3, "historical research is complete when either: (1) the objectives in 8.3.1 through 8.3.2.2 are achieved; or (2) data failure is encountered. Data failure occurs when all standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the objectives have not been met. If data failure is encountered, the report shall document the failure and, if any of the standard historical sources were excluded, give the reasons for the exclusion." In order to address data gaps, additional sources of information may be consulted.

This Phase I ESA conforms to ASTM E1527-13 with the following deviations noted:

- All contacted government agencies have not yet responded to record review inquiries.
- Parked vehicles at the time of the site reconnaissance limited ground visibility.

It is the opinion of the reviewing Environmental Professional that the above deficiencies will not detrimentally affect the identification of potential RECs. Sufficient information has been provided from other data sources to render conclusions regarding the presence of RECs at the Subject Property. As such, this data gaps are not expected to impact the overall conclusions of the Phase I ESA. Should additional information provided at a later date alter the conclusions of this Phase I ESA, an addendum will be issued to this report.

9.0 CONCLUSIONS, FINDINGS, AND OPINIONS

This Phase I ESA was conducted in accordance with ASTM E1527-13 and the USEPA AAI Rule. for the purpose of identifying RECs, historical RECs (HRECs), controlled RECs (CRECs), and BERs. The Subject Property had no HRECs or CRECs and the others are summarized below.

Recognized Environmental Conditions

The Phase I ESA identified the following RECs:

REC 1 – Historical Use of the Subject Property

Historical uses of the Subject Property include:

- LIRR railroad tracks (1886 to 1996)
- Coal/lumber yard (1890 to 1933)
- Manufacturing facilities (1912 to 1951)
- Woodworking (1912 to 1962)
- Carpet cleaning (1912)
- A tin shop (1951)
- Painting facilities (1912 to 1951)

Inadvertent releases of petroleum products, solvents, or other hazardous substances related to these former site uses may have impacted soil, groundwater, and soil vapor.

REC 2 – Historical UST at the Subject Property

The 1912 Sanborn Map shows an UST on the Subject Property. Additional records related to the tank were not available; therefore, it is possible that the tank is still in place. Potential undocumented petroleum releases may have adversely impacted soil, groundwater, and/or soil vapor.

REC 3 – Current and Historical Use of Adjoining and Surrounding Properties

Current and historical use of adjoining and surrounding up- and cross-gradient properties included:

- gasoline filling stations, including one on southern adjoining property with registered petroleum bulk storage tanks (1933 and 2006)
- dry cleaners (1951 to 1981)
- auto repair facilities (1933-present)
- a manufacturing company (1950 to 1970)

Inadvertent releases of petroleum products, solvents, and/or or other hazardous substances related to these uses may have migrated and impacted groundwater and/or soil vapor at the Subject Property. Langan observed monitoring wells south of the Subject Property that are indicative of previous environmental investigation. Contaminants investigated on these neighboring sites may have migrated and impacted groundwater and/or soil vapor at the Subject Property.

Business Environmental Risk

A BER is defined by ASTM 1527-13 as a risk that can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice. The following BERs were identified:

- Geotechnical evaluations completed nearby indicate that the Subject Property is likely underlain by a layer of historic fill material. Historic fill material can include brick, concrete, cinders, coal, slag, and ash and may contain several types of contamination at concentrations above applicable regulatory levels, including SVOCs, pesticides, and metals. The presence of historic fill would not trigger a regulatory reporting obligation, but may result in premium costs for handling and disposal during redevelopment.
- Three on-site storm drains were not observed to have obvious effluent pipes, suggesting they may be dry wells that allow surficial contaminants to percolate into the subsurface. These drains do not trigger a regulatory reporting requirement, but soil the vicinity of these tanks may contain contaminants at higher concentrations than typical historic fill material or soil, and may be associated with a cost premium for disposal.
- The Subject Property was assigned an E-designation (E-415) for Air Quality – HVAC (fuel limited to natural gas) and Window Wall Attenuation and Alternate Ventilation. The E-designation requires the owner to satisfy NYC OER protocols prior to and during redevelopment and new building occupancy which may add additional costs for investigation and remediation compared to other properties.

De Minimis Condition

Langan observed localized black staining on concrete pavement throughout Subject Property during the site reconnaissance. Concrete in these areas appeared to be in fair condition.

10.0 REFERENCES

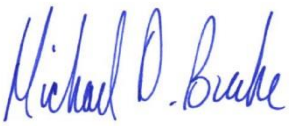
The following references were reviewed as part of this Phase I ESA:

1. Environmental Data Resources, Inc., Inquiry Number: 5411284.8, August 31, 2018. Aerial Photo Decade Package.
2. Environmental Data Resources, Inc., Inquiry Number: 5411284.5, August 31, 2018. City Directory Abstract.
3. Environmental Data Resources, Inc., Inquiry Number: 5411284.4, August 31, 2018. Historical Topographic Map Report.
4. Environmental Data Resources, Inc., Inquiry Number: 5411284.2s, August 31, 2018. Radius Map with GeoCheck.
5. Environmental Data Resources, Inc., Inquiry Number: 5411284.3, August 31, 2018. Sanborn Map Report.
6. Environmental Data Resources, Inc. Inquiry Number 5145309.7, September 5, 2018. EDR Environmental Lien and Activity and Use Limitations Search.
7. Federal Emergency Management Agency Flood Insurance Rate Map, (Map Number 360497, Panel 382, Suffix F), effective November 16, 1983 and revised September 5, 2007, and Preliminary Flood Insurance Rate Map, (Map Number 360497, Panel 382, Suffix G), dated January 30, 2015.
8. New York City Department of Buildings, Building Information System, http://www.nyc.gov/html/dob/html/bis/bis.shtml, reviewed December 28, 2017.
9. New York City Planning Commission. September 5, 2018. Zoning Map 31a.
10. New York City Department of Finance, Office of the City Register, Automated City Register Information System (ACRIS) website, http://a836-acris.nyc.gov/CP/, reviewed September 5, 2018.
11. NYC Oasis Maps: http://www.oasisnyc.com/map.aspx, reviewed September 5, 2018.
12. US Fish and Wildlife Service National Wetlands Inventory (https://www.fws.gov/wetlands/index.html), reviewed September 6, 2018.
13. Phase I ESA (for Lots 59 and 69), prepared by AKRF, dated June 2016

11.0 STATEMENT OF QUALIFICATIONS AND SIGNATURES

Langan declares that, to the best of its professional knowledge and belief, the personnel who performed this Phase I ESA meet the definition of Environmental Professional as defined in Subsection 312 10 of 40 CFR 312 and that they have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. They have developed and performed the AAIs in conformance with the standards and practices set forth in 40 CFR Part 312. Resumes outlining the qualifications of the Environmental Professionals who performed this Phase I ESA are included in Appendix M.

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.



Michael Burke, CHMM, LEED^{AP}
Principal/Vice President

APPENDIX C

CONSTRUCTION HEALTH AND SAFETY PLAN

FOR

10-73 Beach 21st Street
Block 15705, Lots 69 and p/o 59
OER Project Number 19TMP0436Q, 19EA-N149Q
E-Designation E-415
CEQR Number 16DME010Q
Name of Rezoning Action: Downtown Far Rockaway, NY

Prepared For

Beach 21st Limited Partnership
c/o The Community Builders, Inc.
8 West 38th Street, Suite 1102
New York, New York 10018

Prepared By:

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

April 2019
Langan Project No. 170540601

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

1.0 INTRODUCTION

1.1 General

This CONSTRUCTION HEALTH AND SAFETY PLAN (CHASP) was developed to address disturbance of known and reasonably anticipated subsurface contaminants and comply with Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.120(b)(4), *Hazardous Waste Operations and Emergency Response* during anticipated site work at 10-73 Beach 21st Street, Far Rockaway, in the borough of Queens, New York (Tax Map Block 15705, Lot 69 and a portion of Lot 59) ("the Site"). This CHASP provides the minimum requirements for implementing site operations during future possible remedial measure activities. All contractors performing work on this site shall implement their own CHASP that, at a minimum, adheres to this CHASP. The contractor is responsible for their own health and safety and that of their subcontractors. Langan personnel will implement this CHASP while onsite.

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

1.2 Site Location and Background

The site spans about 42,500 square feet, is located in the Far Rockaway neighborhood of Queens, and is identified as Block 15705, Lot 69 and a portion of Lot 59. The site is used for a bus stop and a municipal parking lot and contains asphalt and concrete paved surfaces and a temporary bus shelter, but not permanent buildings.

The proposed redevelopment project consists of a 10-story mixed-use building (commercial and low-income residential) with cellar level. The building would be set back 8 to 15 feet from Beach 21st Street. The cellar would be used for parking, storage, and mechanical rooms. The ground floor would include retail and a daycare center. Upper floors would include residential units and indoor and outdoor communal spaces for residents. An approximately 2,900 square foot area in the southwest corner of the property will be a grade-level play yard (above the cellar level) associated with the day care. Concrete paving is proposed for the setback area along Beach 21st Street and small patches of landscaping are proposed around the daycare play yard. It is estimated that an excavation of 12 feet across the site would be needed to construct the cellar

with some deeper excavations for foundation elements. The water table is expected at about 20-25 feet below grade surface (bgs). . A site location map is included as Figure 1.

1.3 Summary of Work Tasks

1.3.1 Excavation and Soil Screening

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

1.3.2 Soil Screening

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

1.3.3 Stockpiling

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

1.3.4 Soil Sampling

Soil samples (waste characterization, excavation endpoint, delineation, or quality assurance/quality control [QA/QC]) may be collected during construction, as required. Langan personnel will coordinate with the contractor in sampling soil (in accordance with the SMP, where applicable). If stockpile soil sampling is required from above ground level, suitable excavation equipment (i.e., excavator, front end loader) should be used to collect the sample. Soil samples for excavation endpoint or delineation sampling (along with QA/QC samples) may be collected into laboratory-supplied batch-certified clean glassware and submitted to a New York State

Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP).

1.3.5 Characterization of Excavated Material

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

1.3.6 Excavation Backfill

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

1.3.7 Decommissioning and Removal of On-Site Underground Storage Tanks

If an underground storage tank (UST) is encountered, a UST decommissioning and removal contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of any UST in accordance with federal, state and local regulations. Langan personnel will monitor VOCs with a calibrated PID downwind from the UST excavation and record the PID readings.

1.3.8 Construction Dewatering

The dewatering contractor shall be responsible for handling contaminated dewatering fluids in accordance with federal, state and local regulations. Dewatering fluids are to be discharged to the local sanitary sewer system after treatment and under approved regulatory permit. Alternatively, the contractor may provide containerized storage to allow for testing of groundwater prior to, and after, treatment and before disposal. If required, Langan field personnel may sample dewatering treatment system liquids from either a discharge standpipe or a storage tank. Dewatering samples will be submitted to an ELAP-certified laboratory for analysis.

1.3.9 Construction Activity Inspections and Observations

Langan may observe construction activities including the installation of piles, caissons and rock anchors. In addition, Langan may observe and record data from a lateral load test. These activities are to be done in accordance with the work plan. The installation and assembly activities

performed by the contractor in accordance with the construction documents, remedial plan, and special inspection requirements administered by the New York City Department of Buildings. Materials used for construction will be inspected by Langan for conformance to the design documents.

1.3.10 Installation of Waterproofing and Vapor Barrier

A properly licensed contractor will install the waterproofing membrane and vapor barrier system in accordance with specifications outlined in the work plan. Langan or other authorized personnel, as specified in the contract documents, may inspect and document the waterproofing and vapor barrier installation and in accordance with the specification outlined in the work plan.

1.3.11 Drum Sampling

Excess or impacted soil and water that is drummed during activities must be labeled in accordance with the Langan Drum Labeling Standard Operating Procedure (SOP-#9). Langan personnel may collect drum samples, if required, prior to off-site drum disposal. If collected, samples will be placed into laboratory-supplied batch-certified clean glassware and submitted to a NYSDOH ELAP-certified laboratory.

2.0 IDENTIFICATION OF KEY PERSONNEL/HEALTH AND SAFETY PERSONNEL

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

2.1 Langan Project Manager

The Langan Environmental Project Managers (PM) is Jennifer Armstong. The Geotechnical Project Manager is Laurence E. Ford. Their responsibilities include:

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

2.2 Langan Corporate Health and Safety Manager

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

include:

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

2.3 Langan Site Health & Safety Officer

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

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

2.4 Langan Field Team Leader Responsibilities

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

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

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

2.5 Contractor Responsibilities

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

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

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSES

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

3.1 Specific Task Safety Analysis

3.1.1 Soil Screening and Sampling

Sampling the soil requires the donning of chemical resistant gloves in addition to the standard PPE. Langan personnel are not to operate drilling or excavation equipment nor open sampling devices (acetate liners, sonic sample bags, etc.). These tasks are to be completed by the driller or excavation contractor.

3.1.2 Stockpile Sampling

The Langan personnel are not to scale or otherwise climb stockpiles. If the soil sampling plan requires sampling from the stockpile above ground level, samples are to be obtained using suitable excavation equipment operated by the contractor (i.e. front end loader).

3.1.3 Removal of Underground Storage Tank

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

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

3.1.4 Construction Dewatering

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

3.3.5 Backfilling of Excavated Areas to Development Grade

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

3.1.6 Construction Activity Inspection

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

3.1.7 Installation of Waterproofing and Vapor Barrier

Langan personnel are there only to observe and record the data required in the work plan for the installation of waterproofing and vapor barrier. Installation and assemblage of the waterproofing and vapor barrier are to be completed in accordance with the work plan, manufacturer specification and by the contractor following their own health and safety specifications outlined in their HASPs.

3.1.8 Drum Sampling

Drilling fluid, rinse water, grossly-contaminated soils samples and cuttings may be containerized in 55-gallon drums for transport and disposal off site. Each drum must be labeled in accordance with the Langan Drum Labeling Standard Operating Procedure (SOP-#9). Langan may collect drum samples, as required, prior to off-site drum disposal. Samples will be placed into laboratory-supplied batch-certified clean glassware and submitted to a NYSDOH ELAP-certified laboratory.

Langan employees and contractors are not to move or open any orphaned (unlabeled) drum found on the site without approval of the project manager.

3.2 Radiation Hazards

No radiation hazards are known or expected at the site.

3.3 Physical Hazards

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

3.3.1 Explosion

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

3.3.2 Heat Stress

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

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

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

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

To monitor the worker, measure:

- **Heart rate:** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the

following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100 beats per minute.

- **Oral temperature:** Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6^{o}F (37.6^{o}C), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6^{o}F. If oral temperature still exceeds 99.6^{o}F (37.6^{o}C) at the beginning of the next rest period, shorten the following cycle by one-third. Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6^{o}F (38.1^{o}C).

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

- Adjust work schedules.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, id., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
    - Maintain water temperature 50^{o} to 60^{o}F (10^{o} to 16.6^{o}C).
    - Provide small disposal cups that hold about four ounces (0.1 liter).
    - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
    - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
    - Train workers to recognize the symptoms of heat related illness.

3.3.3 Cold-Related Illness

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

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

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

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

Any person developing moderate hypothermia (a core temperature of 92^{O}F) cannot return to work for 48 hours.

3.3.4 Noise

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

3.3.5 Hand and Power Tools

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

3.3.6 Slips, Trips and Fall Hazards

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

3.3.7 Utilities (Electrocution and Fire Hazards)

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All excavation work will be preceded by review of available utility drawings and by notification of the subsurface work to the N.Y. One –Call–Center. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death.

3.4 Biological Hazards

3.4.1 Animals

No animals are expected to be encountered during site operations.

3.4.2 Insects

Insects are not expected to be encountered during site operations.

3.5 Additional Safety Analysis

3.5.1 Presence of Non-Aqueous Phase Liquids (NAPL)

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

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

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

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

3.6 Job Safety Analysis

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

4.0 PERSONNEL TRAINING

4.1 Basic Training

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

4.2 Initial Site-Specific Training

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

4.3 Tailgate Safety Briefings

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

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

5.0 MEDICAL SURVEILLANCE

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

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

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 Levels of Protection

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

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

Level D Protection (as needed)

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

Level D Protection (Modified, as needed)

- Safety glasses with sideshields or chemical splash goggles
- Safety boots/shoes (toe-protected)
- Disposable chemical-resistant boot covers
- Coveralls (polycoated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)
- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection (as needed)
- Personal floatation device (for work within 5 ft of the water)

- Reflective traffic vest

Level C Protection (as needed)

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

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

6.2 Respirator Fit-Test

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

6.3 Respirator Cartridge Change-Out Schedule

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

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

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

7.0 AIR QUALITY MONITORING AND ACTIONS LEVELS

7.1 Monitoring During Site Operations

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

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

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

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

7.1.1 Volatile Organic Compounds

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

7.1.2 Metals

Based upon the site historical fill, there is a potential for the soils to contain PAHs and metals. During invasive procedures which have the potential for creating airborne dust, such as

excavation of dry soils, a real time airborne dust monitor such as a Mini-Ram may be used to monitor for air particulates. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. If dust levels are observed to be greater than 0.100 mg/m^3 or visible dust is observed for longer than 15 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for dust monitoring are provided in Table 4.

7.2 Monitoring Equipment Calibration and Maintenance

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

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

7.3 Determination of Background Levels

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

Table 4 lists the instrument action levels.

8.0 COMMUNITY AIR MONITORING PROGRAM

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

Monitoring for dust and odors will be conducted during all ground intrusive activities by the FTL. Continuous monitoring on the perimeter of the work zones for odor, VOCs, and dust may be required for all ground intrusive activities such as soil excavation and handling activities. The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone and for periodic monitoring for VOCs during activities such as soil and groundwater sampling and .soil excavation.

The site perimeter will be monitored for fugitive dust emissions by visual observations as well as instrumentation measurements (if required). When required, particulate or dust will be monitored continuously with real-time field instrumentation that will meet, at a minimum, the performance standards from DER-10 Appendix 1B.

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

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

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

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

8.1 Vapor Emission Response Plan

This section applies if VOC monitoring is required. If the ambient air concentration of organic

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

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

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

8.2 Major Vapor Emission

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

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

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

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

8.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

- The local police authorities will immediately be contacted by the HSO or FTL and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone.

If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO or FTL; and

- All Emergency contacts will go into effect as appropriate.

8.4 Dust Suppression Techniques

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

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

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

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

9.0 WORK ZONES AND DECONTAMINATION

9.1 Site Control

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

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

Exclusion Zone (EZ) - All activities which may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an EZ. Decontamination of field equipment will

also be conducted in the Contaminant Reduction Zone (CRZ) which will be located on the perimeter of the EZ. The EZ and the CRZ will be clearly delineated by cones, tapes or other means. The HSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

9.2 Contamination Zone

9.2.1 Personnel Decontamination Station

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

9.2.2 Minimization of Contact with Contaminants

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

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

9.2.3 Personnel Decontamination Sequence

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

9.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury), provisions shall be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with polyethylene sheeting to eliminate any potential inhalation hazards. All

emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent data.

9.2.5 Hand-Held Equipment Decontamination

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

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

9.2.6 Heavy Equipment Decontamination

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

9.3 Support Zone

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

9.4 Communications

The following communications equipment will be utilized as appropriate.

- Telephones - A cellular telephone will be located with the HSO for communication with the HSM and emergency support services/facilities.

- Hand Signals - Hand signals shall be used by field teams, along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:

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

9.5 The Buddy System

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

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

10.0 NEAREST MEDICAL ASSISTANCE

The address and telephone number of the nearest hospital:

St. John's Episcopal Hospital
327 Beach 19th Street
Far Rockaway, New York
718-869-7000

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

11.0 STANDING ORDERS/SAFE WORK PRACTICES

The standing orders, which consist of a description of safe work practices that must always be followed while on-site by Langan employees and contractors, are shown in Attachment A. The

site HSO and FTL each have the responsibility for enforcing these practices. The standing orders will be posted prominently at the site, or are made available to all personnel at all times. Those who do not abide by these safe work practices will be removed from the site.

12.0 SITE SECURITY

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

13.0 UNDERGROUND UTILITIES

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

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

14.0 SITE SAFETY INSPECTION

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

15.0 HAND AND POWER TOOLS

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

16.0 EMERGENCY RESPONSE

16.1 General

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, and preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures. In case of emergency, in addition to 911, when a Langan employee is injured, contact the Langan contractor Incident Intervention at 888-449-7787 as soon as possible. When a non-injury incident occurs, contact the Langan Incident Hotline at ***(800) 9-LANGAN*** (800-952-6426) extension 4699 as soon as possible.

16.2 Responsibilities

16.2.1 Health and Safety Officer (HSO)

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

16.2.2 Emergency Coordinator

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

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

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

16.2.3 Site Personnel

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

16.3 Communications

Once an emergency situation has been stabilized, or as soon as practically possible, the HSO will contact the Langan Incident/Injury Hotline (1-800-952-6426) or (973-560-4699) and Project Manager of identify any emergency situation.

16.4 Local Emergency Support Units

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

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

16.5 Pre-Emergency Planning

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

16.6 Emergency Medical Treatment

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

- First Aid Kit: Contractor Mobile Office or Vehicles

- Emergency Eye Wash: Contractor Mobile office or Vehicles

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

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

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

16.8 Emergency Site Evacuation Routes and Procedures

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

16.9 Fire Prevention and Protection

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

16.9.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- Shutting off engines to refuel.

- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.

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

16.10 Significant Vapor Release

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

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

16.11 Overt Chemical Exposure

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

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

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

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

16.12 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO or designee will accompany contaminated victims to the medical facility to advice on matters involving decontamination when necessary. The outer garments can be removed if they do not cause delays, interfere with

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

16.13 Adverse Weather Conditions

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

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

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

16.14 Spill Control and Response

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

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

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

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

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

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

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

16.15 Emergency Equipment

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

- Industrial first aid kit.

- Fire extinguishers (one per site).

16.16 Restoration and Salvage

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

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

16.17 Documentation

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

17.0 RECORDKEEPING

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

17.1 Field Change Authorization Request

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

17.2 Medical and Training Records

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

17.3 Onsite Log

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

17.4 Daily Safety Meetings ("Tailgate Talks")

Completed safety briefing forms will be maintained by the HSO.

17.5 Exposure Records

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

17.6 Hazard Communication Program/MSDS-SDS

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

17.7 Documentation

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

18.0 CONFINED SPACE ENTRY

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

19.0 CHASP ACKNOWLEDGEMENT FORM

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

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

TABLES

TABLE 1
TASK HAZARD ANALYSES

Task	Hazard	Description	Control Measures	First Aid
1.3.1 – 1.3.11	Contaminated Soil or Groundwater-Dermal Contact	Contaminated water spills on skin, splashes in eyes; contact with contaminated soil/fill during construction activities or sampling.	Wear proper PPE; follow safe practices, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.11	Lacerations, abrasions, punctures	Cutting bailer twine, pump tubing, acetate liners, etc. with knife; cuts from sharp site objects or previously cut piles, tanks, etc.; Using tools in tight spaces	Wear proper PPE; follow safe practices	Clean wound, apply pressure and/or bandages; seek medical attention as required.
1.3.1 – 1.3.11	Contaminated Media Inhalation	Opening drums, tanks, wells; vapors for non-aqueous phase liquids or other contaminated site media; dust inhalation during excavation; vapor accumulation in excavation	Follow air monitoring plan; have quick access to respirator, do not move or open unlabeled drums found at the site, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.11	Lifting	Improper lifting/carrying of equipment and materials causing strains	Follow safe lifting techniques; Langan employees are not to carry contractor equipment or materials	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.11	Slips, trips, and falls	Slips, trips and falls due to uneven surfaces, cords, steep slopes, debris and equipment in work areas	Good housekeeping at site; constant awareness and focus on the task; avoid climbing on stockpiles; maintain safe distance from construction activities and excavations; avoid elevated areas over six feet unless fully accredited in fall protection and wearing an approved fall protection safety apparatus	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.11	Noise	Excavation equipment, hand tools, drilling equipment.	Wear hearing protection; maintain safe distance from construction activities	Seek medical attention as required
1.3.1 – 1.3.11	Falling objects	Soil material, tools, etc. dropping from drill rigs, front-end loaders, etc.	Hard hats to be worn at all times while in work zones; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.11	Underground/ overhead utilities	Excavation equipment, drill rig auger makes contact with underground object; boom touches overhead utility	"One Call" before dig; follow safe practices; confirm utility locations with contractor; wear proper PPE; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.11	Insects (bees, wasps, hornet, mosquitoes, and spider)	Sings, bites	Insect Repellent; wear proper protective clothing (work boots, socks and light colored pants);field personnel who may have insect allergies (e.g., bee sting) should provide this information to the HSO or FSO prior to commencing work, and will have allergy medication on site.	Seek medical attention as required
1.3.1 – 1.3.11	Vehicle traffic / Heavy Equipment Operation	Vehicles unable to see workers on site, operation of heavy equipment in tight spaces, equipment failure, malfunctioning alarms	Wear proper PPE, especially visibility vest; use a buddy system to look for traffic; rope off area of work with cones and caution tape or devices at points of hazard, maintain safe distance from construction activities and equipment	Seek medical attention as required

TABLE 2
CONTAMINANT HAZARDS OF CONCERN

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	1,2,4-Trimethylbenzene	95-63-6	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	1,2-Dichloroethene 1,2-Dichloroethylene 1,2-DCE Total 1,2-Dichloroethene cis-1,2-Dichloroethylene mixture of cis and trans Acetylene dichloride cis-Acetylene dichloride trans-Acetylene dichloride sym-Dichloroethylene cis- 1,2-Dichloroethene Trans-1,2-Dichloroethylene, tDCE cDCE Trans-1,2-Dichloroethene 1,1-dimethyl-;dimethyl1,1-cyclohexane trans-1,2-Dichloroethylene	156-59-2 156-60-5 540-59-0	PID	200 ppm 4000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	Irritant to eyes, skin, mucous membranes and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	1,3,5-Trimethylbenzene Mesitylene sym-Trimethylbenzene	108-67-8	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	1,3-Butadiene Biethylene Bivinyl Butadiene Divinyl Erythrene Vinylethylene	106-99-0	PID	1 ppm 2000 ppm	Vapor	inhalation, skin and/or eye contact (liquid)	irritation to the eyes, nose, throat; drowsiness, dizziness; liquid: frostbite; teratogenic, reproductive effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.11	1H,1H,2H,2H.Perfluorooctanes ulfonic Acid (6:2FTS) Sodium 1H,1H, 2H, 2H-Perfluorooctane Sulfonate (6:2)(6:2FTS) 6:2 Fluorinated Telomer Sulfonates (6:2FTS) Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	2-Butanone Ethyl methyl ketone MEK Methyl acetone Methyl ethyl ketone	78-93-3	PID	200 ppm 3000 ppm	Soil Groundwater Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eye: Irrigate immediately Skin: Water wash immediately Breathing: Fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	2-Hexanone Butyl methyl ketone MBK Methyl butyl ketone Methyl n-butyl ketone	591-78-6	PID	100 ppm 1600 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	4,4′-DDD Dichlorodiphenyldichloroethane 1,1'-(2,2-Dichloroethylidene)bis (4-chlorobenzene)	72-54-8	None	NA NA	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	4-Methyl-2-pentanone Hexone Isobutyl methyl ketone Methyl isobutyl ketone MIBK	108-10-1	PID	100 ppm 500 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Acenaphthene 1,2-Dihydroacenaphthylene 1,8-Ethylenenaphthalene peri-Ethylenenaphthalene Naphthyleneethylene Tricyclododecapentaene	83-32-9	PID	NA NA	Soil	inhalation, ingestion, skin and/or eye contact,	irritation to the skin, eyes, mucous membranes and upper respiratory tract; If ingested, it can cause vomiting	Eye: Irrigate immediately Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately
1.3.1 – 1.3.11	Acetone Dimethyl ketone Ketone propane 2-Propanone	67-64-1	PID	1000 ppm 2500 ppm	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Acrylonitrile Acrylonitrile monomer AN Cyanoethylene Propenenitrile 2-Propenenitrile VCN, Vinyl cyanide	107-13-1	PID	1 ppm 85 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; asphyxia; headache; sneezing; nausea, vomiting; lassitude (weakness, exhaustion), dizziness; skin vesiculation; scaling dermatitis; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Water wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Aluminum	7429-90-5	None	0.5 mg/m3 50 mg/m3	Soil	inhalation, skin and/or eye contact	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Anthracene	120-12-7	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to the skin, eyes, mucous membranes and upper respiratory tract, abdominal pain if ingested.	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, Breathing: Move to fresh air, refer to medical attention; Swallow: refer to medical attention
1.3.1 – 1.3.11	Antimony	7440-36-0	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation skin, possible dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Aroclor 1260	11096-82-5	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Arsenic	NA	None	0.5 mg/m³ NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation skin, possible dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Barium	10022-31-8	None	0.5 mg/m³ 50 mg/m³	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Benzene Benzol Phenyl hydride	71-43-2	PID	3.19 mg/m³ 1,595 mg/mg³	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; lassitude (weakness, exhaustion) [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Benzo(a)anthracene Benzanthracene Benzanthrene 1,2-Benzanthracene Benzo[b]phenanthrene Tetraphene	56-55-3	PID	0.2 mg/m³ 80 mg/m³ (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Benzo(a)pyrene	50-32-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately, seek medical attention Skin: Soap wash immediately; Breathing: move to fresh air; Swallow: Induce vomiting if conscious, seek medical attention immediately
1.3.1 – 1.3.11	Benzo(b)fluoranthene	205-99-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.11	Benzo(g,h,i)perylene Benzo(ghi)perylene	191-24-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	NA	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Benzo(k)fluoranthene	207-08-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.11	Beryllium	7440-41-7	None	0.002 mg/m^3 4 mg/m^3	Soil	inhalation, skin and/or eye contact	berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation to the eyes; dermatitis; [potential occupational carcinogen]	Eye: Irrigate immediately Breathing: Fresh air
1.3.1 – 1.3.11	BTEX Benzene, Toluene, Ethylbenzene M-Xylene, O-Xylene And P-Xylene; BTEX I; BTEX II; BTEX Mixture I; BTEX Mixture II; BTEX Stock Standard	NA	PID	3.19 mg/m^3 1,595 mg/mg^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; lassitude (weakness, exhaustion) [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Cadmium	7440-43-9	None	0.005 mg/m^3 9 mg/m^3	Soil	inhalation, ingestion	pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Calcium	7440-70-2	None	NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, upper resp tract; ulcer, perforation nasal septum; pneumonitis; dermatitis	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Carbon disulfide	75-15-0	PID	20 ppm 500 ppm	Soil Groundwater Vapor	inhalation, skin or eye contact, ingestion	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately (liquid) Skin: Water flush immediately (liquid) Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Carbon tetrachloride Carbon chloride Carbon tet Freon® 10 Halon® 104 Tetrachloromethane	56-23-5	PID	10 ppm 200 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Chloroform Methane trichloride Trichloromethane	67-66-3	None	50 ppm 500 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Chromium Total Chromium	7440-47-3	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Chrysene Benzo[a]phenanthrene 1,2-Benzphenanthrene	218-01-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eye, skin, and respiratory, gastrointestinal irritation nausea, vomit, diarrhea [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Cis-Chlordane Cic-Chlordane a-Chlordane alpha Chlordane alpha-chlordane cis-Chlordan CIS-CHLORDANE Chlordane cis-;Chlordane cis;ALPHA-CHLORDAN Chlordan, cis-ALPHA-CHLORDANE alpha(cis)-chlordane α-chlordane solution	5102-71-9	None	0.5 mg/m³ 100 mg/m³	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Cobalt	7440-48-4	None	0.1mg/m³ 20 mg/m³	Soil	inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Copper	7440-50-8	None	1.0 mg/m³ 100 mg/m³	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, metallic taste; dermatitis; anemia	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Cyanide	57-12-5	None	5 mg/m^3 25 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	Exposure to cyanide can cause weakness, headaches, confusion, dizziness, fatigue, anxiety, sleepiness, nausea and vomiting. Breathing can speed up then become slow and gasping. Coma and convulsions also occur. If large amounts of cyanide have been absorbed by the body, the person usually collapses and death can occur very quickly. Long-term exposure to lower levels of cyanide can cause skin and nose irritation, itching, rashes and thyroid changes.	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Cyclohexane Benzene hexahydride Hexahydrobenzene Hexamethylene Hexanaphthene	110-82-7	PID	300 ppm 1300 ppm	Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	DDE 4,4-DDE 1,1-bis-(4-chlorophenyl)-2,2-dichloroethene Dichlorodiphenyldichloroethylene	72-55-9	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	Oral ingestion of food is the primary source of exposure for the general population. Acute and chronic ingestion may cause nausea, vomiting, diarrhea, stomach pain, headache, dizziness, disorientation, tingling sensation, kidney damage, liver damage, convulsions, coma, and death. 4,4' DDE may cross the placenta and can be excreted in breast milk	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	DDT 4,4-DDT 4,4'-DDT p,p'-DDT Dichlorodiphenyltrichloroethane 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane	50-29-3	None	1 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Dibenz(a,h)anthracene Dibenzo(a,h)anthracene	53-70-3	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support PID Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Dibenzofuran	132-64-9	None	NA NA	Soil	inhalation, absorption	irritation to eyes, and skin	Eyes: Irrigate immediately Skin: Soap wash promptly.
1.3.1 – 1.3.11	Dichlorodifluoromethane Difluorodichloromethane, Fluorocarbon 12 Freon 12 Freon® 12 Genetron® 12 Halon® 122 Propellant 12 Refrigerant 12 Dichlorodifluromethane	75-71-8	None	1000 pp, 15,000 ppm	Groundwater Soil Vapor	inhalation, skin and/or eye contact (liquid)	dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.11	Dieldrin HEOD 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo exo-5,8-dimethanonaphthalene	60-57-1	PID	0.25 mg/m^3 50 mg/m^3	Groundwater Soil Water	inhalation, skin absorption, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; [potential occupational carcinogen]; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Diesel Fuel automotive diesel fuel oil No. 2 distillate diesoline diesel oil diesel oil light diesel oil No. 1-D summer diesel	68334-30-5	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Ethyl acetate Acetic ester Acetic ether Ethyl ester of acetic acid Ethyl ethanoate	141-78-6	PID	400 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin, nose, throat; narcosis; dermatitis	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Ethyl benzene Ethylbenzene Ethylbenzol Phenylethane	100-40-4	PID	435 mg/m^3 3,472 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Ethyl chloride Chloroethane Hydrochloric ether Monochloroethane Muriatic ether Hydrochloric ether	75-00-3	PID	1000 ppm 3800 ppm	Groundwater Soil Vapor	inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Fluoranthene Benzo(j, k)fluorene	206-44-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Fluorene	86-73-7	PID	0.2 mg/m³ 80 mg/m³ (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attenti
1.3.1 – 1.3.11	Fuel Oil No. 2	68476-30-2	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Gasoline	8006-61-9	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Helium	7440-59-7	Helium Detector	NA NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Heptachlor	76-44-8	None	0.5 mg/m^3 35 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: tremor, convulsions; liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Heptane n-Heptane	142-82-5	PID	500 ppm 750 ppm	Goundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	dizziness, stupor, incoordination; loss of appetite, nausea; dermatitis; chemical pneumonitis (aspiration liquid); unconsciousness	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Hexavalent Chromium Chromium VI	18540-29-9	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Indeno(1,2,3-cd)pyrene Indeno(1,2,3-c,d)Pyrene	193-39-5	None	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately, wash mouth with water

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Iron	7439-89-6	None	10 mg/m^3 NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Isopropyl alcohol Iso-Propyl Alcohol Carbinol IPA Isopropanol 2-Propanol sec-Propyl alcohol Rubbing alcohol Isopropylalcohol	67-63-0	PID	400 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin; in animals: narcosis	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Lead	7439-92-1	None	0.050 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation to the eyes; hypertension	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Magnesium	7439-95-4	None	15 mg/m^3 NA	Soil	inhalation, skin and/or eye contact	irritation to the eyes, skin, respiratory system; cough	Eye: Irrigate immediately Breathing: Fresh air

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Manganese	7439-96-5	None	5 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, ingestion	aerosol is irritating to the respiratory tract	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Mercury	7439-97-6	None	0.1 mg/m^3 10 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Methyl Chloride Chloromethane Monochloromethane	74-87-3	NA	100 ppm 2000 ppm	Groundwater Soil	inhalation, skin and/or eye contact	dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Methyl chloroform Chlorothene 1,1,1-Trichloroethane 1,1,1-Trichloroethane-(stabilized) 1,1,1-TCA	71-55-6	PID	350 ppm 700 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention
1.3.1 – 1.3.11	Methylene Chloride Dichloromethane Methylene dichloride	75-09-2	PID	25 ppm 2300 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	m-Xylenes 1,3-Dimethylbenzene m-Xylol Metaxylene	108-38-3	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Naphthalene Naphthalin Tar camphor White tar	91-20-3	PID	50 mg/m^3 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; hematuria (blood in the urine); dermatitis, optical neuritis	Eye: Irrigate immediately Skin: Molten flush immediately/solid-liquid soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	n-Hexane Hexane, Hexyl hydride, normal-Hexane	110-54-3	PID	500 ppm 1100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weak; dermatitis; dizziness; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Nickel	7440-02-0	None	NA 10 mg/m^3	Groundwater Soil	ion, ingestion, skin and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Methane Hydrogen Sulfide Carbon Monoxide Nitrogen	 7782-44-7 74-82-8 7783-08-4 830-08-0 7727-37-9	Multi-Gas PID	 NA/NA NA/NA 10/100 ppm 50/1200 ppm NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.11	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Isobutylene Nitrogen	 7782-44-7 115-11-7 7727-37-9	PID	 NA/NA NA/NA NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	o-Xylenes 1,2-Dimethylbenzene ortho-Xylene o-Xylol	95-47-6	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	N-methyl perfluorooctane-sulfonamidoacetic acid	2355-31-9	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	N-ethyl perfluorooctane-sulfonamidoacetic acid	2991-50-6	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorobutanesulfonic acid FC-98 Nonaflate Nonafluorobutanesulphonic acid Perfluorobutanesulfonic Acid Perfluorobutane sulfonate PFBS	375-73-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Perfluorobutanoic Acid Heptafluorobutyric acid Heptafluorobutanoic acid Perfluorobutyric acid PFBA	375-22-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorodecanesulfonic Acid PFDS	335-77-3	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorodecanoic acid PFDA	335-76-2	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorododecanoic acid Perfluoralauric acid Tricosafluorododecanoic acid PFDoA	307-55-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Perfluoroheptane sulfonic Acid Perfluoroheptane sulfonate Perfluoroheptanesulfonic acid PFHpS	375-92-8	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluoroheptanoic Acid PFHpA	375-85-9	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorohexanesulfonic Acid perfluorohexanesulfonate perfluorohexanesulfonic acid PFHxS	355-46-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorohexanoic Acid PFHxA	307-24-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Perfluoronoanoic Acid Perfluorononanoic Acid PFNA perfluoro-n-nonanoic acid perfluorononanoate	375-95-1	NA	None None	Groundwater	Groundwater	inhalation, skin or eye contact, ingestion; strong acid	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorooctanesulfonamide Erfluoroctylsulfonamide Perfluorooctane sulfonamide Heptadecafluorooctanesulphonamide Perfluorooctanesulfonic acid amide Deethylsulfluramid FC-99 PFOSA	754-91-6	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorooctanoic Acid PFOA pentadecafluorooctanoic acid perfluorooctanoate perfluorocaprylic acid	335-67-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluoropentanoic Acid PFPeA	2706-90-3	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Perfluoroundecanoic Acid PFUnA PFUnDA Perfluoroundecanoic Acid Henicosafluoroundecanoic Acid	4234-23-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorotetradecanoic Acid PFTA	376-06-7	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Perfluorotridecanoic Acid PFTrDA Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	72629-94-8	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	p-Ethyltoluene 4-Ethyltoluene 1-ethyl-4-methyl-benzene 1-methyl-4-ethylbenzene	622-96-8	NA	NA NA	Soil	ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Phenanthrene	85-01-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.11	Phenol Carbolic acid Hydroxybenzene, Monohydroxybenzene Phenyl alcohol Phenyl hydroxide	108-95-2	PID	5 ppm 250 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine, skin burns; dermatitis; tremor, convulsions, twitching	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Potassium	7440-09-7	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin and/or eye contact inhalation, ingestion, skin and/or eye contact	eye: Causes eye burns. Skin: Causes skin burns. Reacts with moisture in the skin to form potassium hydroxide and hydrogen with much heat. ingestion: Causes gastrointestinal tract burns. inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.	Eyes: Get medical aid immediately Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Ingestion: If victim is conscious and alert, give 2-4 full cups of milk or water. Get medical aid immediately. inhalation: Get medical aid immediately.
1.3.1 – 1.3.11	Propylene Propene Methyl ethylene	115-07-1	PID	NA NA	Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat, skin burns asphyxiation	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	p-Xylenes 1,4-Dimethylbenzene para-Xylene p-Xylol	106-42-3	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Pyrene benzo[def]phenanthrene	129-00-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.11	Selenium	7782-49-2	None	1 mg/m^3 0.2 mg/m^3	Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Silver	7440-22-4	None	0.01 mg/m³ 10 mg/m³	Soil	inhalation, ingestion, skin and/or eye contact	blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Sodium	7440-23-5	None	NA NA	Groundwater Soil	ion, ingestion, skin and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Styrene Ethenyl benzene Phenylethylene Styrene monomer Styrol Vinyl benzene	100-42-5	PID	100 ppm 700 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose, respiratory system; headache, lassitude (weakness, exhaustion), dizziness, confusion, malaise (vague feeling of discomfort), drowsiness, unsteady gait; narcosis; defatting dermatitis; possible liver injury; reproductive effects	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Tetrachloroethylene Perchlorethylene Perchloroethylene PCE Perk Tetrachlorethylene Tetrachloroethene	127-18-4	PID	100 ppm 150 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Tetrahydrofuran Diethylene oxide 1,4-Epoxybutane Tetramethylene oxide THF	109-99-9	PID	200 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, skin and/or eye contact, ingestion	irritation to the eyes, upper respiratory system; nausea, dizziness, headache, central nervous system depression	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immedi
1.3.1 – 1.3.11	Toluene Methyl benzene Methyl benzol Phenyl methane Toluol	108-88-3	PID	200 ppm 500 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, paresthesia; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Total PCBs Chlorodiphenyl (42% chlorine) Aroclor® 1242 PCB Polychlorinated biphenyl	53469-21-9	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Total Xylenes Dimethylbenzene Xylol	1330-20-7	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Trichloroethylene Ethylene trichloride TCE Trichloroethene Trilene	79-01-6	PID	100 ppm 1000 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Trichlorofluoromethane Fluorotrichloromethane Freon® 11 Monofluorotrichloromethane Refrigerant 11 Trichloromonofluoromethane	75-69-4	PID	1000 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Trivalent Chromium Chromium III	NA	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.11	Vanadium	7440-62-2	None	0.1 mg/m3 15 mg/m3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.11	Zinc	7440-62-2	None	15 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation	chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Breathing: Respiratory support`

EXPLANATION OF ABBREVIATIONS

PID = Photoionization Detector
PEL = Permissible Exposure Limit (8-hour Time Weighted Average)
IDLH = Immediately Dangerous to Life and Health
ppm = part per million
mg/m^3 = milligrams per cubic meter
500 mg/m^3

TABLE 3
Summary of Monitoring Equipment

Instrument	Operation Parameters
Photoionization Detector (PID)	**Hazard Monitored:** Many organic and some inorganic gases and vapors. **Application:** Detects total concentration of many organic and some inorganic gases and vapors. Some identification of compounds is possible if more than one probe is measured. **Detection Method:** Ionizes molecules using UV radiation; produces a current that is proportional to the number of ions. **General Care/Maintenance:** Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories. **Typical Operating Time:** 10 hours. 5 hours with strip chart recorder.
Oxygen Meter	**Hazard Monitored:** Oxygen (O_2). **Application:** Measures the percentage of O_2 in the air. **Detection Method:** Uses an electrochemical sensor to measure the partial pressure of O_2 in the air, and converts the reading to O_2 concentration. **General Care/Maintenance:** Replace detector cell according to manufacturer's recommendations. Recharge or replace batteries prior to explanation of the specified interval. If the ambient air is less than 0.5% C O_2, replace the detector cell frequently. **Typical Operating Time:** 8 – 12 hours.
Additional equipment (if needed, based on site conditions)	
Combustible Gas Indicator (CGI)	**Hazard Monitored:** Combustible gases and vapors. **Application:** Measures the concentration of combustible gas or vapor. **Detection Method:** A filament, usually made of platinum, is heated by burning the combustible gas or vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present. **General Care/Maintenance:** Recharge or replace battery. Calibrate immediately before use. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.
Flame Ionization Detector (FID) with Gas Chromatography Option *(i.e., Foxboro Organic Vapor Analyzer (OVA))*	**Hazard Monitored:** Many organic gases and vapors (approved areas only). **Application:** In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode, identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated. **General Care/Maintenance:** Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance as described in the manual. Check for leaks. **Typical Operating Time:** 8 hours; 3 hours with strip chart recorder.
Potable Infrared (IR) Spectrophotometer	**Hazard Monitored:** Many gases and vapors. **Application:** Measures concentration of many gases and vapors in air. Designed to quantify one or two component mixtures. **Detection Method:** Passes different frequencies of IR through the sample. The frequencies absorbed are specific for each compound. **General Care/Maintenance:** As specified by the manufacturer.

Instrument	Operation Parameters
Direct Reading Colorimetric Indicator Tube	**Hazard Monitored:** Specific gas and vapors. **Application:** Measures concentration of specific gases and vapors. **Detection Method:** The compound reacts with the indicator chemical in the tube, producing a stain whose length or color change is proportional to the compound's concentration. **General Care/Maintenance:** Do not use a previously opened tube even if the indicator chemical is not stained. Check pump for leaks before and after use. Refrigerate before use to maintain a shelf life of about 2 years. Check expiration dates of tubes. Calibrate pump volume at least quarterly. Avoid rough handling which may cause channeling.
Aerosol Monitor	**Hazard Monitored:** Airborne particulate (dust, mist, fume) concentrations **Application:** Measures total concentration of semi-volatile organic compounds, PCBs, and metals. **Detection Method:** Based on light-scattering properties of particulate matter. Using an internal pump, air sample is drawn into the sensing volume where near infrared light scattering is used to detect particles. **General Care/Maintenance:** As specified by the mfr. Also, the instrument must be calibrated with particulates of a size and refractive index similar to those to be measured in the ambient air.
Monitox	**Hazard Monitored:** Gases and vapors. **Application:** Measures specific gases and vapors. **Detection Method:** Electrochemical sensor relatively specific for the chemical species in question. **General Care/Maintenance:** Moisten sponge before use; check the function switch; change the battery when needed.
Gamma Radiation Survey Instrument	**Hazard Monitored:** Gamma Radiation. **Application:** Environmental radiation monitor. **Detection Method:** Scintillation detector. **General Care/Maintenance:** Must be calibrated annually at a specialized facility. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

TABLE 4
INSTRUMENTATION ACTION LEVELS

Photoionization Detector Action Levels	**Action Required**
Background to 5 ppm	No respirator; no further action required
> 1 ppm but < 5 ppm for > 5 minutes	1. Temporarily discontinue all activities and evaluate potential causes of the excessive readings. If these levels persist and cannot be mitigated (i.e., by slowing drilling or excavation activities), contact HSO to review conditions and determine source and appropriate response action. 2. If PID readings remain above 1 ppm, temporarily discontinue work and upgrade to Level C protection. 3. If sustained PID readings fall below 1 ppm, downgrading to Level D protection may be permitted.
> 5 ppm but < 150 ppm for > 5 minutes	1. Discontinue all work; all workers shall move to an area upwind of the jobsite. 2. Evaluate potential causes of the excessive readings and allow work area to vent until VOC concentrations fall below 5 ppm. 3. Level C protection will continue to be used until PID readings fall below 1 ppm.
> 150 ppm	Evacuate the work area

Notes:
1. 1 ppm level based on OSHA Permissible Exposure Limit (PEL) for benzene.
2. 5 ppm level based on OSHA Short Term Exposure Limit (STEL) maximum exposure for benzene for any 15 minute period.
3. 150 ppm level based on NIOSH Immediately Dangerous to Life and Health (IDLH) for tetrachloroethylene.

TABLE 5
EMERGENCY NOTIFICATION LIST

ORGANIZATION	CONTACT	TELEPHONE
Local Police Department	NYPD	911
Local Fire Department	NYFD	911
Ambulance/Rescue Squad	NYFD	911
Hospital	St. John's Episcopal Hospital	911 or 718-869-7000
Langan Incident / Injury Hotline		800-952-6426 ex 4699
Langan Environmental Project Manager	Jennifer Armstrong	917-613-7234 (cell)
Langan Geotechnical Project Manager	Laurence Ford	201-665-6438 (cell)
Langan Health and Safety Manager (HSM)	Tony Moffa	215-756-2523 (cell)
Langan Health & Safety Officer (HSO)	William Bohrer	410-984-3068 (cell)
Langan Field Team Leader (FTL)	To Be Determined	
Client's Representative	Jesse Batus	617-695-9595
National Response Center (NRC)		800-424-8802
Chemical Transportation Emergency Center (Chemtrec)		800-424-9300
Center for Disease Control (CDC)		404-639-3534
EPA (RCRA Superfund Hotline)		800-424-9346
TSCA Hotline		202-554-1404
Poison Control Center		800-222-1222

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at 1-(800)-9-LANGAN (ext. #4699).

TABLE 6
SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR FIT AND ACCLIMATED WORKERS[A]

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F or above (32.2°C) or above	After each 45 min. of work	After each 15 min. of work
87.5°F (30.8°-32.2°C)	After each 60 min. of work	After each 30 min. of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 min. of work	After each 60 min. of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 min. of work	After each 90 min. of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 min. of work	After each 120 min. of work

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj ^{o}F = ta ^{o}F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

TABLE 7

HEAT INDEX

	ENVIRONMENTAL TEMPERATURE (Fahrenheit)										
	70	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**	**115**	**120**
RELATIVE HUMIDITY	**APPARENT TEMPERATURE***										
0%	64	69	73	78	83	87	91	95	99	103	107
10%	65	70	75	80	85	90	95	100	105	111	116
20%	66	72	77	82	87	93	99	105	112	120	**130**
30%	67	73	78	84	90	96	104	113	123	**135**	**148**
40%	68	74	79	86	93	101	110	123	**137**	**151**	
50%	69	75	81	88	96	107	120	**135**	**150**		
60%	70	76	82	90	100	114	**132**	**149**			
70%	70	77	85	93	106	124	**144**				
80%	71	78	86	97	113	**136**					
90%	71	79	88	102	122						
100%	72	80	91	108							

*Combined Index of Heat and Humidity...what it "feels like" to the body
Source: National Oceanic and Atmospheric Administration

How to use Heat Index:
1. Across top locate Environmental Temperature
2. Down left side locate Relative Humidity
3. Follow across and down to find Apparent Temperature
4. Determine Heat Stress Risk on chart at right

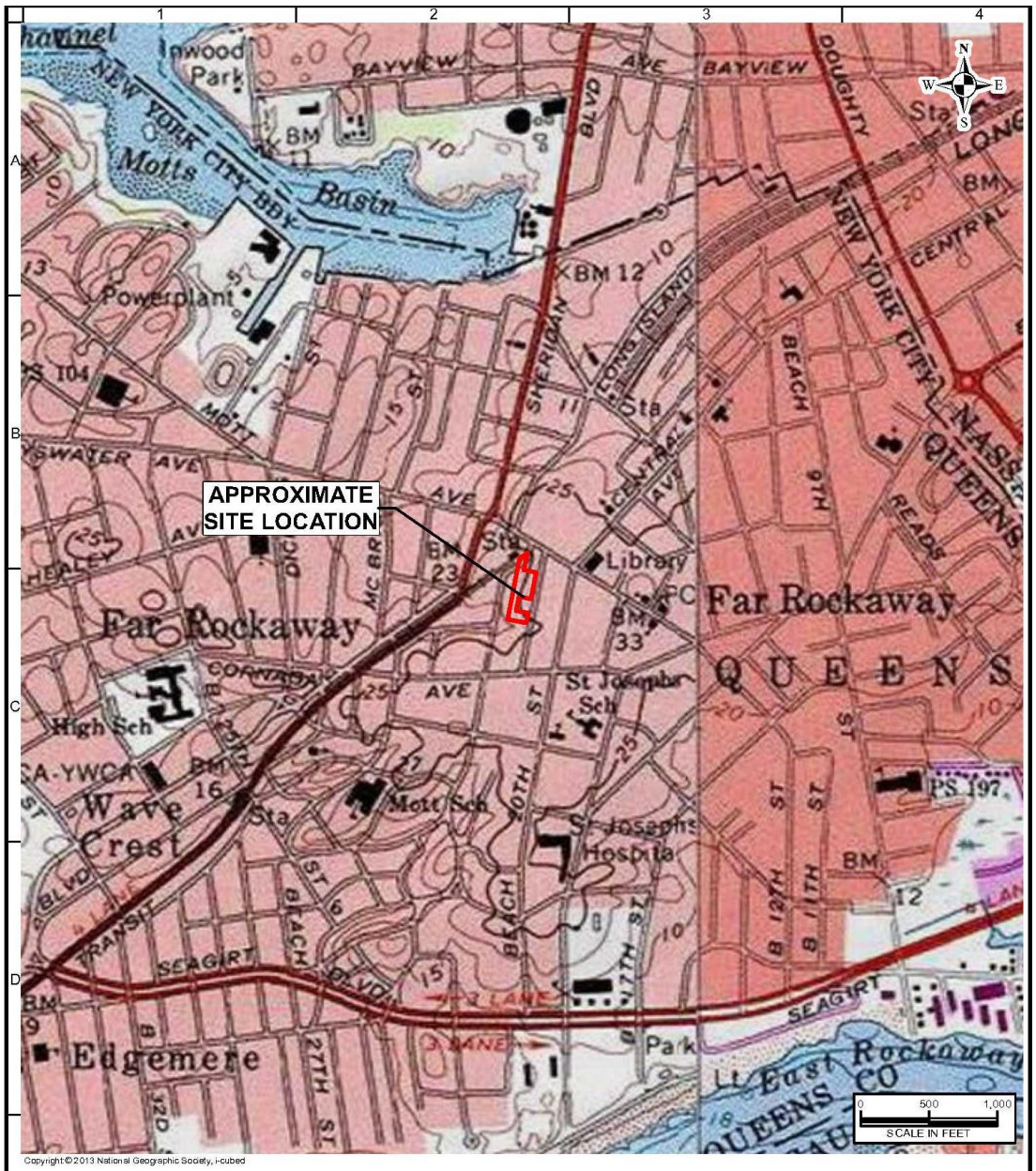
Note: Exposure to full sunshine can increase Heat Index values by up to 15 degrees F.

Apparent Temperature	**Heat Stress Risk with Physical Activity and/or Prolonged Exposure**
90-105	Heat Cramps or Heat Exhaustion Possible
105-130	Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible
>130	Heatstroke Highly Likely

FIGURES

FIGURE 1

Site Location Map



LANGAN 21 Penn Plaza, 360 West 31st Street, 6th Floor New York, NY 10001-2727 T: 212.479.5400 F: 212.479.5444 www.langan.com Langan Engineering & Environmental Services, Inc. Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. Langan International Collectively known as Langan NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400	Project **10-73 Beach 21st Street, Far Rockaway, NY** FAR ROCKAWAY QUEENS COUNTY NEW YORK	**SITE LOCATION** Spatial Reference: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet	Project No. 17054601 Date 12/5/2018 Scale 1:1,000 Drawn By Site Analyzer Submission Date 12/05/2018	Figure 1 Sheet 1 of 1

FIGURE 2
HOSPITAL ROUTE PLAN

Hospital Location: **St. John's Episcopal Hospital**
327 Beach 19th Street
Far Rockaway, New York
718-869-7000

START: 10-73 Beach 21st Street, Far Rockaway, NY.

1. Head north on Beach 21st Street toward Mott Avenue
2. Turn right onto Mott Avenue
3. Turn right onto Beach 20th Street
4. Turn left onto Plainview Avenue
5. Turn left onto Beach 29th Street, destination will be on the left.

END: Bellevue Hospital Center, 462 First Street, New York, NY

ATTACHMENT A

STANDING ORDERS

STANDING ORDERS

GENERAL

- No smoking, eating, or drinking in this work zone.
- Upon leaving the work zone, personnel will thoroughly wash their hands and face.
- Minimize contact with contaminated materials through proper planning of work areas and decontamination areas, and by following proper procedures. Do not place equipment on the ground. Do not sit on contaminated materials.
- No open flames in the work zone.
- Only properly trained and equipped personnel are permitted to work in potentially contaminated areas.
- Always use the appropriate level of personal protective equipment (PPE).
- Maintain close contact with your buddy in the work zone
- Contaminated material will be contained in the Exclusion Zone (EZ).
- Report any unusual conditions.
- Work areas will be kept clear and uncluttered. Debris and other slip, trip, and fall hazards will be removed as frequently as possible.
- The number of personnel and equipment in the work zone will be kept to an essential minimum.
- Be alert to the symptoms of fatigue and heat/cold stress, and their effects on the normal caution and judgment of personnel.
- Conflicting situations which may arise concerning safety requirements and working conditions must be addressed and resolved quickly by the site HSO.

TOOLS AND HEAVY EQUIPMENT

- Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carrying passengers.
- Loose-fitting clothing or loose long hair is prohibited around moving machinery.
- Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.
- Drilling/excavating within 10 feet in any direction of overhead power lines is prohibited.
- The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.
- Check to insure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.
- If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.
- Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as a signalman to direct backing as necessary.
- Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done, and that such equipment is completely decontaminated before moving it into the clean area of the work zone.
- Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.

ATTACHMENT B

DECONTAMINATION PROCEDURES

PERSONNEL DECONTAMINATION

LEVEL C DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Canister or Mask Change	4. If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	5. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.
Station 6:	Face piece Removal	6. Face piece is removed (avoid touching face with fingers). Face piece deposited on plastic sheets.
Station 7:	Field Wash	7. Hands and face are thoroughly washed. Shower as soon as possible.

LEVEL D DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boot, Gloves and Outer Garment Removal	4. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.
Station 5:	Field Wash	5. Hands and face are thoroughly washed. Shower as soon as possible.

EQUIPMENT DECONTAMINATION

GENERAL:

Equipment to be decontaminated during the project may include tools, monitoring equipment, respirators, sampling containers, laboratory equipment and drilling equipment.

All decontamination will be done by personnel in protective gear, appropriate for the level of decontamination, as determined by the site HSO. The decontamination work tasks will be split or rotated among support and work crews.

Depending on site conditions, backhoe and pumps may be decontaminated over a portable decontamination pad to contain wash water; or, wash water may be allowed to run off into a storm sewer system. Equipment needed may include a steam generator with high-pressure water, empty drums, screens, screen support structures, and shovels. Drums will be used to hold contaminated wash water pumped from the lined pit. These drums will be labeled as such.

Miscellaneous tools and equipment will be dropped into a plastic pail, tub, or other container. They will be brushed off and rinsed with a detergent solution, and finally rinsed with clean water.

MONITORING EQUIPMENT:

Monitoring equipment will be protected as much as possible from contamination by draping, masking, or otherwise covering as much of the instruments as possible with plastic without hindering the operation of the unit. The PID, HNu or OVA meter, for example, can be placed in a clear plastic bag, which allows reading of the scale and operation of knobs. The probes can be partially wrapped keeping the sensor tip and discharge port clear.

The contaminated equipment will be taken from the drop area and the protective coverings removed and disposed in the appropriate containers. Any dirt or obvious contamination will be brushed or wiped with a disposable paper wipe.

RESPIRATORS:

Respirators will be cleaned and disinfected after every use. Taken from the drop area, the masks (with the cartridges removed and disposed of with other used disposable gear) will be immersed in a cleaning solution and scrubbed gently with a soft brush, followed by a rinse in plain warm water, and then allowed to air dry. In the morning, new cartridges will be installed. Personnel will inspect their own masks for serviceability prior to donning them. And, once the mask is on, the wearer will check the respirator for leakage using the negative and positive pressure fit check techniques.

ATTACHMENT C

EMPLOYEE EXPOSURE/ INJURY INCIDENT REPORT

EMPLOYEE INCIDENT/INJURY REPORT
LANGAN ENGINEERING & ENVIRONMENTAL SERVICES

(Complete and return to Tony Moffa in the Doylestown Office)

Affected Employee Name: _____ Date: _____

Incident type: ☐ Injury ☐ Report Only/No Injury
☐ Near Miss ☐ Other: _____

EMPLOYEE INFORMATION (Person completing Form)

Employee Name: _____ Employee No: _____

Title: _____ Office Location: _____

Length of time employed or date of hire: _____

Mailing address: _____

_____

Sex: M ☐ F ☐ Birth date: _____

Business phone & extension: _____ Residence/cell phone: _____

ACCIDENT INFORMATION

Project: _____ Project #: _____

Date & time of incident: _____ Time work started & ended: _____

Site location: _____

Incident Type: Possible Exposure ☐ Exposure ☐ Physical Injury ☐

Names of person(s) who witnessed the incident:_____

Exact location incident occurred:

Describe work being done:_____

Describe what affected employee was doing prior to the incident occurring:

Describe in detail how the incident occurred:

Nature of the incident (List the parts of the body affected):

Person(s) to whom incident was reported (Time and Date):

List the names of other persons affected during this incident:

Possible causes of the incident (equipment, unsafe work practices, lack of PPE, etc.):

Weather conditions during incident:

MEDICAL CARE INFORMATION

Did affected employee receive medical care? Yes ☐ No ☐

If Yes, when and where was medical care received:

Provide name of facility (hospital, clinic, etc.):

Length of stay at the facility?

Did the employee miss any work time? Yes ☐ No ☐ Undetermined ☐

Date employee last worked: Date employee returned to work:

Has the employee returned to work? Yes ☐ No ☐

Does the employee have any work limitations or restrictions from the injury? : Yes ☐ No ☐

If Yes, please describe:

Did the exposure/injury result in permanent disability? Yes ☐ No ☐ Unknown ☐

If Yes, please describe:

HEALTH & SAFETY INFORMATION

Was the operation being conducted under an established site specific CONSTRUCTION CONSTRUCTION HEALTH AND SAFETY PLAN?
Yes ☐ No ☐ Not Applicable: ☐

Describe protective equipment and clothing used by the employee:

_____

_____

_____

Did any limitations in safety equipment or protective clothing contribute to or affect exposure / injury? If so, explain:

_____

_____

_____

_____

Employee Signature Date

_____

Langan Representative Date

ATTACHMENT D

CALIBRATION LOG

DATE:________________ **PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________ PROJECT:____________________

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________ **PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________ **PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

ATTACHMENT E

MATERIAL SAFETY DATA SHEETS

SAFETY DATA SHEETS

All Langan Field Personnel Completing This Work Plan Are To Have Real Time Accessibility To Material Safety Data Sheet (MSDs) or Safety Data Sheet (SDSs) Through Their Smart Phone.

The link is http://www.msds.com/
The login name is "drapehead"
The password is "2angan987"

If You Are Unable To Use the Smart Phone App, You Are To Bring Printed Copies of the MSDs/SDSs to the Site

ATTACHMENT F

JOBSITE SAFETY INSPECTION CHECKLIST

Jobsite Safety Inspection Checklist

Date: _____ **Inspected By:** _____

Location: _____ **Project #:** _____

Check one of the following: **A:** Acceptable **NA**: Not Applicable **D**: Deficiency

	A	NA	D	Remark
1. CHASP available onsite for inspection?				
2. Health & Safety Compliance agreement (in CHASP) appropriately signed by Langan employees and contractors?				
3. Hospital route map with directions posted on site?				
4. Emergency Notification List posted on site?				
5. First Aid kit available and properly stocked?				
6. Personnel trained in CPR/First Aid on site?				
7. MSDSs readily available, and all workers knowledgeable about the specific chemicals and compounds to which they may be exposed?				
8 Appropriate PPE being worn by Langan employees and contractors?				
9. Project site safe practices ("Standing Orders") posted?				
10. Project staff have 40-hr./8-hr./Supervisor HAZWOPER training?				
11. Project staff medically cleared to work in hazardous waste sites and fit-tested to wear respirators, if needed?				
12. Respiratory protection readily available?				
13. Health & Safety Incident Report forms available?				
14. Air monitoring instruments calibrated daily and results recorded on the Daily Instrument Calibration check sheet?				
15. Air monitoring readings recorded on the air monitoring data sheet/field log book?				
16. Subcontract workers have received 40-hr./8-hr./Spvsr. HAZWOPER training, as appropriate?				
17. Subcontract workers medically cleared to work on site, and fit-tested for respirator wear?				
18. Subcontract workers have respirators readily available?				
19. Mark outs of underground utilities done prior to initiating any subsurface activities?				
20. Decontamination procedures being followed as outlined in CHASP?				
21. Are tools in good condition and properly used?				
22. Drilling performed in areas free from underground objects including utilities?				

23. Adequate size/type fire extinguisher supplied?				
24. Equipment at least 20 feet from overhead powerlines?				
25. Evidence that drilling operator is responsible for the safety of his rig.				
26. Trench sides shored, layer back, or boxed?				
27. Underground utilities located and authorities contacted before digging?				
28. Ladders in trench (25-foot spacing)?				
29. Excavated material placed more than 2 feet away from excavation edge?				
30. Public protected from exposure to open excavation?				
31. People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?				
32. Confined space entry permit is completed and posted?				
33. All persons knowledgeable about the conditions and characteristics of the confined space?				
34. All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?				
35. Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?				
36. Attendant and/or supervisor certified in basic first aid and CPR?				
37. Confined space atmosphere checked before entry and continuously while the work is going on?				
38. Results of confined space atmosphere testing recorded?				
39. Evidence of coordination with off-site rescue services to perform entry rescue, if needed?				
40. Are extension cords rated for this work being used and are they properly maintained?				
41. Are GFCIs provided and being used?				

Unsafe Acts: _____

_____

_____

_____

Notes: _____

_____

_____

_____

ATTACHMENT G

JOB SAFETY ANALYSIS FORM

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA TITLE: **JSA NUMBER:**	**DATE CREATED:** **CREATED BY**: **REVISION DATE:** **REVISED BY:**

Langan employees must review and revise the Job Safety Analysis (JSA) as needed to address the any site specific hazards not identified. Employees must provide their signatures on the last page of the JSA indicating they have review the JSA and are aware the potential hazards associated with this work and will follow the provided preventive or corrective measures.

PERSONAL PROTECTIVE EQUIPMENT REQUIRED: (PPE): ■ Required ☒ As Needed		
☐ Steel-toed boots	☐ Nitrile gloves	☐ Dermal Protection (Specify)
☐ Long-sleeved shirt	☐ Leather/ Cut-resistant gloves	☐ High visibility vest/clothing
☐ Safety glasses	☐Face Shield	☐ Hard hat
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT NEEDED (Provide specific type(s) or descriptions)		
☐ Air Monitoring:	☐ Respirators:	☐ Other:

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE OR CORRECTIVE ACTION
1.	1. 2.	1a. 1b. 2a. 2b.
2.	1.	1
Additional items identified in the field.		
Additional Items.		

If additional items are identified during daily work activities, please notify all relevant personnel about the change and document on this JSA.

LANGAN	Job Safety Analysis (JSA) Health and Safety

JSA Title: **Subsurface Investigation**

JSA Number: **JSA030-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Dielectric Overshoes, Sun Block				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
1. Transport equipment to work area	1. Back/strain 2. Slip/Trip/Falls 3. Traffic 4. Cuts/abrasions/contusions from equipment 5. Accidents due to vehicle operations	1. Use proper lifting techniques/Use wheeled transport 2. Minimize distance to work area/unobstructed path to work area/follow good housekeeping procedures 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves, Langan approved safety shoes) 5. Observe posted speed limits/ Wear seat belts at all times
2. Traffic	1. Hit by moving vehicle	1. Use traffic cones and signage/ Use High visibility traffic vests and clothing/ Caution tape when working near active roadways.
3. Field Work (drilling, resistivity testing, and inspection)	1. Biological Hazards: insects, rats, snakes, poisonous plants, and other animals 2. Heat stress/injuries 3. Cold Stress/injuries 4. High Energy Transmission Lines 5. Underground Utilities 6. Electrical (soil resistivity testing)	1. Inspect work area to identify biological hazards. Wear light colored long sleeve shirt and long pants/ Use insect repellant as necessary/ Beware of tall grass, bushes, woods and other areas where ticks may live/ Avoid leaving garbage on site to prevent attracting animals/ Identify and avoid contact with poisonous plants/Beware of rats, snakes, or stray animals. 2. Wear proper clothing (light colored)/ drink plenty of water/ take regular breaks/use sun block 3. Wear proper clothing/ dress in layers/ take regular breaks. 4. Avoid direct contact with high energy transmission lines/ position equipment at least 15 feet or as required by PSE&G from the transmission lines/ wear proper PPE (dielectric overshoes 15 kV minimum rating). 5. Call one-call service before performing intrusive field work/ Review utility mark-outs and available utility drawings (with respect to proposed work locations)/ Follow Underground Utility Guidelines

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		6. See AGI Sting R1 operating manual for specific concerns during operating instrument
4. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 7. High Noise levels 8. Overhead hazards 9. Heat Stress/ Cold Stress 10. Eye Injuries	7. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 8. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 9. Wear Langan approved safety shoes 10. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 11. Wear high visibility clothing & vest / Use cones or signs to designate work area 12. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 13. Wear proper hearing protection 14. Wear hard hat / Avoid areas were overhead hazards exist. 15. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 16. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Field Sampling

JSA Number: JSA022-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☐ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
5. Unpack/Transport equipment to work area.	6. Back Strains 7. Slip/Trips/Falls 8. Cuts/Abrasions from equipment 9. Contusions from dropped equipment	6. Use proper lifting techniques/Use wheeled transport 7. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 8. Wear proper PPE (leather gloves, long sleeves). 9. Wear proper PPE (Langan approved safety shoes).
6. Initial Site Arrival-Site Assessment	1. Traffic	1. Situational awareness (be alert of your surroundings). Secure area from through traffic.
7. Surface Water Sampling	1. Contaminated media. Skin/eye contact with biological agents and/or chemicals.	1. Wear appropriate PPE (Safety glasses, appropriate gloves). Review (M)SDS for all chemicals being.
8. Sampling from bridges	1. Struck by vehicles	1. Wear appropriate PPE (Safety Vest). Use buddy system and orange safety cones.
9. Icing of Samples/ Transporting coolers/equipment from work area.	11. Back Strains 12. Slips/Trips/Falls 13. Cuts/Abrasions from equipment 14. Pinch/Crushing Hazards.	17. Drain coolers of water. Use proper lifting techniques. Use wheeled transport. 18. Have unobstructed path from work area. Aware of surroundings. 19. Wear proper PPE (Leather gloves, long sleeves) 20. Wear proper PPE (Leather gloves, long sleeves)
10. Site Departure	1. Contaminated PPE/Vehicle	1. Contaminated PPE should be disposed of on-site. Remove boots and soiled clothing for secure storage in trunk. Wash hands promptly.
11. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts or lacerations during manual handling of materials	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	3. Foot injuries 4. Back injuries 15. Traffic 16. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 17. High Noise levels 18. Overhead hazards 19. Heat Stress/ Cold Stress 20. Eye Injuries	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 21. Wear high visibility clothing & vest / Use cones or signs to designate work area 22. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 23. Wear hearing protection 24. Wear hard hat / Avoid areas were overhead hazards exist. 25. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 26. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	**Sign Name**	**Date**
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Equipment Transportation and Set-Up**

JSA Number: **JSA012-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
12. Transport equipment to work area	10. Back Strain 11. Slips/ Trips/ Falls 12. Traffic 13. Cuts/abrasions from equipment 14. Contusions from dropped equipment	1. Use proper lifting techniques / Use wheeled transport 2. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves) 5. Wear proper PPE (safety shoes)
13. Moving equipment to its planned location	2. Pinch Hazard 3. Slips/ Trips/ Falls	1. Wear proper PPE (leather gloves) 2. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray paint
14. Equipment Set-up	2. Pinch Hazard 3. Cuts/abrasions to knuckles/hands 4. Back Strain	1. Wear proper PPE (leather gloves) 2. Wear proper PPE (leather gloves) 3. Use proper lifting techniques / Use wheeled transport
15. All activities	21. Slips/ Trips/ Falls 22. Hand injuries, cuts or lacerations during manual handling of materials 23. Foot injuries 24. Back injuries 25. Traffic 26. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 27. High Noise levels 28. Overhead hazards 29. Heat Stress/ Cold Stress 30. Eye Injuries	27. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 28. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 29. Wear Langan approved safety shoes 30. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 31. Wear high visibility clothing & vest / Use cones or signs to designate work area

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
4. All activities (cont'd)		32. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 33. Wear hearing protection 34. Wear hard hat / Avoid areas were overhead hazards exist. 35. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 36. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **55-gallon Drum Sampling**

JSA Number: **JSA043-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☒ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	

☒ Other: All Drums are required to be labeled. Langan employees do not open or move undocumented drums or unlabeled drums without proper project manager authorization.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
16. Unpack/Transport equipment to work area.	15. Back Strains 16. Slip/Trips/Falls 17. Cuts/Abrasions from equipment 4. Contusions from dropped equipment	10. Use proper lifting techniques/Use wheeled transport 11. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 12. Wear proper PPE (leather gloves, long sleeves). 4. Wear proper PPE (Langan approved safety shoes).
17. Open Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 2. Pressure from drums.	1. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 2. Open drum slowly to relieve pressure. Wear proper PPE: face shield and goggles; correct gloves; and over garments.
18. Collecting Soil/Fluid Sample	4. Irritation to eye from vapor, soil dust, or splashing 5. Irritation to exposed skin	2. Wear proper eye protection including safety glasses/ face shield/googles and when necessary, splash guard. If dust or vapor phase is present, wear appropriate safety breathing gear (1/2 mask or full face mask with correct filter) 3. Wear proper skin protection including nitrile gloves.
19. Closing Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid.	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches.
20. Moving Drums	2. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 3. Back Strains	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 3. Use proper lifting techniques/Use wheeled transport

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
21. All activities	31. Slips/ Trips/ Falls 32. Hand injuries, cuts or lacerations during manual handling of materials 33. Foot injuries 34. Back injuries 35. Traffic 36. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 37. High Noise levels 38. Overhead hazards 39. Heat Stress/ Cold Stress 40. Eye Injuries	37. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 38. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 39. Wear Langan approved safety shoes 40. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 41. Wear high visibility clothing & vest / Use cones or signs to designate work area 42. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 43. Wear hearing protection 44. Wear hard hat / Avoid areas were overhead hazards exist. 45. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 46. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Direct-Push Soil Borings
JSA Number: JSA004-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT REQUIRED:				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Half-face respirator, dust cartridges, PID (if applicable)				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
22. Move equipment to work site	18. Back strain when lifting equipment 19. Slips/ Trips/ Falls while moving equipment 20. Traffic (if applicable) 21. Pinched fingers or running over toes during geoprobe set-up 22. Overturn drilling rig while transporting to loading dock on flat-bed tow truck	13. Use proper lifting technique (use legs for bending and lifting and not the back)/ Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle 14. Use proper lifting technique (use legs for bending and lifting and not the back) / Use wheeled transport for heavy equipment / Get assistance when handling loads greater than 50 lbs. / Minimize distance to vehicle / Have unobstructed path to vehicle or collection point / Do not lift/walk with boxes that are heavy/difficult to lift 15. Wear high visibility safety vests or clothing / Exercise caution 16. Wear proper PPE (cut-resistant gloves) / Stay alert, be aware of geoprobe rig at all times 17. Drill rig should be parked in center of flat-bed tow truck / Emergency brake shall be used at all times during transport on the flat-bed truck/ All unnecessary personnel should stay away from the flat-bed truck during moving activities
23. Calibration of monitoring equipment	6. Skin or eye contact with calibration chemicals 7. Pinch fingers in monitoring equipment	4. Wear proper PPE (safety glasses/ goggles) 5. Wear proper PPE (leather gloves)
24. Set-up geoprobe rig	5. Geoprobe rig movement	3. All field personnel should stay clear of the geoprobe rig while moving / Use a spotter when backing up the geoprobe
25. Advance geoprobe rods below ground surface to desired depth	4. Underground utilities 5. High noise levels	4. Clean all subsurface soil borings to a minimum of 5 feet below grade 5. Wear proper PPE (hearing protection)
26. Remove and open acetate liner	41. Pinched fingers while removing macrocore 42. Cuts/lacerations when cutting acetate liner open 43. Exposure to hazardous vapors	1. Wear proper PPE (nitrile gloves, cut-resistant or leather gloves 2. Wear proper PPE (cut-resistant or leather gloves) 3. Do not place face over acetate liner when opening / Monitor hazardous vapors in air with PID / Upgrade PPE as necessary based on levels contained in the Health and Safety Plan

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
5. Remove and open acetate liner (cont'd)	44. Skin contact with contaminated soil	4. Wear proper PPE (nitrile gloves)
27. Sample Collections a) Monitor parameters b) Prepare sample containers and labels	1. Contact with potentially contaminated soil 2. Lacerations from broken sample bottles 3. Back strain while transporting full coolers 4. Internal exposure to contaminants and metals through inhalation of dust 5. Slips/ Trips/ Falls	1. Use monitoring devices / Wear proper PPE (safety glasses, nitrile gloves) 2. Do not over-tighten bottle caps / Handle bottles safely to prevent breakage 6. Use proper lifting techniques / Do not lift heavy loads without assistance 7. Avoid creating dust / If necessary, wear a half mask respirator with applicable dust cartridge / Inspect respirator for damage and cleanliness prior to use / Clean respirator after each use and store in a clean, secure location 8. Be alert / Follow good housekeeping procedures
28. Remove excess soil from acetate liner and place in 55-gallon drum (IF NOT PERFORMED BY LANGAN, REMOVE!)	1. Cuts/lacerations from acetate liner 2. Pinched fingers/hand while opening/closing drum 3. Skin contact with contaminated soil 4. Soil debris in eyes	1. Wear proper PPE (cut-resistant or leather gloves) 2. Wear proper PPE (cut-resistant or leather gloves) 3. Wear proper PPE (nitrile gloves) 4. Wear proper PPE (safety glasses)
8. Transport drums to central staging location (IF NOT PERFORMED BY LANGAN, REMOVE!)	1. Back, arm or shoulder strain from moving drums 2. Pinch fingers/hand in drum cart when moving drums 3. Pinch fingers/hand when operating lift-gate on vehicle 4. Contact with potentially contaminated groundwater when moving improperly sealed drums 5. Slips when moving drums 6. Drop drum on feet/toes	47. Use drum cart for moving drums / Use proper lifting techniques / Do not lift heavy loads without assistance 48. Wear proper PPE (cut-resistant or leather gloves) 49. Wear proper PPE (cut-resistant or leather gloves) 50. Wear proper PPE (nitrile gloves underneath work gloves) 51. Follow good housekeeping procedures / Ensure route to move drum and storage space is free from obstructions 52. Wear proper PPE (safety shoes) / Work in a safe manner to prevent dropped drum
9. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 7. High Noise levels 8. Overhead hazards 9. Heat Stress/ Cold Stress	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 5. Wear high visibility clothing & vest / Use cones or signs to designate work area 6. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 7. Wear hearing protection 8. Wear hard hat / Avoid areas were overhead hazards exist. 9. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
9. All activities (cont'd)	10. Eye Injuries	10. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Site Inspection

JSA Number: JSA024-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☒ Rubber Boots
☒ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
29. Jobsite Pre-briefing	23. None	18. Review JSA, SOP's, and discuss hazards that may be present and control measures for present hazards while on-site.
2. Working near railroads	1. Passing Trains. 2. Slip/Trips/Falls.	1. Wear reflective vest/ Stay away from tracks/ Do not cross tracks within 10 ft. of train car or when there is a train within view/listen for train horn. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
3. Walking around site	6. Uneven terrain 7. Wildlife: Stray animals, mice/rats, vectors (i.e. mosquitoes, bees, etc.) 8. Weather: Heat/cold stress 9. Slip/Trips/Falls 10. Foot injuries 11. Eye injuries	9. Pay attention to surrounding area (puddles, wet, frozen, uneven areas); Mark with cones or spray paint. 10. Use bug spray/ Avoid stray animals/Use repellant when needed. 11. Dress for the correct weather situation/ Use sunscreen or protective clothing in sunlight, layers in cold weather/ Drink plenty of fluids/ Take breaks when needed. 4. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones. 5. Wear proper PPE (Langan approved safety shoes)/ Change wet socks during cold weather. 6. Wear proper PPE (safety glasses/goggles).
4. Working near road	1. Passing vehicles 2. Slip/Trips/Falls	1. Wear reflective vest/ Stay away from roadway/ Use buddy system/ Place signage or cones when needed. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
5. All activities	45. Slips/ Trips/ Falls 46. Hand injuries, cuts or lacerations during manual handling of materials 47. Foot injuries 48. Back injuries 49. Traffic	53. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 54. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 55. Wear Langan approved safety shoes

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	50. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 51. High Noise levels 52. Overhead hazards 53. Heat Stress/ Cold Stress 54. Eye Injuries	56. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 57. Wear high visibility clothing & vest / Use cones or signs to designate work area 58. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 59. Wear hearing protection 60. Wear hard hat / Avoid areas were overhead hazards exist. 61. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 62. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Building Construction Oversight**

JSA Number: **JSA006-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
30. Transport equipment to work area	24. Back Strain 25. Slips/ Trips/ Falls 26. Traffic 27. Cuts/abrasions from equipment 28. Contusions from dropped equipment	6. Use proper lifting techniques / Use wheeled transport 7. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 8. Wear proper PPE (high visibility vest or clothing) 9. Wear proper PPE (leather gloves, long sleeves) 10. Wear proper PPE (safety shoes)
31. Drilling/anchor bolt installation	8. Hazards associated with drilling, flying objects, heavy equipment, ground level hazards and dust 9. Slips/ Trips/ Falls 10. Hazards associated with concrete work	3. Maintain a safe distance from drilling operation / Wear proper PPE (hard hat, safety glasses, safety shoes, safety vest) 4. Be aware of potential trip hazards / Follow good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray paint / Wear the proper PPE (safety shoes) 5. Maintain a safe distance from pouring operation
32. Steel building erection	6. Overhead hazards, falling objects 7. Pinching/crushing hazards	5. Wear proper PPE (hard had, safety glasses, safety vest) / Be aware of overhead hazards and maintain a safe distance of at least 10 ft. 6. All personnel should make others aware of moving objects or their inten to move objects / Avoid areas where pinching and crushing hazards are possible
33. All activities	55. Slips/ Trips/ Falls 56. Hand injuries, cuts or lacerations during manual handling of materials 57. Foot injuries 58. Back injuries 59. Traffic 60. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 61. High Noise levels 62. Overhead hazards	63. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 64. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 65. Wear Langan approved safety shoes 66. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
4. All activities (cont'd)	63. Heat Stress/ Cold Stress 64. Eye Injuries	67. Wear high visibility clothing & vest / Use cones or signs to designate work area 68. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 69. Wear hearing protection 70. Wear hard hat / Avoid areas were overhead hazards exist. 71. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 72. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	**Sign Name**	**Date**
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Geotechnical Drilling**

JSA Number: **JSA014-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Nomex (as needed)				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
34. Transport equipment to work area	29. Back Strain 30. Slips/ Trips/ Falls 31. Traffic 32. Cuts/abrasions from equipment 33. Contusions from dropped equipment	11. Use proper lifting techniques / Use wheeled transport 12. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 13. Wear proper PPE (high visibility vest or clothing) 14. Wear proper PPE (leather gloves, long sleeves) 15. Wear proper PPE (safety shoes)
35. Set-up HSA/SPT rig	11. Slips/ Trips/ Falls 12. Pinch Hazards 13. High noise levels 14. Clothing entanglement 15. Electrocution/falling equipment and debris from raising HSA/SPT rig mast 16. Carbon monoxide poisoning 17. HSA/SPT rig roll-over 18. HSA/SPT rig movement	6. Be aware of potential trip hazards / Follow good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray paint 7. Wear proper PPE (leather gloves) 8. Wear proper PPE (hearing protection) 9. Wear proper attire for HSA/SPT rig (no loose clothing, strings, etc.) 10. Wear proper PPE (hard hats) / Be aware of locations at all times / Look up, down and around before raising mast / Check HSA/SPT drill rig mast for loose objects/debris before raising 11. Stand upwind of rig engine 12. Do not move rig with mast raising / Set stabilizers prior to raising mast / Inspect work area / If area appears unstable, the boring locations should be moved. 13. All field personnel should stay clear of rig while moving / Use a spotter when backing up the rig
36. Advance HSA/SPT rods, augers and casing below ground surface	8. Strain wrist/bruise palm 9. Pinched fingers 10. Back strain 11. Clothing entanglement 12. Carbon monoxide poisoning 13. Bruised/Broken toes/feet	7. Wear proper PPE (leather gloves) / Use proper technique for preparing rods / Use second person, if necessary 8. Wear proper PPE (leather gloves) 9. Use proper lifting techniques / Obtain assistance if needed 10. Wear proper attire for HSA/SPT rig (no loose clothing, strings, etc.) 11. Stand upwind of the rig

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
37. Advance HSA/SPT rods, augers and casing below ground surface (cont'd)	14. High noise levels	12. Wear proper PPE (safety shoes) 13. Wear proper PPE (hearing protection)
38. Remove and open split spoon	12. Pinched fingers 13. Cuts/lacerations 14. Skin contact with contaminated soil and groundwater	1. Wear proper PPE (nitrile and leather gloves) 2. Wear proper PPE (leather gloves) 3. Wear proper PPE (nitrile gloves, safety glasses)
39. Repeat steps 3 and 4 until desired depth is reached	1. See steps 3 and 4	1. See steps 3 and 4
40. Remove HSA/SPT rods, augers and casing and place in storage rack	1. Clothing entanglement 2. Back strain 3. Pinched fingers 4. Carbon monoxide poisoning 5. High noise levels	1. Wear proper attire for HSA/SPT rig (no loose clothing, strings, etc.) 2. Use proper lifting techniques / Obtain assistance if needed 3. Wear proper PPE (leather gloves) 4. Stand upwind of rig engine 5. Wear proper PPE (hearing protection)
41. Tremie-grout borehole with a cement-bentonite grout mixture	1. Splash cement/bentonite grout on face/eyes 2. Back strain 3. Pinched fingers	1. Wear proper PPE (safety glasses) 2. Use proper lifting techniques / Obtain assistance if needed 3. Wear proper PPE (nitrile gloves, leather gloves)
42. Decontaminate equipment	1. Contact with potentially impacted material 2. Contact with sharp pieces of equipment	1. Wear proper PPE (safety glasses, nitrile gloves) 2. Wear proper PPE (leather gloves)
43. Patch soil boring location to return to pre-existing conditions (i.e. concrete, asphalt, grass)	1. Cuts/lacerations 2. Splashed concrete on face/eyes 3. Hammer fingers/hands when patching asphalt	1. Wear proper PPE (leather gloves) / Use scissors for cutting 2. Use proper PPE (safety glasses) 3. Be aware of hands/fingers during hammering / Wear proper PPE (leather gloves)
44. All activities	65. Slips/ Trips/ Falls 66. Hand injuries, cuts or lacerations during manual handling of materials 67. Foot injuries 68. Back injuries 69. Traffic 70. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 71. High Noise levels 72. Overhead hazards 73. Heat Stress/ Cold Stress 74. Eye Injuries	73. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 74. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 75. Wear Langan approved safety shoes 76. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 77. Wear high visibility clothing & vest / Use cones or signs to designate work area 78. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 79. Wear hearing protection 80. Wear hard hat / Avoid areas were overhead hazards exist.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		81. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 82. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

ATTACHMENT H

TAILGATE SAFETY BRIEFING FORM

LANGAN TAILGATE SAFETY BRIEFING

Date:_____ Time: _____

Leader:_____ Location:_____

Work Task:

_____

_____

SAFETY TOPICS (*provide some detail of discussion points*)

Chemical Exposure Hazards and Control:_____

_____

Physical Hazards and Control: _____

Air Monitoring: _____

PPE: _____

_____

Communications:_____

Safe Work Practices: _____

_____

Emergency Response: _____

Hospital/Medical Center Location: _____

Phone Nos.: _____

Other: _____

FOR FOLLOW-UP (the issues, responsibilities, due dates, etc.**)**

_____

_____

_____

ATTENDEES

PRINT NAME	COMPANY	SIGNATURE

APPENDIX D

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

Beach 21st Street Development
(Site No. C#####)

Beach 21st Limited Partnership
c/o The Community Builders, Inc.
8 West 38th Street, Suite 1102
New York, NY 10018

April XX, 2019

Citizen Participation Plan
Beach 21st Street Development
Site No. C#####

April XX, 2019

Table of Contents

Appendices:

Appendix A - Project Contacts and Locations of Reports and Information

Appendix B - Site Contact List

Appendix C -Brownfield Cleanup Program Process

Appendix D –DER Scoping Sheet

Appendix E1 –Site Location Map

Appendix E2 –Sample Location Map

* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.
Volunteer: **Beach 21st Limited Partnership c/o The Community Builders ("Volunteer")**
Site Name: **Beach 21st Street Development ("site")**
Site Address: **10-37 Beach 21st Street**
Site County: **Queens**
Site Number: **C######**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing and business.

A brownfield is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC), which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by the NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When the NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why the NYSDEC Involves the Public and Why It Is Important

The NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites and to enable citizens to participate more fully in decisions that affect their health, environment and social well-being. The NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs

that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process;
- Providing citizens with early and continuing opportunities to participate in the NYSDEC's site investigation and cleanup process;
- Ensuring that the NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and
- Encouraging dialogue to promote the exchange of information among the affected/interested public, state agencies and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision-making.

This Citizen Participation (CP) Plan provides information about how the NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies the NYSDEC, the New York State Department of Health (NYSDOH) and the Applicant's representative as the project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC website. If this occurs, the NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners and occupants of the site and properties adjacent to the site;
- The public water supplier that services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix C shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand

contamination issues related to a site and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have the potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments and/or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned CP activities.

Technical Assistance Grant

The NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the CP activities related to the site's cleanup program is included on the following pages.

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process (Complete):	
• Prepare site contact list • Establish document repositories	At the time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 45- day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When the NYSDEC determines that the BCP application is complete. The 30-day public comment period begins on date of publication of notice in the ENB. The end date of the public comment period is as stated in the ENB notice. Therefore, the ENB notice, newspaper notice and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Submitted with Application appendix to Draft Remedial Action Work Plan (RAWP)
Before NYSDEC Approves Remedial Investigation Report (RIR):	
• Mail fact sheet to site contact list that describes the remedial investigation (RI) results • Place approve RIR in the document repository	The Draft RIR was submitted with the BCP application. Mail the fact sheet before the NYSDEC approves the RIR. Once the NYSDEC approves the RIR, place the approved document in the document repository.
Significant Threat Determination:	
• Mail fact sheet to site contact list that discusses significant threat determination. Combine the notice with another fact sheet where appropriate	Determination made be made any time during the remedial process but no later than 20 days after the NYSDEC approves the RIR. A significant threat site is eligible for a TAG.
Before NYSDEC Approves Remedial Action Work Plan (RAWP):	
• Distribute fact sheet to site contact list about proposed RAWP and announcing 45-day public comment period • Public meeting held by the NYSDEC about the proposed RAWP (if requested by the affected community or at the discretion of the NYSDEC project manager) • Conduct 45-day public comment period • Place approved RAWP in the document repository	A draft RAWP was submitted with the BCP application. Before NYSDEC approves the RAWP, a 45-day public comment period begins/ends as per the dates identified in the fact sheet (presumed to begin at the same time as the 30-day comment period for the application). A public meeting will be held during the comment period. Once the NYSDEC approves the RAWP, place the approved document in the document repository.

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
Before the NYSDEC Approves Final Engineering Report (FER):	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the FER including any proposed institutional/engineering controls • Place the approved FER in the document repository.	Mail the fact sheet before the NYSDEC approves the FER. Once the NYSDEC approves the FER, place the approved document in the document repository.
When the Certificate of Completion (COC) is Issued:	
• Place Notice of COC in the document repository • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	Within 10 days of the COC being issued.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the site's cleanup process.

The following major issues of public concern were identified: air quality, health of workers and community, nuisance odors, noise and construction-related traffic. These issues are of the most concern to adjacent property businesses and residents. These issues will be addressed in the Community Air Monitoring Program (CAMP) and site-specific Health and Safety Program (HASP) for the project to be approved by the NYSDEC prior to the respective phases of work.

Based on the NYSDEC online map Potential Environmental Justice Areas in Queens County, New York, the site is located in a Potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

Site information is available through the Project Contacts mentioned in Section 2 and detailed in Appendix A. The BCP Application, RIR, RAWP, and future reports to be prepared for the NYSDEC, will be available in the document repository discussed in Section 2 and detailed in Appendix A. Public Affairs asks that the Handbook's "Scoping Sheet for Major Issues of Public Concern" be used by applicants/responsible parties to inform their completion of this section of the plan. Because of the high percentage of Environmental Justice Areas in New York City, the Scoping Sheet is a particularly valuable tool in this region. The information that is gained by using a Scoping Sheet may be helpful in determining if future fact sheets need to be translated into other languages. The NYSDEC "Scoping Sheet for Major Issues of Public Concern" was used to complete this section (see Appendix D).

4. Site Information

Site Description

The site is located at 10-37 Beach 21st Street in the Far Rockaway neighborhood of Queens, New York, and is identified on the Queens Borough Tax Map as Block 15705, Lot 69 and portion of Lot 59. It is located mid-block, on the city block bound by Beach 21st Street to the east, Cornaga Avenue to the south, Beach 22nd Street to the west, and Mott Avenue to the north. The site comprises an area of about 42,500 square feet. A map showing the site location is included as Appendix E1.

According to the on-line New York City's Zoning and Land Use Map, the site is located within the Special Downtown Far Rockaway District, and is zoned R6 residential with a C2-4 commercial overlay. The special district encourages the development of underutilized and vacant land into mixed-use commercial and residential areas, while promoting the development of affordable housing and strengthening the commercial core of the Downtown Far Rockaway neighborhood. R6 districts promote a diverse mix of building types, with tall buildings set back from the street to achieve higher levels of open space ratio within the lots developed. The C2-4 commercial overlay promotes the development of mixed-use buildings with commercial uses limited to one to two floors. Zoning is consistent with the proposed mixed-use development that will include affordable housing. The surrounding area is primarily commercial, residential, and industrial, along with vacant land and the Far Rockaway subway station.

The site is used as a parking lot and a bus stop, with a temporary bus shelter and no permanent structures/buildings on site. Land use within a one-half mile of the site includes residential, commercial and industrial uses. Adjoining properties include: two-story residential buildings and a two-story commercial/office building to the west, a two-story mixed use building to the north, Beach 21st Street to the east, and vacant land to the south. Sensitive receptors such as schools, hospitals, or daycare centers that exist within a half mile of the site are listed on the contact list.

History of Site Use and Investigations

Based on available Sanborn® Fire Insurance Maps from 1886 to 2006, the site was occupied by a coal/lumber yard coal/lumber yard (1890 to 1933), paint shop/storage (1912 to 1951), manufacturing facilities (1912 to 1951), woodworking (1912 to 1962), carpet cleaning (1912), and a tin shop (1951). All but one of the buildings present on site after 1951 were removed between 1954 and 1961, with most of the site covered by concrete and asphalt and the remaining building on Lot 69. From 1966 to 1975 the site was primarily used for parking, with the on-site building no longer present. Between 1975 and 1980 a bus terminal covering the northeastern portion of the property with asphalt was built.

Sanborn Fire Insurance Maps revealed a Long Island Rail Road (LIRR) right of way traversed the western portion of the site from 1886 to 1996. Additionally, the 1912 Sanborn Map revealed a 100-gallon UST on site, with no documentation of tank removal observed.

The Volunteer has entered a contract to purchase the site with an estimated closing date in the summer of 2019. Until the Volunteer assumes owner ship and begins construction for the proposed redevelopment (estimated for the fall of 2019), the site will continue to be used as a parking lot and bus stop.

The Volunteer's environmental consultant performed a Remedial Investigation (RI) between December 2018 and March 2019 to evaluate potential environmental impacts to soil, groundwater, and soil vapor. The RI also included geophysical surveying using ground penetrating radar (GPR) and radio detection equipment. The geophysical survey revealed the locations of buried electrical utilities and drainage pipes throughout the site. Other anomalies, such as potential USTs, were identified. Refer to Appendix E2 – Sample Location Map which shows the locations of the soil, groundwater, and soil vapor samples that were advanced as part of the RI and are discussed below.

Soil

A total of 23 soil borings were advanced to depths of up to 16 feet below surface grade (bgs), from which 42 samples and three duplicate samples were collected. Historical fill material was observed within each soil boring to depths of about 1.2 to 10.6 feet bgs. The fill consisted of brown or grey, fine- to coarse-grained sand with varying amounts of gravel, sand, concrete, vegetation, glass, clay, and brick. The fill was underlain by a sand layer predominantly consisting of fine- to coarse-grained sand with varying amounts of gravel, and pockets of trace silt and clay. A clay layer was observed at depths ranging from 55 to 70.5 feet bgs (about el -30 to -45.5) in geotechnical borings. Bedrock was not encountered.

The following constituents were detected in soil samples at concentrations that exceed NYSDEC Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use (UU) and/or Restricted Use –Restricted Residential (RURR) Soil Cleanup Objectives (SCO).

- Volatile Organic Compounds (VOCs) were detected above the NYSDEC Part 375 UU SCOs in 1 of the 42 soil samples and one duplicate sample, but RURR SCOs were not exceeded. The UU SCOs are indicated in parentheses.
    - Acetone – 0.21 mg/kg in EB02_1.5-3.5 and 0.051 mg/kg in SDUP04 (UU of 0.05 mg/kg and RURR of 100 mg/kg)

- Semivolatile Organic Compounds (SVOCs) were detected above NYSDEC Part 375 UU and/or RURR SCOs in soil samples. The SCOs are indicated in parentheses.

- Benzo(a)anthracene: 1.1 mg/kg in EB04_0-2 to 12.3mg/kg in EB13_6-8 (UU and RRU SCO of 1 mg/kg)
- Benzo(a)pyrene: 1.13 mg/kg in EB15_8-10 to 11.1 mg/kg in EB13_6-8 (UU and RRU SCO of 1 mg/kg)
- Benzo(b)fluoranthene: 1.07 mg/kg in EB15_8-10 to 8.48 mg/kg in EB18_0-2 (UU and RRU SCO of 1 mg/kg)
- Benzo(k)fluoranthene: 0.813 mg/kg in EB15_8-10 to 10.3 mg/kg in EB13_6-8 (UU SCO of 0.8 mg/kg and RRU SCO of 3.9 mg/kg)
- Chrysene: 1.1 mg/kg in EB04_0-2 to 11.7 mg/kg in EB13_6-8 (UU SCO of 1 mg/kg and RRU SCO of 3.9 mg/kg)
- Dibenzo(a,h)anthracene: 0.34 mg/kg in EB03_1.5-3.5 to 2.84 mg/kg in EB13_6-8 (UU and RRU SCO of 0.33 mg/kg)
- Indeno(1,2,3-cd)pyrene: 0.534 mg/kg in EB15_0-2 to 7.37 mg/kg in EB13_6-8 (UU and RRU SCO of 0.5 mg/kg)

- Pesticides were detected above NYSDEC Part 375 UU SCO in soil samples, but RURR SCOs were not exceeded. The UU SCOs are indicated in parentheses.
  - 4,4'-DDD: 0.0203 mg/kg in EB21_4-6 (UU SCO of 0.0033 mg/kg and RRU SCO of 13 mg/kg)
  - 4,4'-DDE: 0.0076 mg/kg in EB04_0-2 (UU SCO of 0.0033 mg/kg and RRU SCO of 8.9 mg/kg)
  - 4,4'-DDT: 0.00359 mg/kg in EB18_6-8 to 0.0223 in EB18_0-2 (UU SCO of 0.0033 mg/kg and RRU SCO of 7.9 mg/kg)
  - Beta Bhc (Beta Hexachlorocyclohexane): 0.175 mg/kg in EB23_0-2 (UU SCO of 0.036 mg/kg and RRU SCO of 0.36 mg/kg)

- Metals were detected above NYSDEC Part 375 UU and/or RURR SCOs in soil samples. The SCOs are indicated in parentheses.
  - Arsenic: 15.3 mg/kg in EB21_4-6 (UU SCO of 13 mg/kg and RRU SCO of 16 mg/kg)
  - Barium: 351 mg/kg in EB22_5-7 to 821 mg/kg in EB21_0-2 (UU SCO of 350 mg/kg and RRU SCO of 400 mg/kg)
  - Copper: 102 mg/kg in EB21_0-2 to 201 mg/kg in EB15_8-10 (UU SCO of 50 mg/kg and RRU SCO of 270 mg/kg)

- Hexavalent chromium: 1.16 mg/kg in EB11_0-2 (UU SCO of 1 mg/kg and RRU SCO of 110 mg/kg)
- Lead: 71.8 mg/kg in EB13_0-2 to 3,570mg/kg in EB22_0-2 (UU SCO of 63 mg/kg and RRU SCO of 400 mg/kg)
- Mercury: 0.195 mg/kg in EB21_4-6 to 0.701 mg/kg in EB21_0-2 (UU SCO of 0.18 mg/kg and RRU SCO of 0.81 mg/kg)
- Nickel: 35 mg/kg in EB01_0-2 (UU SCO of 30 mg/kg and RRU SCO of 310 mg/kg)
- Zinc: 110 mg/kg in EB07_1-2 to 626 mg/kg in EB22_5-7 (UU SCO of 109 mg/kg and RRU SCO of 10,000 mg/kg)

- TCLP lead analysis on the three selected samples resulted in hazardous concentrations in samples EB22_0-2 (7.27 milligrams per liter [mg/L]) and EB22_5-7 (7.07 mg/L).

A sample location map is provided as Appendix E-2.

Groundwater

Groundwater was observed at about 18.5 feet bgs in 6monitoring wells samples throughout the site. Based on groundwater measurements and observations, an overburden aquifer exists beneath the site. Based on groundwater elevations in surveyed wells, groundwater appears to flow toward the north beneath the site.

Groundwater samples were collected for VOCs, SVOCs, PCBs, pesticides, herbicides, metals, and several perfluorooctanoic acids (PFOA) and perfluorooctane sulfonates (PFOS). The chlorinated solvent tetrachlorethene (PCE) was detected in groundwater, but at concentrations below the NYSDEC Technical and Operational Guidance Series (TOGS) Ambient Water Quality Standards and Guidance Values (SGVs). Low-level detections of PCE in groundwater may be indicative of a former on-site release and/or off-site sources. Phenol, detected in one groundwater sample marginally above the SGV, may be indicative of a release associated with historical site use or may be a constituent of the historic fill (because groundwater sample was turbid). Total and dissolved metals concentrations detected above the SGVs in groundwater samples are attributable to regional groundwater conditions and are not considered indicative of a release. PFOA and PFOS were detected, but there is no SGV at this time.

Soil Vapor

Ten temporary soil vapor probes were installed to approximately 10 feet bgs, and subsequently

sampled for VOCs. PCE was reported at concentrations up to 160 µg/m3 in soil vapor. Soil vapor samples contained petroleum-related BTEX compounds ranging in concentration from about 15 to 1,229 µg/m3. Total VOC concentrations in soil vapor ranged from 74 µg/m3 in SV-1 to 1,545 µg/m3 in SV-9.

5. Investigation and Cleanup Process

Note: See Appendix C for a flowchart of the brownfield site remedial process.

Application

The Volunteer has applied for and been accepted into NYSDEC BCP as a Volunteer. A Volunteer must fully investigate and characterize the nature and extent of contamination that has migrated or emanated from the site to off-site locations, and conduct a qualitative exposure assessment, a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the site. A Draft RIR was submitted with the BCP application.

The Volunteer proposed that the site will be used for mixed-use, commercial and residential purposes.

To achieve this goal, the Volunteer will conduct additional investigation and cleanup activities at the Site if required by NYSDEC and NYSDOH. The Brownfield Cleanup Agreement executed by NYSDEC and the Volunteer sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Volunteer completed a site remedial investigation before it entered into the BCP. For the remedial investigation, NYSDEC will determine if the data are useable.

The site investigation had several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;

3) Assess the impact of the contamination on public health and the environment; and

4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

With the investigation completed, the Volunteer has submitted a Draft RIR to summarize the results. This report also will recommend whether cleanup action is needed to address Site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

A Draft RAWP was also submitted with the BCP application recommending a remediation consisting primarily of excavation and off-site disposal of contaminated soil and historic fill material. When the Volunteer submits a proposed RAWP for approval, NYSDEC would announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The NYSDOH must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Volunteer may then design and perform the cleanup action to address the Site contamination. NYSDEC and NYSDOH oversee the activities. When the Volunteer completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Volunteer. The COC states that cleanup goals have been achieved, and relieves the Volunteer from future liability for site-related contamination, subject to certain conditions. The Volunteer would be eligible to redevelop the site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Volunteer under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An institutional control is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A - Project Contacts and Locations of Reports and Information

Citizen Participation Plan
Beach 21st Street Development
Site No. C#####

April XX, 2019

Project Contacts

For information about the Site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

To Be Determined
NYS Department of Environmental Conservation
Division of Environmental Remediation – Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016
Tel: (518) 402-9143
Email:

New York State Department of Health (NYSDOH):

To Be Determined
NYSDOH
Bureau of Environmental Exposure
Empire State Plaza
Corning Tower, Room 1787
Albany, NY 12237
Tel: (518) 402-7860a
Email:

Citizen Participation Plan
Beach 21st Street Development
Site No. C

April XX, 2019

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, DPC
Ryan Manderbach, CHMM
Senior Associate/VP
Langan
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001
Tel: (212) 479-5582
Email: rmanderbach@langan.com

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Queens Library at Far Rockaway
Sharon Anderson, Branch Manager
1637 Central Avenue
Far Rockaway, NY 11691
Tel: (718) 327-2549
Hours: Mon: 9 AM to 8 PM
Tue: 1 PM to 6 PM
Wed: 10 AM to 6 PM
Thu: 12 PM to 8 PM
Fri: 10 AM to 6 PM
Sat: 10 AM to 5 PM
Sun: Closed

Queens Community Board 14
Jonathan Gaska, District Manager
1931 Mott Avenue, Room 311
Far Rockaway, NY 11691
Tel: (718) 471-7300
Web: https://www1.nyc.gov/site/queenscb14/index.page

Appendix B - Site Contact List

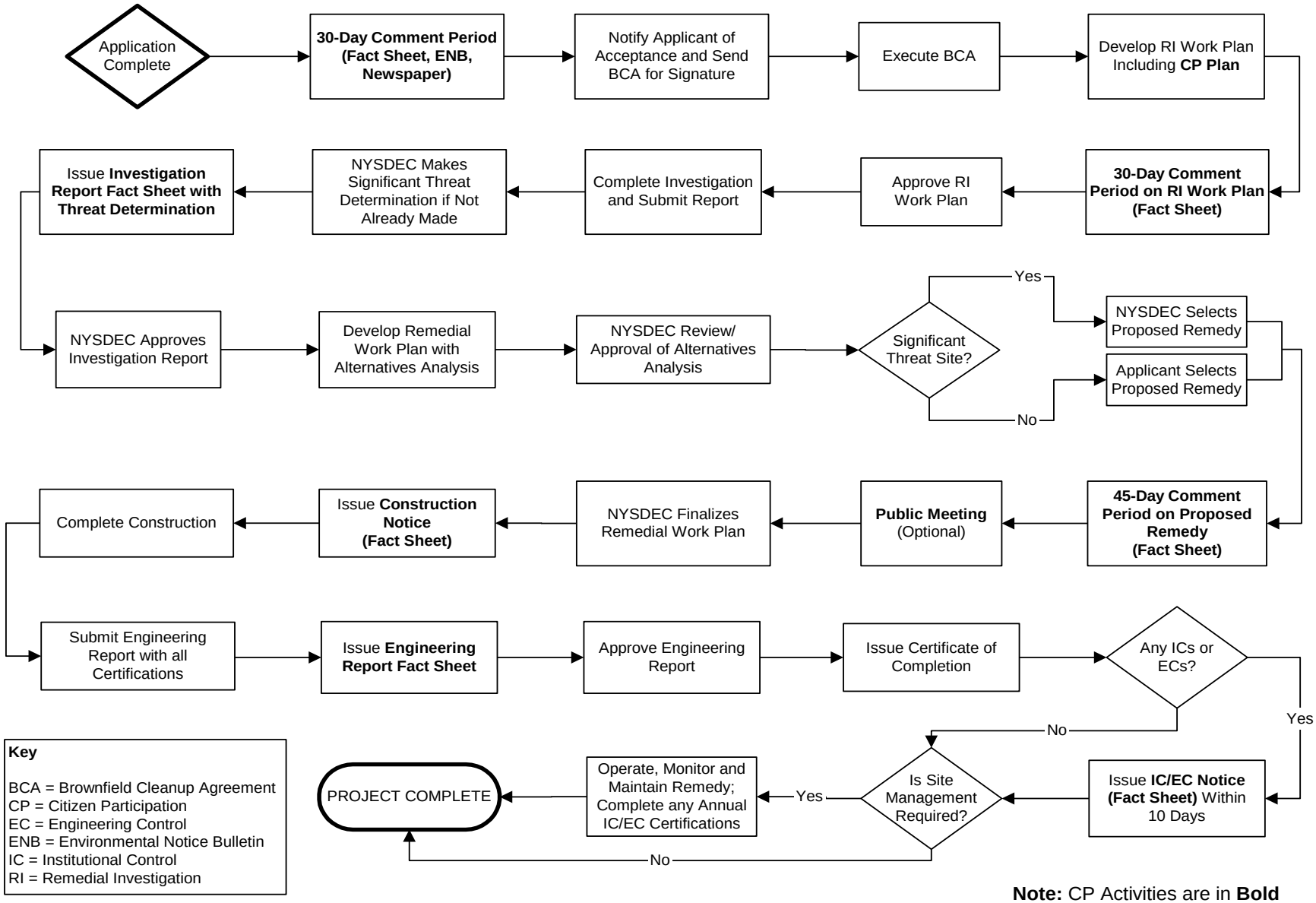
NAME	ADDRESS	PROJECT ROLE
Beach 21st Limited Partnership c/o The Community Builders; Jesse Batus	8 West 38th Street, Suite 1102, New York, NY 10018	Site Owner
Mayor Bill de Blasio	City Hall, 260 Broadway Avenue, New York, NY 10007	Mayor
Marisa Lago, Chair	Department of City Planning, 120 Broadway, 31st Floor, New York, NY 10271	Planning Commission Chair
Melinda Katz	Queens Borough Hall, 120-55 Queens Boulevard, Kew Gardens, NY 11424	Queens Borough President
Raj Rampershad	Dept of City Planning, 120-55 Queens Boulevard, Room 201, Kew Gardens, NY 11424	Dept of Planning
Nearby Properties		
Tarik Holding, Corp	3342 9th Street, Astoria, New York 11106	Owner of 21-01 Mott Avenue
Beach 22, LLC	8047 269th Street, New Hyde Park, New York 11040	Owner of 10-74 Beach 22nd Street
Ronald Victor	10-62 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
Ava M. Pruitt	10-60 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
James Spann	10-56 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
Leslyn Bishop	10-54 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
Hyacinth Frost	10-42 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
Anthony Pipa	10-40 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
1025 Beach LLC	137-30 Redding Street, Ozone Park, New York 11417	Vacant Lot (Owned by 1025 Beach LLC)
Malatesta Constantin	1005 20th Street, Far Rockaway, New York 11691	Commercial Property
David Hance	10-32 Beach 21st Street, Far Rockaway, New York 11691	Commerical Property
Michelle Charles	1318 Caffery Avenue #1, Far Rockaway, New York 11691	Owner of 10-50 Beach 21st Street
Milton Crossdale	10-48 Beach 22nd Street, Far Rockaway, New York 11691	Residential Property and Property Owner
Annette Deer	2206 Nameoke Street, Far Rockaway, New York 11691	Owner of 10-50 Beach 21st Street
Lino Reality Corp.	PO Box 8685, Elizabeth, New Jersey 07208	Owner of 10-47 Beaach 20th Street
1051 BCH 20 St Associates	111 Eigth Avenue, New York, New York 10011	Owner of 10-51 Beach 20th Street
Koltar Realty LLC	100 Co-Op City Boulevard 6G, Bronx, New York 10475	Owner of 10-27 Beach 20th Street
KVPB, LLC	81 Hempstead Avenue, Lynbrook, New York 11563	Owner of 10-40 Beach 21st Street
Gleitman Realty Assocaites	124 Cedarhurst Avenue, Suite 5, Cedarhurst, New York, 11516	Owner of 10-62 Beach 21st Street
D-MART, Inc.	28 Liberty Street, New York, New York 10005	Owner of 10-57 Beach 20th Street
Central Building Corp.	29-16 147th Street, Flushing, New York 11354	Owner of 20-01 Mott Avenue
Local News Media		
Queens Chronicle	71-19 80th Street, Suite 8-201, Glendale, New York 11385	Local Media
The Queens Tribune	31-100 47th Avenue, 3100B, Long Island City, New York 11101	Local Media
The Wave	88-08 Rockaway Beach Boulevard, Rockaway Beach New York 11693	Local Media
Queens Daily Eagle	8900 Sutpin Boulevard, LL11, Jamacia, New York 11435	Local Media
Public Water Supply		
Vincent Sapienza	59-17 Junction Boulevard, Flushing, NY 11373	NYCDEP Acting Commissioner
	255 Greenwich Street, 6th Floor, New York, New York 10007	New York City Municipal Water Finance Authority
	59-17 Junction Boulevard, Flushing, NY 11373	New York City Water Board
Nearby Schools and Daycare Facilities		
Administrator	New York Career Training School, 1032 Beach 20th Street, Far Rockaway, NY 111691	
Betty Leon, Esqm Chairperson of Board of Trustees	Peninsula Preparatory Academy, 611 Beach 19th Streetm Far Rockaway, NY 11691	
Administrator	St. Mary's Star of the Sea School, 595 Beach 19th Street, Far Rockaway, NY 11691	
Administrator	Talmud Torah Siach Yitzchok, 1513 Central Avenue, Far Rockaway, NY 11691	
Moshe Goodman, Administrator	Reishis Chochma Preschoool, 1525 Central Avenue, Far Rockaway, NY 11691	
Mavgar Mondesir-Gordon, 6-8 Principal	Challenge Charter Middle School, 15-26 Central Avenue, Far Rockaway, NY 11691	
Administrator	Kid's Time Childcare, 1050 Beach 22nd Street, Far Rockaway, NY 11691	
Andrea Mejied, Principal	Middle School 53 Brian Piccolo, 10-45 Nameoke Street, Queens, NY 11691	
Doris Lee, Principal	Village Academy, 10-45 Nameoke Street, Queens, NY 11691	
Ty Redmond, Principal	Success Academy Far Rockaway, 10-45 Nameoke Street, Queens, NY 11691	
Theodore Michael, Administrator	Church of God Christian Academy, 1332 Central Avenue, Far Rockaway, NY 11691	

NAME	ADDRESS	PROJECT ROLE
Ms. Gonzalez, On-Site Provider	Early Bird Family Day Care, Inc., 439 Beach 22nd Street, Apt. 3P, Far Rockaway, NY 11691	
Gemma Ferguson, Principal	Wave Preparatory Elementary School, 535 Briar Place, Queens, NY 11691	
Phoebe Grant Robinson, I.A. Principal	P.S. 253, 1307 Central Avenue, Far Rockaway, NY 11691	
Administrator	Our Precious Angels, 2402 Ocean Crest Boulevard, Far Rockaway, NY 11691	
Administrator	Little Treasures Daycare, 1418 Mott Avenue, Far Rockaway, NY 11691	
Administrator	Precious Savor Children's Center, 2118 Elk Drive, Far Rockaway, NY 11691	
William Johnson, Principal	Academy of Medical Technology; A College Board School, 8-21 Bay 25th Street, Queens, NY 11691	
Administrator	Kiddies Care Corner, 2117 Elk Drive, Far Rockaway, NY 11691	
Madeline Cuffie, On-Site Provider	Alleluia Day Care, 443 Beach 22nd Street, Far Rockaway, NY 11691	
Ms. Bowen, On-Site Provider	Bowens Unique Headstart, 449 Beach 21st Street, Floor 1, Far Rockaway, NY 11691	
Administrator	Our Kids Daycare, Inc., 429 Fernside Place, Far Rockaway, NY 11691	
Lynn Gottfried, Director	Hebrew Kindergarten and Infants, 310 Beach 20th Street, Far Rockaway, NY 11691	
Administrator	Sunshine Daycare, 13-81 McBride Street, Far Rockaway, NY 11691	
Administrator	Bnos Bais Yaakov.Tichon Meir Moshe, 613 Beach 9th Street, Far Rockaway, NY 11691	
Charles Ogundimu, Principal	Frederick Douglas Academy VI High School, 8-21 Bay 25th Street, Queens, NY 11691	
Ronald Lowinger, President	Yeshiva Darchei Torah, 257 Beach 17th Street, Far Rockaway, NY 11691	
Carl Manalo, Principal	Queens High School for Information, Research and Technology, 8-21 Bay 25th Street, Queens, NY 11691	
Gary Dumornay, Principal	Kappa Vi-Knowledge and Power Preparatory Academy VI, 8-21 Bay 25th Street, Queens, NY 11691	
Yvonne Spence Fulwood, On-Site Provider	Lovable Kids Daycare, 1070 Dickens Street, Far Rockaway, NY 11691	

Appendix C – Brownfield Cleanup Program Process

Citizen Participation Plan
Beach 21st Street Development
Site No. C

April XX, 2019



Note: CP Activities are in **Bold**

Appendix D – DER Scoping Sheet

New York State Department of Environmental Conservation
Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Remedial Party: Beach 21st Limited Partnership c/o The Community Builders, Inc.

Site Name: Beach 21st Street Development

Site Number: C

Site County: Queens

Note: For Parts 1. - 3., the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**

Remediation of soil and groundwater may impact air quality while work is performed. NYSDEC and NYSDOH are overseeing the project to ensure the air and odor issues are monitored and mitigated during implementation of the work plan.

How were these issues and/or information identified?

Previous investigation reports identified contaminated soil and groundwater at the site.

Part 2. List important information needed **from** the community, if applicable. Identify groups, organizations, businesses and/or units of government related to the needed information.

No additional information is required from the community at this time.

How were these information needs identified?

There are no information needs at this time.

Part 3. List major issues and information that need to be communicated **to** the community. Identify groups, organizations, businesses and/or units of government related to the issues(s) and/or information.

Information will be communicated to the public as outlined in the Citizen's Participation Plan. NYSDEC and NYSDOH contacts will be provided. A repository will exist for the public to review documentation.

How were these issues and/or information identified?

Issue identification is the same as Part 1 response. Information communication was established by NYSDEC and NYSDOH as part of the NYS Brownfield Cleanup Program remediation.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning around site:

[X] Residential [ ] Agricultural [ ] Recreational [X] Commercial [X] Industrial

b. Residential type around site:

[X] Urban [ ] Suburban [ ] Rural

c. Population density around site: [X] High [ ] Medium [ ] Low

d. Community economic status: [ ] High [ ] Medium [X] Low

e. Water supply of nearby residences: [X] Public [ ] Private Wells [ ] Mixed

f. Other environmental issues significantly impacting affected community? (Yes/No) No

Explain if "Yes" –

g. Special considerations: [X] Language [ ] Age [ ] Transportation [ ] Other

Explain marked categories in **g.**: Large Spanish speaking population.

Part 5. The site contact list must include, at a minimum, the individuals, groups and organizations identified in the instructions for **Part 5.** Are other individuals, groups and organizations affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

[X] Non-Adjacent Residents/Property Owners: Please see contact list.

[X] Local Officials: Please see contact list.

[X] Media: Please see contact list.

[X] Business/Commercial Interests: Please see contact list.

[ ] Labor Group(s)/Employees: Not identified.

[ ] Indian Nation: Not identified.

[ ] Citizens/Community Group(s): Not identified.

[ ] Environmental Justice Group(s): Not identified.

[ ] Environmental Group(s): Not identified.

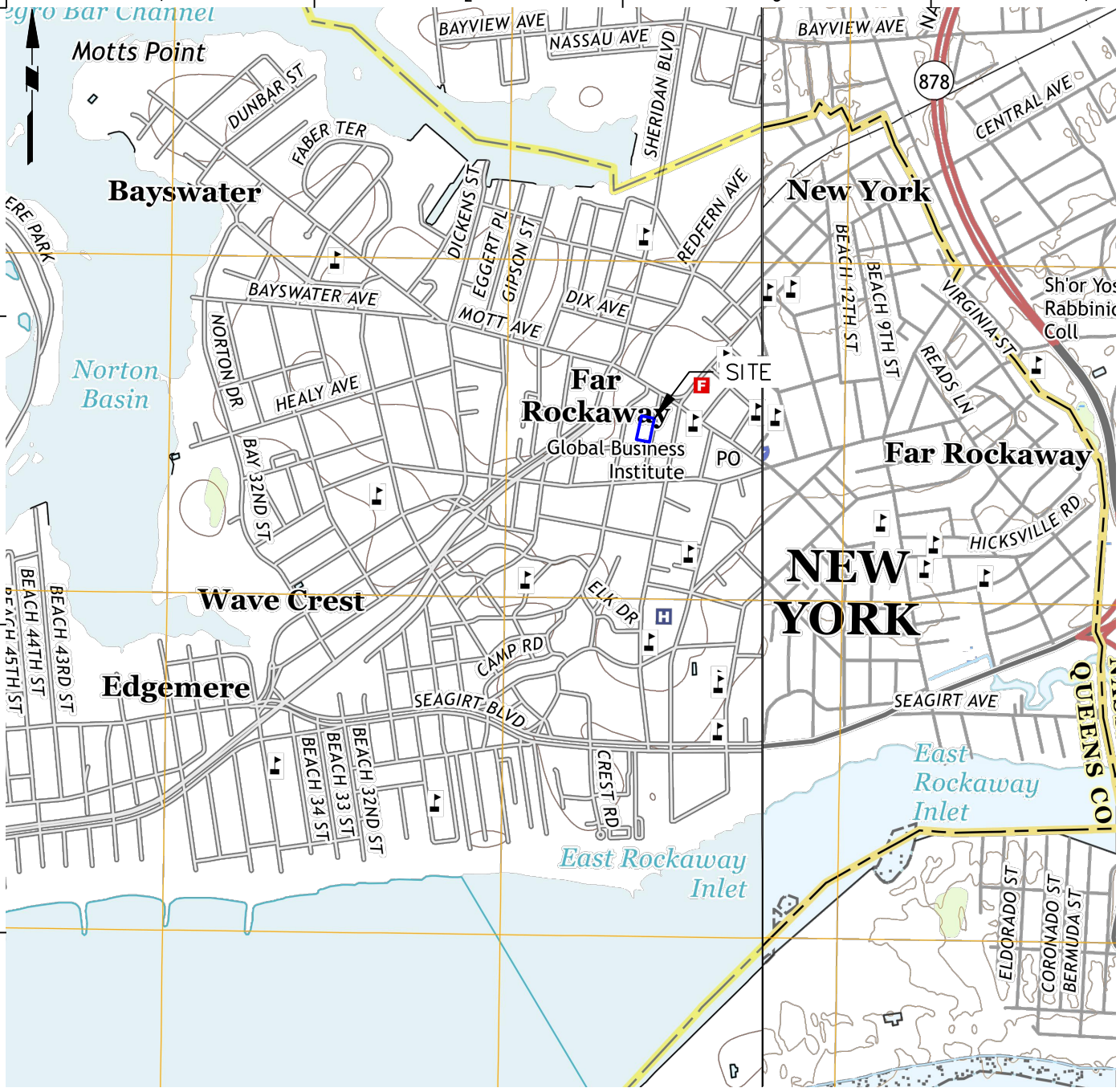
[ ] Civic Group(s): Not identified.

[ ] Recreational Group(s): Not identified.

[X] Other(s): Please see contact list.

Date Completed:	Prepared By:	Reviewed By:
04/01/2019	Langan Engineering	

Appendix E1 – Site Location Map



NOTES:
1. IMAGE FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) FAR ROCKAWAY, NY AND LAWRENCE, NY 7.5–MINUTE QUADRANGLE MAPS
2. FIGURE NOT DRAWN TO SCALE

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

1500 0 300 1500
SCALE IN FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 AND p/o 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
SITE LOCATION MAP

Project No.	17050601
Date	09/07/18
Drawn By	EB
Checked By	JA

Figure No. **1**
Sheet 1 of 1

Filename: \\langan.com\data\NYC\data6\170540601\Project Data\CAD\01\2D-DesignFiles\Environmental\RIR\Site Location Map\Figure 1 - Site Location Map.dwg Date: 4/1/2019 Time: 15:14 User: kwexler Style Table: Langan.stb Layout: ANSIA-BP

Appendix E2 – Soil Sample Location/Results Map

Sample ID Sample Date Depth Range (feet bgs)	EB01_0-2 12/17/2018 0-2	EB01_12-14 12/17/2018 12-14
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	NE	ND
Inorganics (mg/kg)		
Nickel	**35**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB06_1-3 12/14/2018 1-3	EB06_12-14 12/14/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	NE
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**98.7**	NE
Zinc	**163**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB08_1.5-3.5 12/17/2018 1.5-3.5	EB08_12-14 12/17/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Pyrene	**1.2** J	ND
Benzo(b)Fluoranthene	**1.6** J	ND
Indeno(1,2,3-c,d)Pyrene	**0.58** J	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)	NE	NE

Sample ID Sample Date Depth Range (feet bgs)	EB16_0-2 3/13/2019 0-2	EB16_4-6 3/13/2019 4-6
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	ND
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Mercury	**0.226**	ND

Sample ID Sample Date Depth Range (feet bgs)	EB23_0-2 3/13/2019 0-2
VOCs (mg/kg)	ND
SVOCs (mg/kg)	NE
Pesticides (mg/kg)	
Beta Bhc (Beta Hexachlorocyclohexane)	**0.175** D
Herbicides (mg/kg)	ND
PCBs (mg/kg)	ND
Inorganics (mg/kg)	NE

Sample ID Sample Date Depth Range (feet bgs)	EB11_0-2 12/12/2018 0-2	EB11_12-14 12/12/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Chromium, Hexavalent	**1.16**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB13_0-2 3/13/2019 0-2	EB13_6-8 3/13/2019 6-8
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.57** D	**12.3** D
Benzo(a)Pyrene	**1.59** D	**11.1** D
Benzo(b)Fluoranthene	**1.54** D	**8.25** D
Benzo(k)Fluoranthene	**1.41** D	**10.3** D
Chrysene	**1.61** D	**11.7** D
Dibenz(a,h)Anthracene	**0.43** D	**2.84** D
Indeno(1,2,3-c,d)Pyrene	**1.37** D	**7.37** D
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	NE	ND
Inorganics (mg/kg)		
Lead	**71.8**	**72.9**
Mercury	NE	**0.242**

Sample ID Sample Date Depth Range (feet bgs)	EB21_0-2 3/5/2019 0-2	EB21_4-6 3/5/2019 4-6
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.46** D	NE
Benzo(a)Pyrene	**1.48** D	NE
Benzo(b)Fluoranthene	**1.24** D	NE
Benzo(k)Fluoranthene	**0.998** D	NE
Chrysene	**1.22** D	NE
Indeno(1,2,3-c,d)Pyrene	**0.932** D	NE
Pesticides (mg/kg)		
4,4'-DDD	ND	**0.0203** D
4,4'-DDT	**0.00597** D	**0.0144** D
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Arsenic	NE	**15.3**
Barium	**821**	NE
Copper	**102**	**143**
Lead	**1,250**	**411**
Mercury	**0.701**	**0.195**
Zinc	**525**	**273**
TCLP - Inorganics (mg/L)		
Lead	NE	NA

Sample ID Sample Date Depth Range (feet bgs)	EB02_1.5-3.5 12/14/2018 1.5-3.5	EB02_6-8 12/14/2018 6-8	EB02_12-14 12/14/2018 12-14
VOCs (mg/kg)			
Acetone	**0.21**	ND	NE
SVOCs (mg/kg)	NE	NE	NE
Pesticides (mg/kg)	ND	ND	ND
Herbicides (mg/kg)	ND	ND	ND
PCBs (mg/kg)	NE	ND	ND
Inorganics (mg/kg)			
Lead	**119**	NE	NE

Sample ID Sample Date Depth Range (feet bgs)	EB18_0-2 3/5/2019 0-2	EB18_6-8 3/5/2019 6-8	SODUP04_030519 3/5/2019 6-8
VOCs (mg/kg)			
Acetone	NE	NE	**0.051**
SVOCs (mg/kg)			
Benzo(a)Anthracene	**10.5** D	NE	NE
Benzo(a)Pyrene	**10** D	NE	NE
Benzo(b)Fluoranthene	**8.48** D	NE	NE
Benzo(k)Fluoranthene	**6.64** D	NE	NE
Chrysene	**8.75** D	NE	NE
Dibenz(a,h)Anthracene	**1.43** D	NE	NE
Indeno(1,2,3-c,d)Pyrene	**7.1** D	NE	NE
Pesticides (mg/kg)			
4,4'-DDT	**0.0223** D	**0.00359** D	ND
Herbicides (mg/kg)	ND	ND	ND
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)			
Lead	**401**	**109**	**90.3**
Zinc	**392**	**118**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB22_0-2 3/5/2019 0-2	EB22_5-7 3/5/2019 5-7
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	NE	**3.58** D
Benzo(a)Pyrene	NE	**3.46** D
Benzo(b)Fluoranthene	NE	**2.64** D
Benzo(k)Fluoranthene	NE	**2.2** D
Chrysene	NE	**2.44** D
Dibenz(a,h)Anthracene	NE	**0.605** D
Indeno(1,2,3-c,d)Pyrene	**0.618** D	**2.26** D
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Barium	NE	**351**
Lead	**3,570**	**2,420**
Mercury	NE	**0.367**
Zinc	**432**	**626**
TCLP - Inorganics (mg/L)		
Lead	7.27	7.07

Sample ID Sample Date Depth Range (feet bgs)	EB15_0-2 3/5/2019 0-2	EB15_8-10 3/5/2019 8-10
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	NE	**1.28** D
Benzo(a)Pyrene	NE	**1.13** D
Benzo(b)Fluoranthene	NE	**1.07** D
Benzo(k)Fluoranthene	NE	**0.813** D
Chrysene	NE	**1.14** D
Indeno(1,2,3-c,d)Pyrene	**0.534** D	**0.767** D
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Barium	NE	**574**
Copper	NE	**201**
Lead	**94.5**	**611**
Zinc	NE	**298**

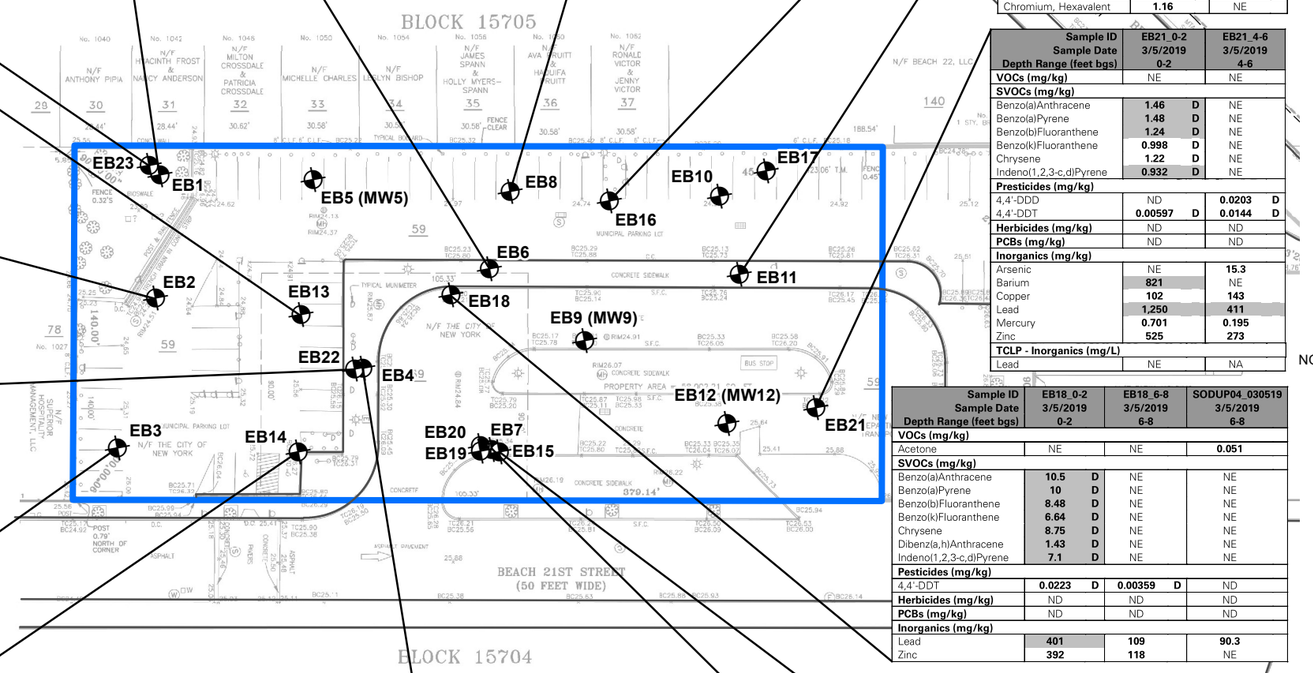
Sample ID Sample Date Depth Range (feet bgs)	EB03_1.5-3.5 12/17/2018 1.5-3.5	EB03_12-14 12/17/2018 12-14
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**2.3**	ND
Benzo(a)Pyrene	**2.1**	ND
Benzo(b)Fluoranthene	**2.9** D	ND
Chrysene	**1.9**	ND
Dibenz(a,h)Anthracene	**0.34** J	ND
Indeno(1,2,3-c,d)Pyrene	**1.1**	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	NE
Inorganics (mg/kg)		
Lead	**137**	NE
Zinc	**113**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB14_0-2 3/13/2019 0-2	EB14_6-8 3/13/2019 6-8
VOCs (mg/kg)	ND	NE
SVOCs (mg/kg)	NE	NE
Pesticides (mg/kg)	ND	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**141**	**864**
Zinc	NE	**237**

Sample ID Sample Date Depth Range (feet bgs)	EB04_0-2 12/11/2018 0-2	EB04_14-16 12/11/2018 14-16
VOCs (mg/kg)	NE	ND
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.1**	ND
Benzo(b)Fluoranthene	**1.4**	ND
Chrysene	**1.1**	ND
Indeno(1,2,3-c,d)Pyrene	**0.71**	ND
Pesticides (mg/kg)		
4,4'-DDE	**0.0076**	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**385** N	NE
Zinc	**310**	NE

Sample ID Sample Date Depth Range (feet bgs)	EB07_1-2 12/11/2018 1-2	EB07_11-12 12/11/2018 11-12
VOCs (mg/kg)	NE	NE
SVOCs (mg/kg)		
Benzo(a)Anthracene	**1.4**	ND
Benzo(a)Pyrene	**1.2**	ND
Benzo(b)Fluoranthene	**1.7**	ND
Chrysene	**1.3**	ND
Indeno(1,2,3-c,d)Pyrene	**0.66** J	ND
Pesticides (mg/kg)	NE	ND
Herbicides (mg/kg)	ND	ND
PCBs (mg/kg)	ND	ND
Inorganics (mg/kg)		
Lead	**89.3** N	NE
Zinc	**110**	NE

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	Maximum Concentration of Contaminants for the Toxicity Characteristic
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	~
Dibenz(a,h)Anthracene	0.33	0.33	~
Indeno(1,2,3-c,d)Pyrene	0.5	0.5	~
Pesticides (mg/kg)			
4,4'-DDD	0.0033	13	~
4,4'-DDE	0.0033	8.9	~
4,4'-DDT	0.0033	7.9	~
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	~
Inorganics (mg/kg)			
Arsenic	13	16	~
Barium	350	400	~
Chromium, Hexavalent	1	110	~
Copper	50	270	~
Lead	63	400	~
Mercury	0.18	0.81	~
Nickel	30	310	~
Zinc	109	10,000	~
TCLP - Inorganics (mg/L)			
Lead	~	~	5



LEGEND:

- EB8 — ENVIRONMENTAL BORING LOCATION
- APPROXIMATE SITE BOUNDARY
- CURB LINE
- NYCTA ELEVATED TRACK

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OBTAINED FROM HAKS ENGINEERS, ARCHITECTS & LAND SURVEYORS, P.C., DATED 12 SEPTEMBER 2016.
2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE AND RESTRICTED USE RESTRICTED - RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCO) AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24 - ENVIRONMENTAL PROTECTION AGENCY (EPA) MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC.
3. ONLY CONCENTRATIONS EXCEEDING THE COMPARISON CRITERIA ARE SHOWN.
4. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE UNRESTRICTED USE SCOs ARE BOLDED.
5. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE RESTRICTED-RESIDENTIAL SCOs ARE BOLDED AND SHADED.
6. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC ARE SHADED RED.
7. SAMPLE SODUP01_121218 IS A DUPLICATE SAMPLE OF EB10_12-14, SAMPLE SODUP02_121318 IS A DUPLICATE SAMPLE OF EB12_12-14, AND SAMPLE SODUP04_030519 IS A DUPLICATE SAMPLE OF EB18_6-8.
8. bgs = BELOW GRADE SURFACE
9. mg/kg = MILLIGRAMS PER KILOGRAM
10. mg/L = MILLIGRAMS PER LITER
11. NE = DETECTED AT CONCENTRATION(S) NOT EXCEEDING EITHER SCO
12. ND = NOT DETECTED
13. NA = NOT ANALYZED

QUALIFIERS:

D = THE CONCENTRATION REPORTED IS A RESULT OF A DILUTED SAMPLE.
J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE REPORTING LIMIT (RL); THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
N = THE SPIKED SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS

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

60 0 60
SCALE IN FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
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New York, NY 10001
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Project
10-37 BEACH 21ST STREET
BLOCK No. 15705, LOT No. 69 & P/O 59
FAR ROCKAWAY
QUEENS NEW YORK

Figure Title
SOIL BORING LOCATIONS AND RESULTS MAP

Project No. 170540601
Date 4/8/2019
Scale 1"=60'
Drawn By MG
Figure 5
Sheet 5 of 7

Path: \\langan.com\data\NYC\data6\170540601\Project Data\ArcGIS\MXD\Environmental_Figures\Final\Figure 5 - Soil Boring Locations and Results Map.mxd Date: 4/8/2019 User: mgeorgalas Time: 1:57:59 PM

APPENDIX E

Jennifer Armstrong, LEED AP

Senior Project Scientist
Environmental Scientist & Remedial Oversight

14 years in the industry

Ms. Armstrong has experience working on environmental projects in New York. She has conducted Phase I and II Environmental Site Assessments, remedial investigations, soil vapor and indoor air quality surveys, and waste characterization investigations. She has also developed remedial investigation and remedial action work plans and managed groundwater monitoring programs. Her field experience includes soil, soil vapor, and groundwater sampling, indoor air investigations, remedial excavation oversight, and Community Air Monitoring Program (CAMP) management. Ms. Armstrong also has several years of experience in evaluating asbestos consultants and contractors.

Selected Projects

- 144-150 Barrow Street, BCP Management, New York, NY
- 538-540 Hudson Street, BCP Management, New York, NY
- 572 Eleventh Avenue, City VCP Management, New York, NY
- 156-162 Perry Street, BCP Program Management, New York, NY
- Mail Distribution Facility at 57th Avenue, Capping Plan and Implementation, Long Island City, NY
- SJM Storage, 607 West 47th Street, E-designated Site Management, New York, NY
- Con Edison, Spill Delineation and Product Recovery, Governors Island, NY
- Consolidated Edison, Groundwater Sampling and Monitoring Reports, Governors Island, New York, NY
- Gowanus Village, Various Locations, Brooklyn, NY
- West & Watts Development, Phase I and II Environmental, Waste Characterization, and BCP Management, New York, NY
- ACME Greenpoint, Various Locations, Brooklyn, NY
- Consolidated Edison, Atlantic Ave Station, Brooklyn, NY
- Highline 131410, Phase I ESA and Phase II ESI, Hotel Development, New York, NY
- NYC School Construction Authority, Phase I ESAs for Various Sites, New York, NY
- CUNY John Jay College Expansion, CAMP Management, New York, NY
- Pelham Plaza, MGP Remediation Oversight, Pelham Manor, NY
- Con Edison East 74th Street Steam Generation Plant, Remediation Investigations, New York, NY
- MODA Apartments, Waste Characterization and Remediation Oversight, Jamaica, NY
- Bronx Terminal Market, Oversight for Remedial Excavation and Backfilling Bronx, NY

Education

B.S., Environmental Science
Marist College

Professional Registration

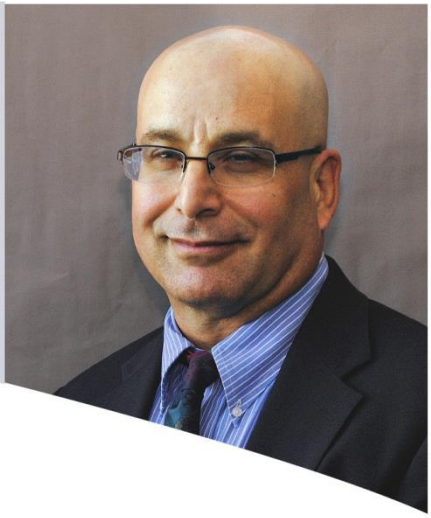
LEED Accredited Professional (LEED AP)

Certified Hazardous Materials Manager

- Pier 4, Spill Remediation Oversight, Bronx, NY
- 40 Bond Street, Site Management Planning, New York, NY
- Bronx Mental Health Redevelopment, Phase I ESA, Bronx, NY
- Silvercup West, Brownfield Program Application and Waste Characterization Investigation, Long Island City, NY
- Freshkills Landfill, Public Relations and Operations and Maintenance Plan Preparation Staten Island, NY
- Distribution Facility, Phase I & Phase II ESA and Regulatory Compliance, Bohemia, NY
- Foxgate/MREC, Due Diligence and Solid Waste Compliance, Central Islip, NY
- Huntington Station Superfund Due Diligence, Huntington Station, NY
- Garvies Point Bulkhead, Glen Cove, NY
- Johnson & Hoffman Metal Stamping Facility, Environmental Compliance, Carle Place, NY
- Floral Park Storage Facility, Phase I and Phase II ESA
- Garden City Phase I ESAs at two sites, including part of a Superfund Site, Garden City, NY
- Huntington Station Storage Facility, Phase I and II ESA, Huntington Station, NY

William Bohrer

Project Geologist
Geologist



39 years in the industry

Mr. Bohrer is an experienced geologist responsible for managing Langan's environmental standards and Health and Safety compliance for projects throughout New York City. His services include dissemination of environmental protocols, troubleshooting at project sites, in-house/field training, and maintenance of quality standards across the environmental discipline. Mr. Bohrer has a diverse and extensive background in geophysics, hydrogeology, mining and petroleum, and geotechnical engineering. He has developed conceptual site models for public, industrial and commercial facilities nationwide.

Selected Projects

NYU Poly – 122 Johnson Street, Brooklyn, NY
Con Edison of New York at Governor's Island, NY, NY
535 4th Avenue, Brooklyn, NY
27 Wooster Street, New York, NY
42 West Street, Brooklyn, NY
455 West 19th Street, New York, NY
Kings Plaza Mall, Brooklyn, NY
Hudson Yards "Terra Firma", New York, NY
Hudson Yards, Platform Special Inspection, New York, NY
PSAC II, Bronx, NY
595-647 Smith Street, Brooklyn, NY
New York University, 7-13 Washington Square North Investigation, New York, NY
NYU 4 Washington Square Village, New York, NY
125th Street and Lenox Avenue, New York, NY
Sullivan Street Development, New York, NY
Hudson Crossing II, New York, NY
New York Aquarium, Shark Tank & Animal Care Facility, Brooklyn, NY
209-219 Sullivan Street, New York, NY
261 Hudson Street, New York, NY
460 Washington Street, New York, NY
552 West 24th Street, New York, NY
Brooklyn Bridge Park Pier 1, New York, NY
International Leadership Bronx Charter School, Bronx, NY
203 East 92nd Street, New York, NY
HighLine 28-29, New York, NY
539 Smith Street Bulkhead, Brooklyn, NY
Willets Point, Corona, NY

Education

Post Graduate Studies in Geophysics
Cornell University

B.S., Geology
Tufts University

Professional Registration

40 Hour OSHA HazWOPER

OSHA Construction Safety & Health

OSHA Supervisory Certification Credential (TWIC)

Transportation Worker Identification

NYS DEC- Protecting New York's Natural Resources with Better Construction Site Management"

Affiliations

American Association of Petroleum Geologists

National Groundwater Association

Geological Society of America

PA Council of Professional Geologists

Jason J. Hayes, PE, LEED AP

Principal
Environmental Engineering

15 years in the industry

Mr. Hayes has experience in New York, New Jersey, Washington D.C., California, Washington, Oregon, Alaska, and Internationally. His experience includes Environmental Protection Agency (EPA), New York State (NYS) Brownfield's application, investigation, and remediation; New York City Department of Environmental Protection (NYCDEP) and New York City Office of Environmental Remediation (OER) E-designated site application, investigation, and remediation. His expertise also includes Phase I and II Environmental Site Investigations and Assessments; contaminated building cleanup and demolition; Underground Storage Tank (UST) permitting, removal specifications, and closure reporting; soil vapor intrusion investigation and mitigation system design (depressurization systems, etc.); development of groundwater contaminant plume migration models; environmental analysis; and oversight, design and specification generation for remediation operations with contaminants of concern to include polychlorinated biphenyls (PCBs), solvents, mercury, arsenic, petroleum products, asbestos, mold and lead.

Selected Projects

Confidential Location (Remediation for Mercury-Contaminated Site), New York, NY
Confidential Location (Phase II ESI and Remedial Design for Mercury Impacted Site), Brooklyn, NY
NYC School Construction Authority (PCB Remediation), Various Locations, New York, NY
28-29 High Line (Phase I ESA, Phase II ESI, and Environmental Remediation), New York, NY
Georgetown Heating Plant (Phase II ESI and Remedial Design for Mercury Impacted Site), Washington D.C.
268 West Street (BCP Application, RI and RIWP), New York, NY
Confidential Multiple Mixed-Use Tower Location (BCP Application, RI, Phase I ESA, and Phase II ESI), New York, NY
Dock 72 at Brooklyn Navy Yard, Tall Office Building (NYS Voluntary Cleanup Program), Brooklyn, NY
27-21 44th Drive (BCP Application, Remedial Investigation Phase I ESA, and Phase II ESI), Long Island City, NY
Purves Street Development, Tall Residential Building, BCP Application, RAWP, and Phase II ESI, Long Island City, NY
267-273 West 87th Street (BCP Application, Remedial Investigation, RIWP, RAWP), New York, NY
New York Aquarium, Shark Tank and Animal Care Facility (Environmental Remediation), Coney Island, NY
International Leadership Charter School (Environmental Remediation), Bronx, NY
West & Watts (BCP Application), New York, NY

Education

M.S., Environmental Engineering
Columbia University

B.S., Chemistry, Environmental Toxicology
Humboldt State University

Business Administration (minor)
Humboldt State University

Professional Registration

Professional Engineer (PE) in NY

LEED Accredited Professional (LEED AP)

Troxler Certification for Nuclear Densometer Training

CPR and First Aid Certification

OSHA 40-Hour (HAZWOPER)

OSHA HAZWOPER Site Supervisor

Affiliations

US Green Building Council, NYC Chapter (USGBC), Communications Committee

Urban Land Institute (ULI), member

Commercial Real Estate Development Association (NAIOP), member

NYC Brownfield Partnership, member

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Hudson Yards Redevelopment (Phase I ESA and Phase II ESI), New York, NY
627 Smith Street (RI and Report), Brooklyn, NY
Gateway Center II Retail (Phase I ESA and Phase II ESI), Brooklyn, NY
261 Hudson Street (Phase I ESA, Phase II ESI, BCP, and RAWP), New York, NY
Riverside Center, Building Two (BCP, Phase I ESA and Phase II ESI), New York, NY
New York Police Academy, (Sub-Slab Depressurization and Vapor Barrier System), College Point, NY
Bronx Terminal Market (BCP, RIWP, RAWP, Phase I ESA and Phase II ESI), Bronx, NY
Jacob Javits Convention Center (Phase I ESA and Phase II ESI), New York, NY
Yankee Stadium Development Waterfront Park (NYSDEC Spill Sites), Bronx, NY
Bushwick Inlet Park (Phase I ESA, Approvals for NYC E-Designation), Brooklyn, NY
Silvercup West (BCP, RIWP, RIR, RAWP, and RAA), Long Island City, NY
29 Flatbush Residential Tower (Groundwater Studies, RIR and RAWP), Brooklyn, NY
Gowanus Village I (BCP, RIWP and RIR), Brooklyn, NY
Sullivan Street Hotel (Site Characterization Study and Owner Representation), New York, NY
Riker's Island Co-Generation Plant (Soil and Soil Vapor Quality Investigations), Bronx, NY
The Shops at Atlas Park (Sub-Slab Depressurization and Vapor Barrier Design), Glendale, NY
Memorial Sloan-Kettering Cancer Center (Subsurface and Soil Vapor Intrusion Investigations), New York, NY
Element West 59th Street (Oversight and Monitoring of Sub-Slab Depressurization and Vapor Barrier Systems), New York, NY
Teterboro Airport (Delineation and Remedial Oversight of Petroleum-Contaminated Soils), Teterboro, NJ
Proposed New York JETS Stadium (Phase I ESA), New York, NY
Former Con Edison Manufactured Gas Plant Sites (Research Reports), New York, NY
7 World Trade Center (Endpoint Sampling and Final Closure Report), New York, NY
Peter Cooper Village, Environmental Subsurface Investigations, New York, NY

Selected Publications, Reports, and Presentations

NYC Mayor's Office of Environmental Remediation – Big Apple Brownfield Workshop – Presented on Soil Vapor Intrusion Remedies (e.g., SSD Systems, Vapor Barriers, Modified HVAC)

New York City Brownfield Partnership – Presented on environmental considerations and complications of the Hudson yards Development

Waterfront Development Technical Course – Presented on Impacted Waterfront Planning Considerations

Ryan Manderbach, CHMM

Associate
Environmental Engineering & Site Assessments

15 years in the industry

Mr. Manderbach has experience in New York, New Jersey, Massachusetts, Maine, Rhode Island, New Hampshire, and Connecticut. His recent experience includes New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs, and New York City Office of Environmental Remediation (OER) E-designated site investigation, and remediation. He has managed and performed Phase I and II Environmental Site Assessments; Underground Storage Tank (UST) removals and closures; soil vapor intrusion investigations; and site investigations and remediation. He also has extensive experience with Hazard Ranking System (HRS) evaluations, site assessments, removal actions, and emergency response activities under the EPA Regions I and II Superfund program.

Selected Projects

- Brownfield Redevelopment, 520 West 41st Street, New York, NY
- Riverside Parcel 1, 3, 4 and 5, Mixed-Use Development, New York, NY
- Brownfield Redevelopment, 267-273 West 87th Street, New York, NY
- Brownfield Redevelopment, 225 33rd Street, Brooklyn, NY
- River Place Residential, SMP Implementation, New York, NY
- Mixed-Use Educational/Residential Development, New York, NY
- Public Safety Answering Center (PSAC) II, Bronx, NY
- American Copper Buildings (616 First Avenue), New York, NY
- Environmental Assessments at 430 East 92nd Street, New York, NY
- Environmental Assessments at 125th Street and Lenox, New York, NY
- Hotel at 70 Park Avenue, New York, NY
- Environmental Due Diligence at Mixed-Use Development, 85 Jay Street, Brooklyn, NY
- 346 Broadway Due Diligence, New York, NY
- Liberty Brass Site, 38-01 Queens Boulevard, Long Island City, NY
- Environmental Remediation, 42 West Street Residential, Brooklyn, NY
- Brownfield Redevelopment, 335 Bond Street, Brooklyn, NY
- Residences at 540 West 21st Street, New York, NY
- International Leadership Bronx Charter School, Bronx, NY
- President Street Properties, Brooklyn, NY
- Residential Development, 43-30 24th Street, Long Island City, NY
- Mixed-Use Condominium, 505-513 West 43rd Street, New York, NY
- 685 First Avenue, New York, NY
- Columbia University, Manhattanville Development, New York, NY
- The Shops at Atlas Park, Glendale, NY
- 536 West 41st Street, New York, NY
- Shore Parkway, Brooklyn, NY
- 100 West 125th Street, New York, NY
- 11 North Moore Street, New York, NY

Education

B.A., Environmental Analysis and Policy
Boston University

Professional Registration

Certified Hazardous Materials Manager (CHMM)

40 Hour HAZWOPER

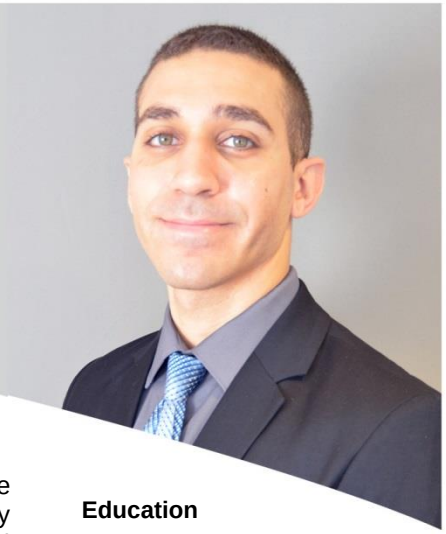
Affiliations

New York Building Congress (NYBC), Young Professionals Committee

American Council of Engineering Companies of New York (ACEC NY) – Emerging Leaders Committee

Sherief Saleh

Senior Staff Scientist
Environmental Engineering



4 years in the industry

Mr. Saleh is an environmental scientist with experience in conducting Phase I and Phase II Environmental Site Assessments to support property transactions; Environmental Assessment Statement and Environmental Impact Statements studies; pre-design investigations; soil and waste classification, construction oversight; lab coordination; and data analysis. Mr. Saleh has a proficient understanding of NJDEP, NYSDEC and NYC OER Technical Guidance and participated in numerous projects requiring environmental review and studies to comply with the City Environmental Quality Review (CEQR) Technical Manual. He possesses a functioning knowledge of several field related software and instruments, including but not limited to: Equis Data Gathering Engine (EDGE), IBMSPSS, Surfer, AQTESOLV, Topcon handheld surveying, various groundwater sampling pumps and Microsoft Office Suite. His experience also includes subcontractor evaluation, project estimating, groundwater flow modeling and scope preparation.

Selected Projects

- University Heights Industrial Yard, Bronx, NY
- 35th Avenue Commercial Lot, Long Island City, NY
- Inwood Rezoning, New York
- Bronx and Upper Manhattan Rezoning, New York, NY
- Betsy Head Park, New York NY
- Skillman Avenue Environmental Remediation, Long Island City, NY
- West 29th Street Redevelopment, New York, NY
- Industrial Chlorinated Solvents Site, New Brunswick, NY
- Federal NJ Chrome Sites, Jersey City, NJ
- Large-scale Industrial Hexavalent Chromium Site, Jersey City, NJ
- Commercial Asbestos and Lead Paint Properties, Jersey City, NJ
- Commingled Soils Excavation, Garfield Avenue, Jersey City, NJ

Selected Publications and Presentations

Saleh, S., Wehrer, M., Binley, A., Slater,L. - Characterization of reactive transport by 3-D electrical resistivity tomography (ERT) under unsaturated conditions

Education

MBA, Business and Technology
New Jersey Institute of Technology

B.S., Environmental Science
New Jersey Institute of Technology

Professional Registration

40-Hour OSHA HAZWOPER

10-Hour Construction Safety

LIRR Roadway Worker Protection Training

Affiliations

Beta Gamma Sigma Business Honor Society

APPENDIX F

QUALITY ASSURANCE PROJECT PLAN

for

BEACH 21ST STREET DEVELOPMENT
10-37 Beach 21st Street
Far Rockaway, Queens, New York
Block 15705, Lot 69 and Part of Lot 59

Prepared For:

Beach 21st Limited Partnership
c/o The Community Builders, Inc.
8 West 38th Street, Suite 1102
New York, NY 10018

Prepared By:

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

April 2019
Langan Project No. 170488401

TABLE OF CONTENTS

FIGURES

ATTACHMENTS

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) was prepared on behalf of Beach 21st Limited Partnership (the Requestor), for the Beach 21st Street Development at 10-37 Beach 21st Street in the Far Rockaway, Queens, New York (the site). This Quality Assurance Project Plan (QAPP) supports the Remedial Action Work Plan (RAWP) that was submitted to the New York State Department of Environmental Conservation (NYSDEC) as part of a New York State Brownfield Cleanup Program (BCP) application. The Requestor intends to remediate the site in conjunction with redevelopment.

This QAPP specifies analytical methods to be used to ensure that data collected during site management are precise, accurate, representative, comparable, complete, and meet the sensitivity requirements of the project.

1.2 PROJECT OBJECTIVES

The RAWP covers earthwork to be completed during construction of the proposed development at the site. A Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) for the protection of on-site workers, the community, and the environment has been developed and will be implemented during remediation and construction activities. These objectives have been established in order to meet standards that will protect public health and the environment for the site.

1.3 SCOPE OF WORK

Implementation of the RAWP consists of remediation of the site to Track 1 cleanup standards. The proposed Track 1 remedy consists of the following tasks:

- Excavation, stockpiling, off-site transport, and disposal of historic fill and native soil that exceeds the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) Soil Cleanup Objectives (SCOs). About 11,300 cubic yards of historic fill will be excavated as a remedial measure, and an additional 12,700 cubic yards of native soil will be excavated to accommodate development. The maximum elevation at which soil exceeding the UU SCOs is present is elevation[1] (el) 15 (about 10 feet below grade surface [bgs]). Material

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

that exceeds UU SCOs will be excavated in conjunction with construction of the support of excavation (SOE) system and foundation components.

- Decommissioning and removal of any underground storage tanks (USTs) identified during earthwork
- Collection and analysis of confirmation soil samples to confirm UU SCOs are achieved
- Backfilling of remediated areas to development sub-grade with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA)
- Development and execution of plans for the protection of on-site workers, the community, and the environment during the remediation phase of development

2.0 DATA QUALITY OBJECTIVES AND PROCESS

Data Quality Objectives (DQOs) are qualitative and quantitative statements to help ensure that data of known and appropriate quality are obtained during the project. The overall objective is to prevent additional environmental impacts to site media (soil and groundwater) by removal of hazardous lead-impacted fill hot-spots. DQOs for sampling activities are determined by evaluating five factors:

- Data needs and uses: The types of data required and how the data will be used after it is obtained.
- Parameters of Interest: The types of chemical or physical parameters required for the intended use.
- Level of Concern: Levels of constituents, which may require remedial actions or further investigations.
- Required Analytical Level: The level of data quality, data precision, and QA/QC documentation required for chemical analysis.
- Required Detection Limits: The detection limits necessary based on the above information.

The quality assurance and quality control objectives for all measurement data include:

- **Precision** – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and/or matrix spike duplicates.
- **Accuracy** – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. For soil and groundwater samples, accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), internal standards, laboratory method blanks, instrument calibration, and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. For soil vapor or air samples, analytical accuracy will be assessed by examining the percent recoveries that are added to each sample, internal standards, laboratory method blanks, and instrument calibration.

- **Representativeness** – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is accomplished by following all applicable methods, laboratory-issued standard operating procedures (SOPs), the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.
- **Completeness** – the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.
- **Comparability** – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and analysis as documented in the QAPP, using standard reporting units and reporting formats, and data validation.
- **Sensitivity** – the ability of the instrument or method to detect target analytes at the levels of interest. The project manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection.

3.0 PROJECT ORGANIZATION

Excavation activities will be overseen by Langan on behalf of the Requestor. Langan will perform the sampling collection as described in the RAWP and will subcontract excavation and analytical services. Langan will also arrange data analysis and reporting tasks. The analytical services will be performed by York Analytical Laboratories Inc. of Stratford, Connecticut (NYSDOH ELAP certification numbers 10854 and 12058).

Key contacts for this project are as follows:

Beach 21st Partnership c/o The Community Builders, Inc.	Mr. Jesse Batus Telephone: (973) 622-0073
Remediation Engineer:	Mr. Jason Hayes, P.E. Telephone: (212) 479-5427
Langan Project Director:	Mr. Ryan Manderbach, CHMM Telephone: (212) 479-5582
Langan Project Manager:	Ms. Jennifer Armstrong Telephone: (212) 479-5537
Langan Field Team Leader:	Mr. Sherief Saleh Telephone: (212) 479-5593
Langan Quality Assurance Officer (QAO):	Mr. Gerald Nicholls Telephone: (212) 479-5559
Langan Health and Safety Manager:	Mr. Tony Moffa, CHMM Telephone: (215) 491-6545
Langan Health and Safety Officer:	Mr. William Bohrer Telephone: (212) 479-5533
Data Validator:	Emily Strake, Langan Telephone: (215) 491-6526
Laboratory Representative:	Ms. Lidya Gulizia (York Lab) Telephone: (203) 325-1371
Field Personnel:	TBD

Langan résumés are appended to the RAWP.

4.0 QUALITY ASSURANCE OBJECTIVES FOR COLLECTION OF DATA

The overall quality assurance objective is to develop and implement procedures for sampling, laboratory analysis, field measurements, and reporting that will provide data of sufficient quality to evaluate the engineering controls on the site. The sample set, chemical analysis results, and interpretations must be based on data that meet or exceed quality assurance objectives established for the site. Quality assurance objectives are usually expressed in terms of accuracy or bias, sensitivity, completeness, representativeness, comparability, and sensitivity of analysis. Variances from the quality assurance objectives at any stage of the investigation will result in the implementation of appropriate corrective measures and an assessment of the impact of corrective measures on the usability of the data.

4.1 PRECISION

Precision is a measure of the degree to which two or more measurements are in agreement. Field precision is assessed through the collection and measurement of field duplicates. Laboratory precision and sample heterogeneity also contribute to the uncertainty of field duplicate measurements. This uncertainty is taken into account during the data assessment process. For field duplicates, results less than 2x the reporting limit (RL) meet the precision criteria if the absolute difference is less than ±2x the RL and acceptable based on professional judgement. For results greater than 2x the RL, the acceptance criteria is a relative percent difference (RPD) of ≤50% (soil and air), <30% (water). RLs and method detection limits (MDL) are provided in Attachment A.

4.2 ACCURACY

Accuracy is the measurement of the reproducibility of the sampling and analytical methodology. It should be noted that precise data may not be accurate data. For the purpose of this QAPP, bias is defined as the constant or systematic distortion of a measurement process, which manifests itself as a persistent positive or negative deviation from the known or true value. This may be due to (but not limited to) improper sample collection, sample matrix, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.

Accuracy in the field is assessed through the use of field blanks and through compliance to all sample handling, preservation, and holding time requirements. All field blanks should be non-detect when analyzed by the laboratory. Any contaminant detected in an

associated field blank will be evaluated against laboratory blanks (preparation or method) and evaluated against field samples collected on the same day to determine potential for bias. Trip blanks are not required for non-aqueous matrices but are planned for non-aqueous matrices where high concentrations of VOCs are anticipated.

Laboratory accuracy is assessed by evaluating the percent recoveries of matrix spike/matrix spike duplicate (MS/MSD) samples, laboratory control samples (LCS), surrogate compound recoveries, and the results of method preparation blanks. MS/MSD, LCS, and surrogate percent recoveries will be compared to either method-specific control limits or laboratory-derived control limits. Sample volume permitting, samples displaying outliers should be reanalyzed. All associated method blanks should be non-detect when analyzed by the laboratory.

4.3 COMPLETENESS

Laboratory completeness is the ratio of total number of samples analyzed and verified as acceptable compared to the number of samples submitted to the fixed-base laboratory for analysis, expressed as a percent. Three measures of completeness are defined:

- Sampling completeness, defined as the number of valid samples collected relative to the number of samples planned for collection;
- Analytical completeness, defined as the number of valid sample measurements relative to the number of valid samples collected; and
- Overall completeness, defined as the number of valid sample measurements relative to the number of samples planned for collection.

Air, soil vapor, soil, and groundwater data will meet a 90% completeness criterion. If the criterion is not met, sample results will be evaluated for trends in rejected and unusable data. The effect of unusable data required for a determination of compliance will also be evaluated.

4.4 REPRESENTATIVENESS

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is dependent upon the adequate design of the sampling

program and will be satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. This is performed by following applicable standard operating procedures (SOPs) and this QAPP. All field technicians will be given copies of appropriate documents prior to sampling events and are required to read, understand, and follow each document as it pertains to the tasks at hand.

Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is performed by following all applicable EPA methods, laboratory-issued SOPs, the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

4.5 COMPARABILITY

Comparability is an expression of the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the sampling plan is followed and that sampling is performed according to the SOPs or other project-specific procedures. Analytical data will be comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability will be controlled by requiring the use of specific nationally-recognized analytical methods and requiring consistent method performance criteria. Comparability is also dependent on similar quality assurance objectives. Previously collected data will be evaluated to determine whether they may be combined with contemporary data sets.

4.6 SENSITIVITY

Sensitivity is the ability of the instrument or method to detect target analytes at the levels of interest. The project director will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection and QC acceptance limits that meet established performance criteria. Concurrently, the project director will select the level of data assessment to ensure that only data meeting the project DQOs are used in decision-making.

Field equipment will be used that can achieve the required levels of detection for analytical measurements in the field. In addition, the field sampling staff will collect and submit full volumes of samples as required by the laboratory for analysis, whenever possible. Full volume aliquots will help ensure achievement of the required limits of detection and allow

for reanalysis if necessary. The concentration of the lowest level check standard in a multi-point calibration curve will represent the reporting limit.

Analytical methods and quality assurance parameters associated with the sampling program are presented in Attachment B. The frequency of associated field blanks and duplicate samples will be based on the recommendations listed in DER-10, and as described in Section 5.3.

Site-specific MS and MSD samples will be prepared and analyzed by the analytical laboratory by spiking an aliquot of submitted sample volume with analytes of interest. Additional sample volume is not required by the laboratory for this purpose. An MS/MSD analysis will be analyzed at a rate of 1 out of every 20 samples, or one per analytical batch. MS/MSD samples are only required for soil and groundwater samples.

5.0 SAMPLE COLLECTION AND FIELD DATA ACQUISITION PROCEDURES

Soil and groundwater sampling will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). Soil vapor sampling will be conducted in accordance with the established New York State Department of Health (NYSDOH) protocols contained in the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). The following sections describe procedures to be followed for specific tasks.

5.1 FIELD DOCUMENTATION PROCEDURES

Field documentation procedures will include summarizing field data in field books and field data sheets, and proper sample labeling. These procedures are described in the following sections.

5.1.1 Field Data and Notes

Field notebooks contain the documentary evidence regarding procedures conducted by field personnel. Hard cover, bound field notebooks will be used because of their compact size, durability, and secure page binding. The pages of the notebook will not be removed.

Entries will be made in waterproof, permanent blue or black ink. No erasures will be allowed. If an incorrect entry is made, the information will be crossed out with a single strike mark and the change initialed and dated by the team member making the change. Each entry will be dated. Entries will be legible and contain accurate and complete documentation of the individual or sampling team's activities or observations made. The level of detail will be sufficient to explain and reconstruct the activity conducted. Each entry will be signed by the person(s) making the entry.

The following types of information will be provided for each sampling task, as appropriate:

- Project name and number
- Reasons for being on-site or taking the sample
- Date and time of activity
- Sample identification numbers
- Geographical location of sampling points with references to the site, other facilities or a map coordinate system. Sketches will be made in the field logbook when appropriate

- Physical location of sampling locations such as depth below ground surface
- Description of the method of sampling including procedures followed, equipment used and any departure from the specified procedures
- Description of the sample including physical characteristics, odor, etc.
- Readings obtained from health and safety equipment
- Weather conditions at the time of sampling and previous meteorological events that may affect the representative nature of a sample
- Photographic information including a brief description of what was photographed, the date and time, the compass direction of the picture and the number of the picture on the camera
- Other pertinent observations such as the presence of other persons on the site, actions by others that may affect performance of site tasks, etc.
- Names of sampling personnel and signature of persons making entries

Field records will also be collected on field data sheets including boring logs, which will be used for geologic and drilling data during soil boring activities. Field data sheets will include the project-specific number and stored in the field project files when not in use. At the completion of the field activities, the field data sheets will be maintained in the central project file.

5.1.2 Sample Labeling

Each sample collected will be assigned a unique identification number in accordance with the sample nomenclature guidance included in Attachment C, and placed in an appropriate sample container. Each sample container will have a sample label affixed to the outside with the date and time of sample collection and project name. In addition, the label will contain the sample identification number, analysis required and chemical preservatives added, if any. All documentation will be completed in waterproof ink.

5.2 EQUIPMENT CALIBRATION AND PREVENTATIVE MAINTENANCE

A photoionization detector (PID) will be used during the sampling activities to evaluate work zone action levels, collect pre- and post-sample readings for air samples, screen soil samples, and collect monitoring well headspace readings. Field calibration and/or field checking of the PID will be the responsibility of the field team leader and the site HSO, and will be accomplished by following the procedures outlined in the operating manual

for the instrument. At a minimum, field calibration and/or field equipment checking will be performed once daily, prior to use. Field calibration will be documented in the field notebook. Entries made into the logbook regarding the status of field equipment will include the following information:

- Date and time of calibration
- Type of equipment serviced and identification number (such as serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

A water quality meter (YSI 6820 or similar) will be used during purging of groundwater to measure pH, specific conductance, temperature, dissolved oxygen, turbidity and oxidation-reduction-potential (ORP), every five minutes. A portable turbidity meter (LaMotte or similar) may also be used to measure turbidity. Water-quality meters should be calibrated and the results documented before use each day using standardized field calibration procedures and calibration checks.

Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent utilization. The equipment will be properly tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated to the manufacturer's specifications by qualified personnel. Equipment that cannot be repaired will be replaced.

Off-site calibration and maintenance of field instruments will be conducted as appropriate throughout the duration of project activities. All field instrumentation, sampling equipment and accessories will be maintained in accordance with the manufacturer's recommendations and specifications and established field equipment practice. Off-site calibration and maintenance will be performed by qualified personnel. A logbook will be kept to document that established calibration and maintenance procedures have been followed. Documentation will include both scheduled and unscheduled maintenance.

5.3 SAMPLE COLLECTION

Soil Samples

Soil samples will be visually classified and field screened using a PID to assess potential impacts from VOCs and for health and safety monitoring. Soil samples collected for analysis of VOCs will be collected using either EnCore® or Terra Core® sampling equipment. For analysis of non-volatile parameters, samples will be homogenized and placed into glass jars. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected soil samples will meet the holding times required for each analyte as specified in Attachment B. In addition, analysis of collected soil sample will meet all quality assurance criteria set forth by this QAPP and DER-10.

Groundwater Samples (If Necessary)

Groundwater sampling will be conducted using low-flow sampling procedures following USEPA guidance ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EQASOP-GW 001, January 19, 2010).

During purging, field parameters should be measured, including: water level drawdown, purge rate, pH, specific conductance, temperature, dissolved oxygen, turbidity and oxidation-reduction-potential (ORP), every ten minutes using a water quality meter (YSI 6820 or similar) and a depth-to-water interface probe that should be decontaminated between wells. Samples should generally not be collected until the field parameters have stabilized. Field parameters will be considered stable once three sets of measurements are within ±0.1 standard units for pH, ±3% for conductivity and temperature, ±10 millivolts for ORP, and ±10% for turbidity and dissolved oxygen. Purge rates should be adjusted to keep the drawdown in the well to less than 0.3 feet, as practical. Additionally, an attempt should be made to achieve a stable turbidity reading of less than 10 Nephelometric Turbidity Units (NTU) prior to sampling. If the turbidity reading does not stabilize at reading of less than 10 NTU for a given well, then both filtered and unfiltered samples should be collected from that well. If necessary, field filtration should be performed using a 0.45 micron disposable in-line filter. Groundwater samples should be collected after parameters have stabilized as noted above or the readings are within the precision of the meter. Deviations from the stabilization and drawdown criteria, if any, should be noted on the sampling logs.

Samples should be collected directly into laboratory-supplied jars. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected groundwater samples will meet the holding times required for each analyte as specified in Attachment B. In addition, analysis of collected groundwater sample will meet all quality assurance criteria set forth by this QAPP and DER-10.

Soil Vapor Samples (If Necessary)

Prior to sample collection, a pre-sampling inspection will be conducted to document chemicals and potential subsurface pathways at the site. Soil vapor samples will be collected into laboratory-supplied, batch certified-clean Summa® canisters calibrated for a sampling rate of two hours. The pressure gauges on each calibrated flow controller should be monitored throughout sample collection. Sample collection should be stopped when the pressure reading reaches -4 mmHg.

Sample Field Blanks and Duplicates

Field blanks will be collected for quality assurance purposes at a rate of one per 20 investigative samples per matrix (soil and groundwater only). Field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blank samples will be analyzed for the complete list of analytes on the day of sampling. Trip blanks will be collected at a rate of one per day if soil samples are analyzed for VOCs during that day.

Duplicate soil samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative samples per matrix and will be submitted to the laboratory as "blind" samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

5.4 SAMPLE CONTAINERS AND HANDLING

Certified, commercially clean sample containers will be obtained from the analytical laboratory. If soil or groundwater samples are being collected, the laboratory will also prepare and supply the required trip blanks and field blank sample containers and reagent

preservatives. Sample bottle containers, including the field blank containers, will be placed into plastic coolers by the laboratory. These coolers will be received by the field sampling team within 24 hours of their preparation in the laboratory. Prior to the commencement of field work, Langan field personnel will fill the plastic coolers with ice in Ziploc® bags (or equivalent) to maintain a temperature of 4° ±2° C.

Soil and/or groundwater samples collected in the field for laboratory analysis will be placed directly into the laboratory-supplied sample containers. Samples will then be placed and stored on-ice in laboratory provided coolers until shipment to the laboratory. The temperature in the coolers containing samples and associated field blanks will be maintained at a temperature of 4°±2°C while on-site and during sample shipment to the analytical laboratory.

Possession of samples collected in the field will be traceable from the time of collection until they are analyzed by the analytical laboratory or are properly disposed. Chain-of-custody procedures, described in Section 5.9, will be followed to maintain and document sample possession. Samples will be packaged and shipped as described in Section 5.6.

5.5 SAMPLE PRESERVATION

Sample preservation measures will be used in an attempt to prevent sample decomposition by contamination, degradation, biological transformation, chemical interactions and other factors during the time between sample collection and analysis. Preservation will commence at the time of sample collection and will continue until analyses are performed. Should chemical preservation be required, the analytical laboratory will add the preservatives to the appropriate sample containers before shipment to the office or field. Samples will be preserved according to the requirements of the specific analytical method selected, as shown in Attachment B.

5.6 SAMPLE SHIPMENT

5.6.1 Packaging

Soil vapor samples canisters can be stored and transported without additional packaging. Soil and groundwater sample containers will be placed in plastic coolers. Ice in Ziploc® bags (or equivalent) will be placed around sample containers. Cushioning material will be added around the sample containers if necessary. Chains-of-custody and other paperwork will be placed in a Ziploc® bag (or equivalent) and placed inside the cooler. The cooler will be taped closed and custody seals will be affixed to one side of the cooler at a

minimum. If the samples are being shipped by an express delivery company (e.g. FedEx) then laboratory address labels will be placed on top of the cooler.

5.6.2 Shipping

Standard procedures to be followed for shipping environmental samples to the analytical laboratory are outlined below.

- All environmental samples will be transported to the laboratory by a laboratory-provided courier under the chain-of-custody protocols described in Section 5.9.
- Prior notice will be provided to the laboratory regarding when to expect shipped samples. If the number, type or date of shipment changes due to site constraints or program changes, the laboratory will be informed.

5.7 DECONTAMINATION PROCEDURES

Decontamination procedures will be used for non-dedicated sampling equipment. Decontamination of field personnel is discussed in the site-specific HASP appended to the RAWP. Field sampling equipment that is to be reused will be decontaminated in the field in accordance with the following procedures:

1. Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
2. Generous tap water rinse
3. Distilled/de-ionized water rinse

5.8 RESIDUALS MANAGEMENT

Debris (e.g., paper, plastic and disposable PPE) will be collected in plastic garbage bags and disposed of as non-hazardous industrial waste. Debris is expected to be transported to a local municipal landfill for disposal. If applicable, residual solids (e.g., leftover soil cuttings) will be placed back in the borehole from which it was sampled. If gross contamination is observed, soil will be collected and stored in Department of Transportation (DOT)-approved 55-gallon drums in a designated storage area at the Site. The residual materials stored in a designated storage area at the site for further characterization, treatment or disposal.

Residual fluids (such as purge water) will be collected and stored in DOT-approved (or equivalent) 55-gallon drums in a designated storage area at the site. The residual fluids will be transported to the on-site wastewater treatment plant or analyzed, characterized and disposed off-site in accordance with applicable federal and state regulations. Residual fluids such as decontamination water may be discharged to the ground surface, however, if gross contamination is observed, the residual fluids will be collected, stored, and transported similar purge water or other residual fluids.

5.9 CHAIN OF CUSTODY PROCEDURES

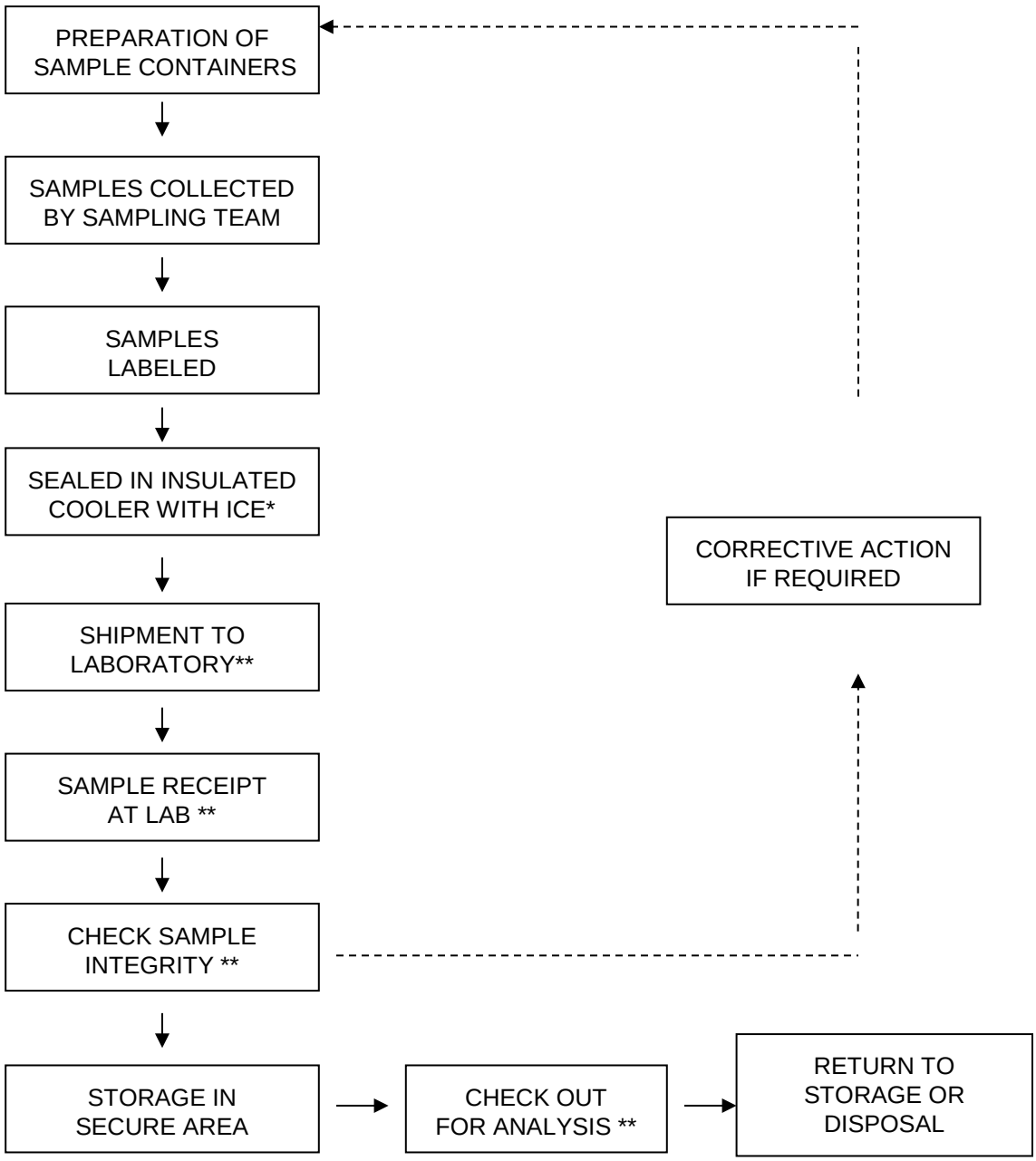
A chain-of-custody protocol has been established for collected samples that will be followed during sample handling activities in both field and laboratory operations. The primary purpose of the chain-of-custody procedures is to document the possession of the samples from collection through shipping, storage and analysis to data reporting and disposal. Chain-of-custody refers to actual possession of the samples. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except the shipping courier, is responsible for sample integrity and safe keeping. Chain-of-custody procedures are provided below:

- Chain-of-custody will be initiated by the laboratory supplying the pre-cleaned and prepared sample containers. Chain-of-custody forms will accompany the sample containers.
- Following sample collection, the chain-of-custody form will be completed for the sample collected. The sample identification number, date and time of sample collection, analysis requested and other pertinent information (e.g., preservatives) will be recorded on the form. All entries will be made in waterproof, permanent blue or black ink.
- Langan field personnel will be responsible for the care and custody of the samples collected until the samples are transferred to another party, dispatched to the laboratory, or disposed. The sampling team leader will be responsible for enforcing chain-of-custody procedures during field work.
- When the form is full or when all samples have been collected that will fit in a single cooler, the sampling team leader will check the form for possible errors and sign the chain-of-custody form. Any necessary corrections will be made to the record with a single strike mark, dated, and initialed.

If soil and/or groundwater samples are collected, sample coolers will be accompanied by the chain-of-custody form, sealed in a Ziploc® bag (or equivalent) and placed on top of the samples or taped to the inside of the cooler lid. If applicable, a shipping bill will be completed for each cooler and the shipping bill number recorded on the chain-of-custody form.

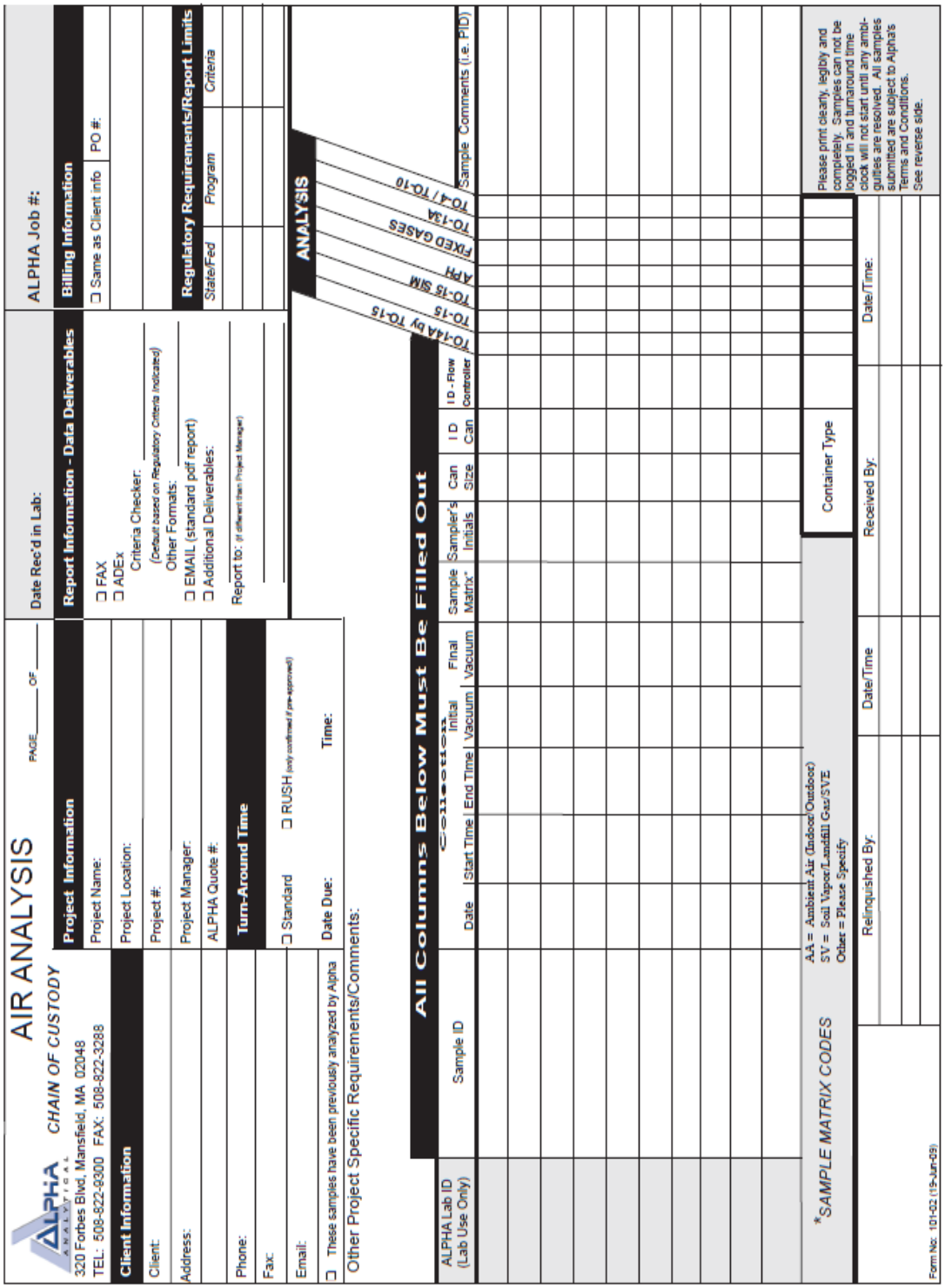
Samples will be packaged for shipment to the laboratory with the appropriate chain-of-custody form. A copy of the form will be retained by the sampling team for the project file and the original will be sent to the laboratory with the samples. Bills of lading will also be retained as part of the documentation for the chain-of-custody records, if applicable. When transferring custody of the samples, the individuals relinquishing and receiving custody of the samples will verify sample numbers and condition and will document the sample acquisition and transfer by signing and dating the chain-of-custody form. This process documents sample custody transfer from the sampler to the analytical laboratory. A flow chart showing a sample custody process is included as Figure 5.1, and chain-of-custody forms are included as Figures 5.2 and 5.3.

Figure 5.1 Sample Custody



*SUMMA CANISTERS SHOULD NOT BE ICED
** REQUIRES SIGN-OFF ON CHAIN-OF-CUSTODY FORM

Figure 5.2 Sample Chain-of-Custody Form – Air Sample



ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

AIR ANALYSIS CHAIN OF CUSTODY

PAGE ___ OF ___

Date Rec'd in Lab:

ALPHA Job #:

Client Information
Client:
Address:
Phone:
Fax:
Email:
☐ These samples have been previously analyzed by Alpha

Project Information
Project Name:
Project Location:
Project #:
Project Manager:
ALPHA Quote #:

Turn-Around Time
☐ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables
☐ FAX
☐ ADEx
Criteria Checker: (Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information
☐ Same as Client info
PO #:

Regulatory Requirements/Report Limits
State/Fed | Program | Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS: TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

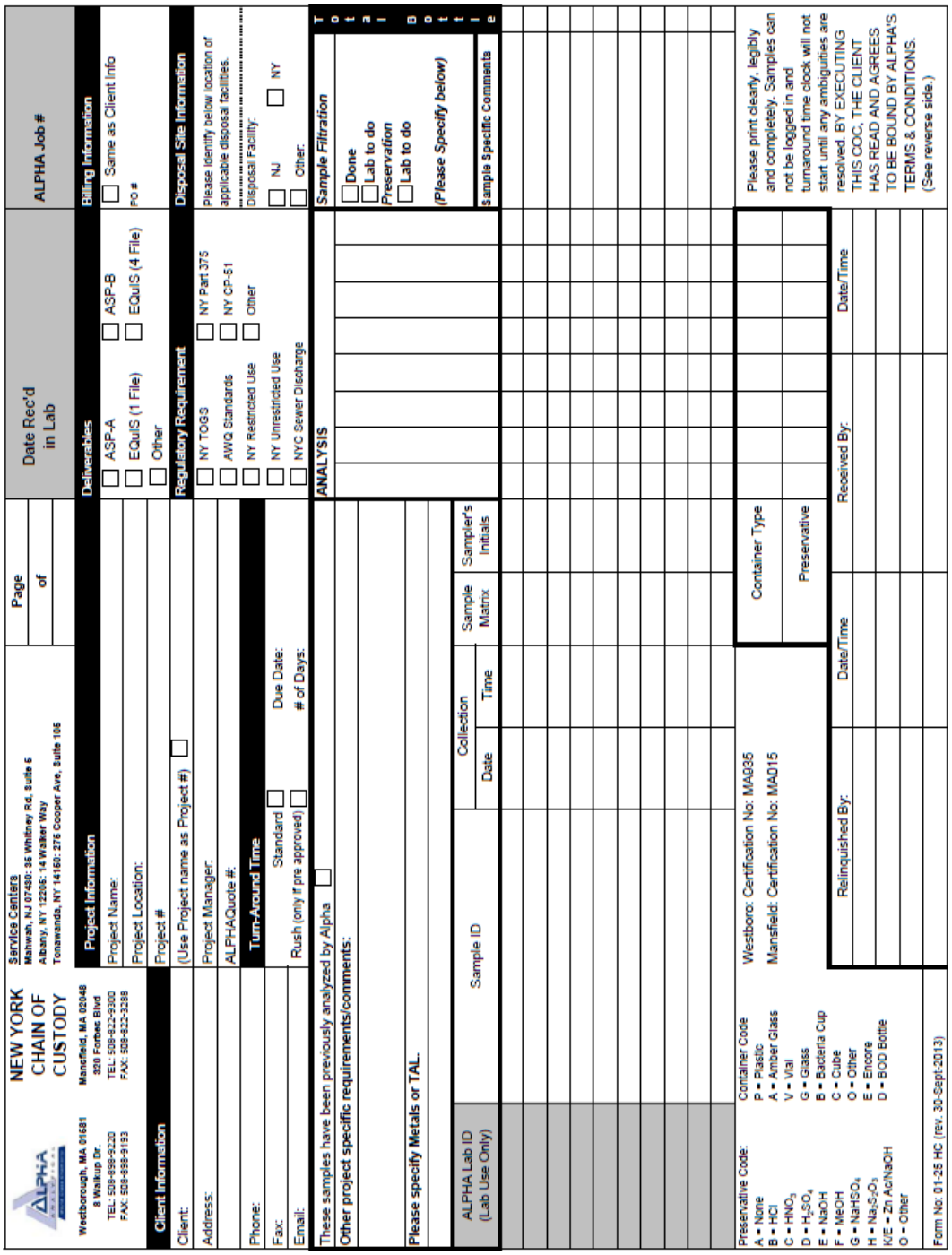
Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:

Form No: 101-02 (19-Jun-09)

Figure 5.3 Sample Chain-of-Custody Form – Soil and Groundwater



Laboratory chain-of-custody will be maintained throughout the analytical processes as described in the laboratory's Quality Assurance Manual. The analytical laboratory will provide a copy of the chain-of-custody in the analytical data deliverable package. The chain-of-custody becomes the permanent record of sample handling and shipment.

5.10 LABORATORY SAMPLE STORAGE PROCEDURES

The subcontracted laboratory will use a laboratory information management system (LIMS) to track and schedule samples upon receipt by the analytical laboratories. Any sample anomalies identified during sample log-in must be evaluated on individual merit for the impact upon the results and the data quality objectives of the project. When irregularities do exist, the environmental consultant must be notified to discuss recommended courses of action and documentation of the issue must be included in the project file.

For samples requiring thermal preservation, the temperature of each cooler will be immediately recorded. Each sample and container will be will be assigned a unique laboratory identification number and secured within the custody room walk-in coolers designated for new samples. Samples will be, as soon as practical, disbursed in a manner that is functional for the operational team. The temperature of all coolers and freezers will be monitored and recorded using a certified temperature sensor. Any temperature excursions outside of acceptance criteria (i.e., below 2°C or above 6°C) will initiate an investigation to determine whether any samples may have been affected. Samples for VOCs will be maintained in satellite storage areas within the VOC laboratory. Following analysis, the laboratory's specific procedures for retention and disposal will be followed as specified in the laboratory's SOPs and/or QA manual.

6.0 DATA REDUCTION, VALIDATION, AND REPORTING

6.1 INTRODUCTION

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

6.2 DATA REDUCTION

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

6.3 DATA VALIDATION

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results,
- Verification of the identification of sample results (both positive hits and non-detects),
- Recalculation of 10% of all investigative sample results, and
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;
- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
- "UJ" - Not detected. Quantitation limit may be inaccurate or imprecise;
- "J" - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method
- "N" – Tentative identification. Analyte is considered present in the sample;
- "R" – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and
- No Flag - Result accepted without qualification.

7.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

7.1 INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

7.2 SYSTEM AUDITS

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

7.3 PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

7.4 FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

8.0 CORRECTIVE ACTION

8.1 INTRODUCTION

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.2 PROCEDURE DESCRIPTION

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups, monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or

contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

FIGURE 8.1

CORRECTIVE ACTION REQUEST
Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOWUP:

CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

9.0 REEFERENCES

NYSDEC. Division of Environmental Remediation. DER-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

NYSDOH. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XI, dated January 1992. USEPA Region II.

USEPA. Hazardous Waste Support Section. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15. SOP No. HW-31, Revision #6, dated June 2014.

ATTACHMENT A

Quantitation Limits					
Method	**Matrix**	**Analyte**	**LOQ**	**MRL**	**Units**
		Volatile Organics			
EPA 8260C	Soil	1,1,1,2-Tetrachloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,1-Trichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2,2-Tetrachloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2-Trichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1-Dichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	1,1-Dichloropropylene	2.5	5	ug/kg
EPA 8260C	Soil	1,2,3-Trichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2,3-Trichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,2,4-Trichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2,4-Trimethylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dibromo-3-chloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dibromoethane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,3,5-Trimethylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,3-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,3-Dichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,4-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,4-Dioxane	50	100	ug/kg
EPA 8260C	Soil	2,2-Dichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	2-Butanone	2.5	5	ug/kg
EPA 8260C	Soil	2-Chlorotoluene	2.5	5	ug/kg
EPA 8260C	Soil	2-Hexanone	2.5	5	ug/kg
EPA 8260C	Soil	4-Chlorotoluene	2.5	5	ug/kg
EPA 8260C	Soil	4-Methyl-2-pentanone	2.5	5	ug/kg
EPA 8260C	Soil	Acetone	5	10	ug/kg
EPA 8260C	Soil	Acrolein	5	10	ug/kg
EPA 8260C	Soil	Acrylonitrile	2.5	5	ug/kg
EPA 8260C	Soil	Benzene	2.5	5	ug/kg
EPA 8260C	Soil	Bromobenzene	2.5	5	ug/kg
EPA 8260C	Soil	Bromochloromethane	2.5	5	ug/kg
EPA 8260C	Soil	Bromodichloromethane	2.5	5	ug/kg
EPA 8260C	Soil	Bromoform	2.5	5	ug/kg
EPA 8260C	Soil	Bromomethane	2.5	5	ug/kg
EPA 8260C	Soil	Carbon disulfide	2.5	5	ug/kg
EPA 8260C	Soil	Carbon tetrachloride	2.5	5	ug/kg
EPA 8260C	Soil	Chlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	Chloroethane	2.5	5	ug/kg
EPA 8260C	Soil	Chloroform	2.5	5	ug/kg
EPA 8260C	Soil	Chloromethane	2.5	5	ug/kg
EPA 8260C	Soil	cis-1,2-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	cis-1,3-Dichloropropylene	2.5	5	ug/kg
EPA 8260C	Soil	Cyclohexane	2.5	5	ug/kg

EPA 8260C	Soil	Dibromochloromethane	2.5	5	ug/kg
EPA 8260C	Soil	Dibromomethane	2.5	5	ug/kg
EPA 8260C	Soil	Dichlorodifluoromethane	2.5	5	ug/kg
EPA 8260C	Soil	Ethyl Benzene	2.5	5	ug/kg
EPA 8260C	Soil	Hexachlorobutadiene	2.5	5	ug/kg
EPA 8260C	Soil	Isopropylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Methyl acetate	2.5	5	ug/kg
EPA 8260C	Soil	Methyl tert-butyl ether (MTBE)	2.5	5	ug/kg
EPA 8260C	Soil	Methylcyclohexane	2.5	5	ug/kg
EPA 8260C	Soil	Methylene chloride	5	10	ug/kg
EPA 8260C	Soil	Naphthalene	2.5	10	ug/kg
EPA 8260C	Soil	n-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	n-Propylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	o-Xylene	2.5	5	ug/kg
EPA 8260C	Soil	p- & m- Xylenes	5	10	ug/kg
EPA 8260C	Soil	p-Isopropyltoluene	2.5	5	ug/kg
EPA 8260C	Soil	sec-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Styrene	2.5	5	ug/kg
EPA 8260C	Soil	tert-Butyl alcohol (TBA)	2.5	5	ug/kg
EPA 8260C	Soil	tert-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Tetrachloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	Toluene	2.5	5	ug/kg
EPA 8260C	Soil	trans-1,2-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	trans-1,3-Dichloropropylene	2.5	5	ug/kg
EPA 8260C	Soil	Trichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	Trichlorofluoromethane	2.5	5	ug/kg
EPA 8260C	Soil	Vinyl acetate	2.5	5	ug/kg
EPA 8260C	Soil	Vinyl Chloride	2.5	5	ug/kg
EPA 8260C	Soil	Xylenes, Total	7.5	15	ug/kg
		Semi-Volatiles Organics			
EPA 8270D	Soil	1,1'-Biphenyl	20.9	41.7	ug/kg
EPA 8270D	Soil	1,2,4,5-Tetrachlorobenzene	41.7	83.3	ug/kg
EPA 8270D	Soil	1,2,4-Trichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	1,2-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	1,2-Diphenylhydrazine (as Azobenzene)	20.9	41.7	ug/kg
EPA 8270D	Soil	1,3-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	1,4-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	2,3,4,6-Tetrachlorophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	2,4,5-Trichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4,6-Trichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4-Dichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4-Dimethylphenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4-Dinitrophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	2,4-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Soil	2,6-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Chloronaphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Chlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Methylnaphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Methylphenol	20.9	41.7	ug/kg

EPA 8270D	Soil	2-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	2-Nitrophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	3- & 4-Methylphenols	20.9	41.7	ug/kg
EPA 8270D	Soil	3,3'-Dichlorobenzidine	20.9	41.7	ug/kg
EPA 8270D	Soil	3-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	4,6-Dinitro-2-methylphenol	41.7	83.3	ug/kg
EPA 8270D	Soil	4-Bromophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chloro-3-methylphenol	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chloroaniline	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chlorophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	4-Nitrophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	Acenaphthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Acenaphthylene	20.9	41.7	ug/kg
EPA 8270D	Soil	Acetophenone	20.9	41.7	ug/kg
EPA 8270D	Soil	Aniline	83.5	167	ug/kg
EPA 8270D	Soil	Anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Atrazine	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzaldehyde	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzidine	83.5	167	ug/kg
EPA 8270D	Soil	Benzo(a)anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(a)pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(b)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(g,h,i)perylene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(k)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzoic acid	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzyl alcohol	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzyl butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroethoxy)methane	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroethyl)ether	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroisopropyl)ether	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-ethylhexyl)phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Caprolactam	41.7	83.3	ug/kg
EPA 8270D	Soil	Carbazole	20.9	41.7	ug/kg
EPA 8270D	Soil	Chrysene	20.9	41.7	ug/kg
EPA 8270D	Soil	Dibenzo(a,h)anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Dibenzofuran	20.9	41.7	ug/kg
EPA 8270D	Soil	Diethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Dimethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Di-n-butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Di-n-octyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Fluorene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorobutadiene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorocyclopentadiene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachloroethane	20.9	41.7	ug/kg
EPA 8270D	Soil	Indeno(1,2,3-cd)pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Isophorone	20.9	41.7	ug/kg

EPA 8270D	Soil	Naphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	Nitrobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	N-Nitrosodimethylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	N-nitroso-di-n-propylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	N-Nitrosodiphenylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	Pentachlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Phenanthrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Phenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Pyridine	83.5	167	ug/kg
		PCBs			
EPA 8082A	Soil	Aroclor 1016	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1221	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1232	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1242	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1248	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1254	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1260	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1262	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1268	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Total PCBs	0.0167	0.0167	mg/kg
		Pesticides			
EPA 8081B	Soil	4,4'-DDD	0.330	0.330	ug/kg
EPA 8081B	Soil	4,4'-DDE	0.330	0.330	ug/kg
EPA 8081B	Soil	4,4'-DDT	0.330	0.330	ug/kg
EPA 8081B	Soil	Aldrin	0.330	0.330	ug/kg
EPA 8081B	Soil	alpha-BHC	0.330	0.330	ug/kg
EPA 8081B	Soil	alpha-Chlordane	0.330	0.330	ug/kg
EPA 8081B	Soil	beta-BHC	0.330	0.330	ug/kg
EPA 8081B	Soil	Chlordane, total	6.6	6.6	ug/kg
EPA 8081B	Soil	delta-BHC	0.330	0.330	ug/kg
EPA 8081B	Soil	Dieldrin	0.330	0.330	ug/kg
EPA 8081B	Soil	Endosulfan I	0.330	0.330	ug/kg
EPA 8081B	Soil	Endosulfan II	0.330	0.330	ug/kg
EPA 8081B	Soil	Endosulfan sulfate	0.330	0.330	ug/kg
EPA 8081B	Soil	Endrin	0.330	0.330	ug/kg
EPA 8081B	Soil	Endrin aldehyde	0.330	0.330	ug/kg
EPA 8081B	Soil	Endrin ketone	0.330	0.330	ug/kg
EPA 8081B	Soil	gamma-BHC (Lindane)	0.330	0.330	ug/kg
EPA 8081B	Soil	gamma-Chlordane	0.330	0.330	ug/kg
EPA 8081B	Soil	Heptachlor	0.330	0.330	ug/kg
EPA 8081B	Soil	Heptachlor epoxide	0.330	0.330	ug/kg
EPA 8081B	Soil	Methoxychlor	0.330	0.330	ug/kg
EPA 8081B	Soil	Toxaphene	33.0	33.0	ug/kg
		Herbicides			
EPA 8151A	Soil	2,4,5-T	20	20	ug/kg

EPA 8151A	Soil	2,4,5-TP (Silvex)	20	20	ug/kg
EPA 8151A	Soil	2,4-D	20	20	ug/kg
		Total Petroleum Hydrocarbons			
EPA 8015D	Soil	TPH-DRO	3.4	10	mg/kg
EPA 8015D	Soil	TPH-GRO	0.4	0.8	mg/kg
		Inorganics			
EPA 6010C	Soil	Aluminum	5.00	5.00	mg/kg
EPA 6010C	Soil	Antimony	0.500	0.500	mg/kg
EPA 6010C	Soil	Arsenic	1.00	1.00	mg/kg
EPA 6010C	Soil	Barium	1.00	1.00	mg/kg
EPA 6010C	Soil	Beryllium	0.100	0.100	mg/kg
EPA 6010C	Soil	Cadmium	0.300	0.300	mg/kg
EPA 6010C	Soil	Calcium	0.500	5.00	mg/kg
EPA 6010C	Soil	Chromium	0.500	0.500	mg/kg
EPA 6010C	Soil	Cobalt	0.500	0.500	mg/kg
EPA 6010C	Soil	Copper	0.500	0.500	mg/kg
EPA 6010C	Soil	Iron	2.00	2.00	mg/kg
EPA 6010C	Soil	Lead	0.300	0.300	mg/kg
EPA 6010C	Soil	Magnesium	5.00	5.00	mg/kg
EPA 6010C	Soil	Manganese	0.500	0.500	mg/kg
EPA 6010C	Soil	Nickel	0.500	0.500	mg/kg
EPA 6010C	Soil	Potassium	5.00	5.00	mg/kg
EPA 6010C	Soil	Selenium	1.00	1.00	mg/kg
EPA 6010C	Soil	Silver	0.500	0.500	mg/kg
EPA 6010C	Soil	Sodium	10.0	10.0	mg/kg
EPA 6010C	Soil	Thallium	1.00	1.00	mg/kg
EPA 6010C	Soil	Vanadium	1.00	1.00	mg/kg
EPA 6010C	Soil	Zinc	1.5	1.5	mg/kg
EPA 7473	Soil	Mercury	0.03	0.03	mg/kg
EPA 9014/9010C	Soil	Cyanide, total	0.5	0.5	mg/kg
EPA 7196A	Soil	Chromium, Hexavalent	0.35	0.5	mg/kg
Calculation	Soil	Chromium, Trivalent	0.25	0.5	mg/kg

Project Quantitation Limits for Water Samples					
Method	**Matrix**	**Analyte**	**MDL**	**RL**	**Units**
		Volatile Organics			
EPA 8260C	Water	1,1,1,2-Tetrachloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,1-Trichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,2,2-Tetrachloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,2-Trichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1-Dichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1-Dichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	1,2,3-Trichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2,3-Trichloropropane	0.2	0.5	ug/L
EPA 8260C	Water	1,2,4-Trichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichloropropane	0.2	0.5	ug/L
EPA 8260C	Water	1,3-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,4-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	cis-1,2-Dichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Tetrachloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Trichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Vinyl Chloride	0.2	0.5	ug/L
EPA 537M	Water	Perfluorobutanoic acid (PFBA)	0.444	2	ng/L
EPA 537M	Water	Perfluoropentanoic acid (PFPeA)	0.444	2	ng/L
EPA 537M	Water	Perfluorohexanoic acid (PFHxA)	0.444	2	ng/L
EPA 537M	Water	Perfluoroheptanoic acid (PFHpA)	0.29	2	ng/L
EPA 537M	Water	Perfluorooctanoic acid (PFOA)	0.47	2	ng/L
EPA 537M	Water	Perfluorononanoic acid (PFNA)	0.26	2	ng/L
EPA 537M	Water	Perfluorodecanoic acid (PFDA)	0.444	2	ng/L
EPA 537M	Water	Perfluoroundecanoic acid (PFUnA)	0.444	2	ng/L
EPA 537M	Water	Perfluorododecanoic acid (PFDoA)	0.444	2	ng/L
EPA 537M	Water	Perfluorotridecanoic Acid (PFTriA)	0.444	2	ng/L
EPA 537M	Water	Perfluorotetradecanoic acid (PFTeA)	0.444	2	ng/L
EPA 537M	Water	Perfluorobutanesulfonic acid (PFBS)	0.88	2	ng/L
EPA 537M	Water	Perfluorohexanesulfonic acid (PFHxS)	0.28	2	ng/L
EPA 537M	Water	Perfluoroheptanesulfonic Acid (PFHpS)	0.444	2	ng/L
EPA 537M	Water	Perfluorooctanesulfonic acid (PFOS)	0.3	2	ng/L
EPA 537M	Water	Perfluorodecanesulfonic acid (PFDS)	0.444	2	ng/L
EPA 537M	Water	Perfluorooctane Sulfonamide (FOSA)	0.444	2	ng/L
EPA 537M	Water	hyl perfluorooctane sulfonamidoacetic acid (NMeFC	0.6	2	ng/L
EPA 537M	Water	nyl perfluorooctane sulfonamidoacetic acid (NEtFOS	0.6	2	ng/L
EPA 537M	Water	6:2FTS	0.6	2	ng/L
EPA 537M	Water	8:2FTS	0.6	2	ng/L
SW-846 8270D SIM	Water	1,4-Dioxane	0.049	0.1	ug/L

ATTACHMENT B
LABORATORY REPORTING LIMITS AND METHOD DETECTION LIMITS

SOIL VAPOR ANALYTE	CASNUMBER	RL	UNITS
1,1,1-Trichloroethane	71-55-6	0.55	ug/m³
1,1,2,2-Tetrachloroethane	79-34-5	0.69	ug/m³
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	0.77	ug/m³
1,1,2-Trichloroethane	79-00-5	0.55	ug/m³
1,1-Dichloroethane	75-34-3	0.40	ug/m³
1,1-Dichloroethylene	75-35-4	0.40	ug/m³
1,2,4-Trichlorobenzene	120-82-1	0.74	ug/m³
1,2,4-Trimethylbenzene	95-63-6	0.49	ug/m³
1,2-Dibromoethane	106-93-4	0.77	ug/m³
1,2-Dichlorobenzene	95-50-1	0.60	ug/m³
1,2-Dichloroethane	107-06-2	0.40	ug/m³
1,2-Dichloropropane	78-87-5	0.46	ug/m³
1,2-Dichlorotetrafluoroethane	76-14-2	0.70	ug/m³
1,3,5-Trimethylbenzene	108-67-8	0.49	ug/m³
1,3-Butadiene	106-99-0	0.43	ug/m³
1,3-Dichlorobenzene	541-73-1	0.60	ug/m³
1,4-Dichlorobenzene	106-46-7	0.60	ug/m³
1,4-Dioxane	123-91-1	0.36	ug/m³
2-Butanone	78-93-3	0.29	ug/m³
2-Hexanone	591-78-6	0.82	ug/m³
4-Methyl-2-pentanone	108-10-1	0.41	ug/m³
Acetone	67-64-1	0.24	ug/m³
Benzene	71-43-2	0.32	ug/m³
Benzyl chloride	100-44-7	0.52	ug/m³
Bromodichloromethane	75-27-4	0.62	ug/m³
Bromoform	75-25-2	1.0	ug/m³
Bromomethane	74-83-9	0.39	ug/m³
Carbon disulfide	75-15-0	0.31	ug/m³
Carbon tetrachloride	56-23-5	0.16	ug/m³
Chlorobenzene	108-90-7	0.46	ug/m³
Chloroethane	75-00-3	0.26	ug/m³
Chloroform	67-66-3	0.49	ug/m³
Chloromethane	74-87-3	0.21	ug/m³
cis-1,2-Dichloroethylene	156-59-2	0.40	ug/m³
cis-1,3-Dichloropropylene	10061-01-5	0.45	ug/m³
Cyclohexane	110-82-7	0.34	ug/m³
Dibromochloromethane	124-48-1	0.80	ug/m³
Dichlorodifluoromethane	75-71-8	0.49	ug/m³
Ethyl acetate	141-78-6	0.72	ug/m³
Ethyl Benzene	100-41-4	0.43	ug/m³
Hexachlorobutadiene	87-68-3	1.1	ug/m³
Isopropanol	67-63-0	0.49	ug/m³
Methyl Methacrylate	80-62-6	0.41	ug/m³
Methyl tert-butyl ether (MTBE)	1634-04-4	0.36	ug/m³
Methylene chloride	75-09-2	0.69	ug/m³
n-Heptane	142-82-5	0.41	ug/m³
n-Hexane	110-54-3	0.35	ug/m³
o-Xylene	95-47-6	0.43	ug/m³
p- & m- Xylenes	179601-23-1	0.87	ug/m³
p-Ethyltoluene	622-96-8	0.49	ug/m³
Propylene	115-07-1	0.17	ug/m³
Styrene	100-42-5	0.43	ug/m³
Tetrachloroethylene	127-18-4	0.17	ug/m³
Tetrahydrofuran	109-99-9	0.29	ug/m³
Toluene	108-88-3	0.38	ug/m³
trans-1,2-Dichloroethylene	156-60-5	0.40	ug/m³
trans-1,3-Dichloropropylene	10061-02-6	0.45	ug/m³
Trichloroethylene	79-01-6	0.13	ug/m³
Trichlorofluoromethane (Freon 11)	75-69-4	0.56	ug/m³
Vinyl acetate	108-05-4	0.35	ug/m³
Vinyl Chloride	75-01-4	0.064	ug/m³

ATTACHMENT B

ATTACHMENT B
ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

Matrix Type	No. Samples (w/o QA/QC)	Field Parameters	Laboratory Parameters	Analytical Methods	Sample Preservation	Sample Container Volume and Type	Sample Hold Time	Field Duplicate Samples	Equipment Blank Samples	Trip Blank Samples	MS/MSD Samples
Groundwater	Run 5 samples	Water level drawndown, purge rate, pH, specific conductance, temperature, dissolved oxygen, turbidity, and oxidation-reduction-potential	Part 375 and TCL VOCS	EPA Method 8260C	Cool to 4 ± 2°C, HCL to pH <2; no headspace	Three 40-mL VOC vials with Teflon® -lined cap	Analyze within 14 days of collection	1 per 20 samples (minimum 1)	1 per 20 samples (minimum 1)	1 per Shipment of VOC samples	1 per 20 samples
			Part 375 and TCL SVOCs	EPA Method 8270D	Cool to 4 ± 2°C	Two 1-Liter Amber Glass	7 days to extract; 40 days after extraction to analysis			NA	
			1,4-Dioxane as SVOC	EPA Method 8270D with SIM		Two 1-Liter Amber Glass	7 days to extract; 40 days after extraction to analysis				
			Part 375 and TCL Pesticides	EPA Method 8081B		Two 1-Liter Amber Glass	7 days to extract; 40 days after extraction to analysis				
			PCBs	EPA Method 8082A							
			Part 375 and TCL Herbicides	EPA Method 8260C							
			TAL total/dissolved metals	EPA Method 6010C/7000	Cool to 4 ± 2°C; HNO_3 to pH<2	250 mL plastic	6 months, except Mercury 28 days				
			Hexavalent Chromium	EPA 7196A	Cool to 4 ± 2°C	250 mL plastic	24 hours				
			PFCS TAL	EPA Method 537M (2009)	Cool to 4 ± 2°C; Trizma	Three 250-mL HDPE or polypropylene container	14 days to extract; 28 days after extraction to analysis				
Soil	Run 8 samples	Total VOCs via PID	Part 375 and TCL VOCS	EPA Method 8260C	Cool to 4 ± 2°C	Terra Core Samplers (two 40-mL VOC Vials with 5mL H_2O, one with MeOH)	Analyze within 48 hours of sampling if not frozen or extruded into methanol. If frozen or extruded into methanol, analyze within 14 days of collection	1 per sampling day (minimum 1)	1 per 20 samples (minimum 1)	NA	1 per 20 samples
			Part 375 and TCL SVOCs	EPA Method 8270D		4 oz. jar*	14 days to extract; 40 days after extraction to analysis				
			Part 375 and TCL Pesticides	EPA Method 8081B		4 oz. jar*					
			PCBs	EPA Method 8082A							
			Part 375 and TCL Herbicides	EPA Method 8260C		4 oz. jar*					
			Hexavalent Chromium	EPA 7196A		2 oz. jar*	24 hours				
			PFCS TAL	EPA Method 537M (2009)	Cool to 4 ± 2°C; Trizma	4 oz. jar*	14 days to extract; 28 days after extraction to analysis				
	Run 4 samples Hold 8 samples		Part 375 SVOCs	EPA Method 8270D	Cool to 4 ± 2°C	4 oz. jar*	14 days to extract; 40 days after extraction to analysis				
	Run 14 samples Hold 28 samples		Part 375 total metals	EPA Method 6010C/7000		2 oz. jar*	6 months, except Mercury 28 days and Cyanide 14 days				
	TBD		TCLP Metals	EPA Method 6010D/1311		2 oz. jar*	6 months				
	TBD		Percent Solids	SM 2540G	NA	NA	NA	NA	NA	NA	NA
Soil Vapor/Ambient Air	Run 7 samples	Total VOCs via PID and multi-gas monitor	TO-15 Listed VOCs	USEPA Method TO-15	Ambient Temperature	2.7-Liter Summa Canister	Analyze within 30 days of collection	1 per 20 samples (minimum 1)	NA	NA	NA

Notes:
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - Polychlorinated Biphenyls
PFAS - Perfluoro Alkylated Substances
SIM - Selected Ion Monitoring
HCl - Hydrochloric Acid
HNO_3 - Nitric Acid
MeOH - Methanol
N/A - Not Applicable
TBD = To be determined
*Can be combined in one or more 8 oz. jars

Analyte	MDL	MRL	Units	CASNumber
Perfluorobutanesulfonic acid (PFBS)	2.00	2.00	ng/L	375-73-5
Perfluorohexanoic acid (PFHxA)	2.00	2.00	ng/L	307-24-4
Perfluoroheptanoic acid (PFHpA)	2.00	2.00	ng/L	375-85-9
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.00	ng/L	3871-99-6
Perfluorooctanoic acid (PFOA)	2.00	2.00	ng/L	335-67-1
Perfluorooctanesulfonic acid (PFOS)	2.00	2.00	ng/L	1763-23-1
Perfluorononanoic acid (PFNA)	2.00	2.00	ng/L	375-95-1
Perfluorodecanoic acid (PFDA)	2.00	2.00	ng/L	335-76-2
Perfluoroundecanoic acid (PFUnA)	2.00	2.00	ng/L	2058-94-8
Perfluorododecanoic acid (PFDoA)	2.00	2.00	ng/L	307-55-1
Perfluorotridecanoic acid (PFTrDA)	2.00	2.00	ng/L	72629-94-8
Perfluorotetradecanoic acid (PFTA)	2.00	2.00	ng/L	376-06-7
N-MeFOSAA	2.00	2.00	ng/L	2355-31-9
N-EtFOSAA	2.00	2.00	ng/L	2991-50-6
Perfluoropentanoic acid (PFPeA)	2.00	2.00	ng/L	2706-90-3
Perfluoro-1-octanesulfonamide (FOSA)	2.00	2.00	ng/L	754-91-6
Perfluoro-1-heptanesulfonic acid (PFHpS)	2.00	2.00	ng/L	375-92-8
Perfluoro-1-decanesulfonic acid (PFDS)	2.00	2.00	ng/L	2806-15-7
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	2.00	2.00	ng/L	27619-97-2
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)	2.00	2.00	ng/L	39108-34-4
Perfluoro-n-butanoic acid (PFBA)	2.00	2.00	ng/L	375-22-4
Isotope compounds				
M3FBS	2.00	2.00	ng/L	
M5PFHxA	2.00	2.00	ng/L	
M4PFHpA	2.00	2.00	ng/L	
M3PFHxS	2.00	2.00	ng/L	
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	2.00	2.00	ng/L	
M6PFDA	2.00	2.00	ng/L	
M7PFUdA	2.00	2.00	ng/L	
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	2.00	2.00	ng/L	
M2PFTeDA	2.00	2.00	ng/L	
Perfluoro-n-[13C4]butanoic acid (MPFBA)	2.00	2.00	ng/L	
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	2.00	2.00	ng/L	
Perfluoro-n-[13C5]pentanoic aid (M5PFPeA)	2.00	2.00	ng/L	
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	2.00	2.00	ng/L	
d3-N-MeFOSAA	2.00	2.00	ng/L	
d5-N-EtFOSAA	2.00	2.00	ng/L	
M2-6:2 FTS	2.00	2.00	ng/L	
M2-8:2 FTS	2.00	2.00	ng/L	
M9PFNA	2.00	2.00	ng/L	
MPFOA	2.00	2.00	ng/L	

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Acenaphthene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Acenaphthylene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Anthracene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Benzo(a)anthracene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Benzo(a)pyrene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Benzo(b)fluoranthene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Benzo(g,h,i)perylene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Benzo(k)fluoranthene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Chrysene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Dibenzo(a,h)anthracene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Fluoranthene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Fluorene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Indeno(1,2,3-cd)pyrene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Naphthalene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Phenanthrene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	Pyrene	21	42	ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	SURR: Nitrobenzene-d5			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	SURR: 2-Fluorobiphenyl			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	SURR: Terphenyl-d14			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: 1,4-Dichlorobenzene-d4			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: Naphthalene-d8			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: Acenaphthene-d10			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: Phenanthrene-d10			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: Chrysene-d12			ug/kg
EPA 8270D	Semi-Volatiles, CP-51 (formerly STARS) List	Soil	ISTD: Perylene-d12			ug/kg

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 6010D/1311	Metals, TCLP TAL	Soil	Aluminum	0.050	0.050	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Antimony	0.025	0.025	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Arsenic	0.015	0.015	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Barium	0.025	0.025	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Beryllium	0.0005	0.0005	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Cadmium	0.003	0.003	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Calcium	0.050	0.050	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Chromium	0.005	0.005	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Cobalt	0.004	0.004	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Copper	0.020	0.020	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Iron	0.250	0.250	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Lead	0.005	0.005	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Magnesium	0.050	0.050	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Manganese	0.005	0.005	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Nickel	0.010	0.010	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Potassium	0.050	0.050	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Selenium	0.025	0.025	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Silver	0.005	0.005	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Sodium	0.500	0.500	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Thallium	0.025	0.025	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Vanadium	0.010	0.010	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Zinc	0.025	0.025	mg/L
EPA 6010D/1311	Metals, TCLP TAL	Soil	Yttrium 371.029			mg/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,1,1-Trich	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,1,2,2-Tet	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,1,2-Trich	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,1-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,1-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,2,3-Trich	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,2,4-Trich	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,2,4-Trime	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,2-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,2-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,3,5-Trime	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,3-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,3-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,4-Dichlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	1,4-Dioxan	50	100	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	2-Butanone	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	4-Methyl-2-	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Acetone	5.0	10	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Benzene	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Carbon dis	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Carbon tetı	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Chloroben:	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Chloroetha	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Chloroform	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	cis-1,2-Dicl	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Ethyl Benz	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Isopropylbe	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Methyl tert-	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Methylene	5.0	10	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Naphthaler	2.5	10	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	n-Butylben	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	n-Propylbe	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	o-Xylene	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	p- & m- Xyl	5.0	10	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	p-Isopropyl	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	sec-Butylbe	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	tert-Butylbe	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Tetrachlorc	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Toluene	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	trans-1,2-D	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Trichloroeth	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Vinyl Chlor	2.5	5.0	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	Xylenes, T	7.5	15	ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	SURR: 1,2-Dichloroethane-d4			ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	SURR: Toluene-d8			ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	SURR: p-Bromofluorobenzene			ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	ISTD: Fluorobenzene			ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	ISTD: Chlorobenzene-d5			ug/kg
EPA 8260(	Volatile Organics, NYSDEC Part 375 List	Soil	ISTD: 1,2-Dichlorobenzene-d4			ug/kg

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,1-Biphenyl	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,2,4,5-Tetrachlorobenzene	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,2,4-Trichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,2-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,2-Diphenylhydrazine (as Azobenzene)	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,3-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	1,4-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,3,4,6-Tetrachlorophenol	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4,5-Trichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4,6-Trichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4-Dichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4-Dimethylphenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4-Dinitrophenol	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,4-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2,6-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Chloronaphthalene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Chlorophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Methylnaphthalene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Methylphenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	2-Nitrophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	3- & 4-Methylphenols	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	3,3-Dichlorobenzidine	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	3-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4,6-Dinitro-2-methylphenol	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Bromophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Chloro-3-methylphenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Chloroaniline	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Chlorophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	4-Nitrophenol	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Acenaphthene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Acenaphthylene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Acetophenone	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Aniline	83.5	167	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Anthracene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Atrazine	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzaldehyde	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzidine	83.5	167	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzo(a)anthracene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzo(a)pyrene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzo(b)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzo(g,h,i)perylene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzo(k)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzoic acid	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzyl alcohol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Benzyl butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Bis(2-chloroethoxy)methane	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Bis(2-chloroethyl)ether	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Bis(2-chloroisopropyl)ether	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Bis(2-ethylhexyl)phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Caprolactam	41.7	83.3	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Carbazole	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Chrysene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Dibenzo(a,h)anthracene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Dibenzofuran	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Diethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Dimethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Di-n-butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Di-n-octyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Fluorene	20.9	41.7	ug/kg

EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Hexachlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Hexachlorobutadiene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Hexachlorocyclopentadiene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Hexachloroethane	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Indeno(1,2,3-cd)pyrene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Isophorone	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Naphthalene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Nitrobenzene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	N-Nitrosodimethylamine	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	N-nitroso-di-n-propylamine	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	N-Nitrosodiphenylamine	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Pentachlorophenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Phenanthrene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Phenol	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Pyrene	20.9	41.7	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	Pyridine	83.5	167	ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: 2-Fluorophenol			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: Phenol-d5			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: Nitrobenzene-d5			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: 2-Fluorobiphenyl			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: 2,4,6-Tribromophenol			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	SURR: Terphenyl-d14			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: 1,4-Dichlorobenzene-d4			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: Naphthalene-d8			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: Acenaphthene-d10			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: Phenanthrene-d10			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: Chrysene-d12			ug/kg
EPA 8270D	Semi-Volatiles, 8270 - Comprehensive	Soil	ISTD: Perylene-d12			ug/kg

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8082A	PCB, 8082	Soil	Aroclor 1016	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (1)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (2)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (3)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (4)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (5)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1016 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (1)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (2)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (3)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1221 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (1)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (2)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (3)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (4)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (5)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1232 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (1)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (2)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (3)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (4)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (5)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1242 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (1)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (2)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (3)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (4)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (5)			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082	Soil	Aroclor 1248 (3) [2C]			mg/kg

EPA 8082A	PCB, 8082 Soil	Aroclor 1248 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1248 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (1)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (2)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (3)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (4)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (5)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1254 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (1)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (2)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (3)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (4)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (5)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1260 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (1)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (2)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (3)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (4)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (5)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1262 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (1)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (2)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (3)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (4)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (5)			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (1) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (2) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (3) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (4) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Aroclor 1268 (5) [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Total PCBs	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Total PCBs [2C]	0.0167	0.0167	mg/kg
EPA 8082A	PCB, 8082 Soil	Tetrachloro-m-xylene			mg/kg
EPA 8082A	PCB, 8082 Soil	Tetrachloro-m-xylene [2C]			mg/kg
EPA 8082A	PCB, 8082 Soil	Decachlorobiphenyl			mg/kg

EPA 8082A	PCB, 8082 Soil	Decachlorobiphenyl [2C]	mg/kg

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDD	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDD [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDE	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDE [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDT	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	4,4'-DDT [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Aldrin	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Aldrin [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	alpha-BHC	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	alpha-BHC [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	alpha-Chlordane	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	alpha-Chlordane [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	beta-BHC	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	beta-BHC [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Chlordane, total	6.60	6.60	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Chlordane, total [2C]	6.60	6.60	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	delta-BHC	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	delta-BHC [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Dieldrin	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Dieldrin [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan I	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan I [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan II	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan II [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan sulfate	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endosulfan sulfate [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin aldehyde	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin aldehyde [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin ketone	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Endrin ketone [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	gamma-BHC (Lindane)	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	gamma-BHC (Lindane) [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	gamma-Chlordane	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	gamma-Chlordane [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Heptachlor	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Heptachlor [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Heptachlor epoxide	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Heptachlor epoxide [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Methoxychlor	1.65	1.65	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Methoxychlor [2C]	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Toxaphene	16.7	16.7	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Toxaphene [2C]	33.0	33.0	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Mirex	0.330	0.330	ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Decachlorobiphenyl			ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Decachlorobiphenyl [2C]			ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Tetrachloro-m-xylene			ug/kg
EPA 8081B	Pesticides, 8081 target list	Soil	Tetrachloro-m-xylene [2C]			ug/kg

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8151A	HERB, 815	Soil	2,4,5-T	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4,5-T [2C	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4,5-TP (S	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4,5-TP (S	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4-D	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4-D [2C]	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4-DB	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4-DB [2C	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	Dalapon	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	Dalapon [2	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	Dicamba	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	Dicamba [2	20.0	20.0	ug/kg
EPA 8151A	HERB, 815	Soil	2,4-Dichlorophenylacetic acid (DC			ug/kg
EPA 8151A	HERB, 815	Soil	2,4-Dichlorophenylacetic acid (DC			ug/kg

SpecificMethod	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 6010D	Metals, Target Analyte	Soil	Aluminum	5.00	5.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Antimony	2.50	2.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Arsenic	1.50	1.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Barium	2.50	2.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Beryllium	0.050	0.050	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Cadmium	0.300	0.300	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Calcium	0.500	5.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Chromium	0.500	0.500	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Cobalt	0.400	0.400	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Copper	2.00	2.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Iron	25.0	25.0	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Lead	0.500	0.500	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Magnesiun	5.00	5.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Manganes	0.500	0.500	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Nickel	1.00	1.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Potassium	5.00	5.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Selenium	2.50	2.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Silver	0.500	0.500	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Sodium	50.0	50.0	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Thallium	2.50	2.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Vanadium	1.00	1.00	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Zinc	2.50	2.50	mg/kg
EPA 6010D	Metals, Target Analyte	Soil	Yttrium 371	.029		mg/kg
EPA 7196A	Chromium, Hexavalent	Soil	Chromium,	0.350	0.500	mg/kg
Calculation	Chromium, Trivalent	Soil	Chromium,	0.250	0.500	mg/kg

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 9014/	Cyanide, T	Soil	Cyanide, tc	0.500	0.500	mg/kg

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8260(	Volatile Or(	Water	1,1,1,2-Tet	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1,1-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1,2,2-Tet	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1,2-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1,2-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,1-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2,3-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2,3-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2,4,5-Tet	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2,4-Trich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2,4-Trime	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2-Dibrom	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2-Dibrom	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,2-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,3,5-Trime	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,3-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,3-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,4-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	1,4-Dioxan	40	40	ug/L
EPA 8260(	Volatile Or(	Water	2,2-Dichlor	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	2-Butanone	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	2-Chlorotol	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	2-Hexanon	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	4-Chlorotol	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	4-Methyl-2-	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Acetone	1.0	2.0	ug/L
EPA 8260(	Volatile Or(	Water	Acrolein	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Acrylonitrile	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Benzene	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Bromobenz	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Bromochlo	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Bromodich	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Bromoform	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Bromometl	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Carbon dis	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Carbon tet	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Chloroben	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Chloroetha	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Chloroform	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Chlorometl	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	cis-1,2-Dic	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	cis-1,3-Dic	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Cyclohexar	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Dibromoch	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Dibromom	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Dichlorodifl	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Ethyl Benz	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Hexachlorc	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Isopropylbe	0.20	0.50	ug/L
EPA 8260(	Volatile Or(	Water	Methyl ace	0.20	0.50	ug/L

EPA 8260C	Volatile Org	Water	Methyl tert-	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Methylcyclo	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Methylene	1.0	2.0	ug/L
EPA 8260C	Volatile Org	Water	Naphthaler	1.0	2.0	ug/L
EPA 8260C	Volatile Org	Water	n-Butylben	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	n-Propylbe	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	o-Xylene	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	p- & m- Xyl	0.50	1.0	ug/L
EPA 8260C	Volatile Org	Water	p-Diethylbe	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	p-Ethyltolu	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	p-Isopropyl	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	sec-Butylbe	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Styrene	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	tert-Butyl a	0.50	1.0	ug/L
EPA 8260C	Volatile Org	Water	tert-Butylbe	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Tetrachlorc	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Toluene	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	trans-1,2-D	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	trans-1,3-D	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	trans-1,4-d	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Trichloroetl	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Trichloroflu	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Vinyl aceta	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Vinyl Chlor	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	Xylenes, T	0.60	1.5	ug/L
EPA 8260C	Volatile Org	Water	Chlorodiflu	0.20	0.50	ug/L
EPA 8260C	Volatile Org	Water	SURR: 1,2-Dichloroethane-d4			ug/L
EPA 8260C	Volatile Org	Water	SURR: Toluene-d8			ug/L
EPA 8260C	Volatile Org	Water	SURR: p-Bromofluorobenzene			ug/L
EPA 8260C	Volatile Org	Water	ISTD: Fluorobenzene			ug/L
EPA 8260C	Volatile Org	Water	ISTD: Chlorobenzene-d5			ug/L
EPA 8260C	Volatile Org	Water	ISTD: 1,2-Dichlorobenzene-d4			ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8270E	Semi-Volat	Water	1,1-Biphen	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,2,4,5-Tet	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,2,4-Trich	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,2-Dichlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,2-Diphen	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,3-Dichlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	1,4-Dichlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,3,4,6-Tet	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4,5-Trich	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4,6-Trich	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4-Dichlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4-Dimeth	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4-Dinitrop	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,4-Dinitrot	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2,6-Dinitrot	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Chlorona	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Chloroph	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Methylna	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Methylph	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Nitroanili	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	2-Nitrophe	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	3- & 4-Metl	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	3,3-Dichlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	3-Nitroanili	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4,6-Dinitro-	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Bromoph	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Chloro-3-	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Chloroan	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Chloroph	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Nitroanili	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	4-Nitrophe	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Acenaphth	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Acenaphth	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Acetophen	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Aniline	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Anthracene	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Atrazine	0.500	0.500	ug/L
EPA 8270E	Semi-Volat	Water	Benzaldeh	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Benzidine	10.0	20.0	ug/L
EPA 8270E	Semi-Volat	Water	Benzo(a)ar	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Benzo(a)py	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Benzo(b)flu	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Benzo(g,h,	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Benzo(k)flu	0.0500	0.0500	ug/L
EPA 8270E	Semi-Volat	Water	Benzoic ac	25.0	50.0	ug/L
EPA 8270E	Semi-Volat	Water	Benzyl alcc	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Benzyl buty	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Bis(2-chlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Bis(2-chlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Bis(2-chlor	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Bis(2-ethyll	0.500	0.500	ug/L
EPA 8270E	Semi-Volat	Water	Caprolacta	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Carbazole	2.50	5.00	ug/L
EPA 8270E	Semi-Volat	Water	Chrysene	0.0500	0.0500	ug/L

EPA 8270D	Semi-Volat	Water	Dibenzo(a,	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Dibenzofur	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Diethyl phtl	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Dimethyl pl	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Di-n-butyl p	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Di-n-octyl p	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Fluoranthe	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Fluorene	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Hexachlorc	0.0200	0.0200	ug/L
EPA 8270D	Semi-Volat	Water	Hexachlorc	0.500	0.500	ug/L
EPA 8270D	Semi-Volat	Water	Hexachlorc	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Hexachlorc	0.500	0.500	ug/L
EPA 8270D	Semi-Volat	Water	Indeno(1,2	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Isophorone	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Naphthaler	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Nitrobenze	0.250	0.250	ug/L
EPA 8270D	Semi-Volat	Water	N-Nitrosod	0.500	0.500	ug/L
EPA 8270D	Semi-Volat	Water	N-nitroso-d	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	N-Nitrosod	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Pentachlor	0.250	0.250	ug/L
EPA 8270D	Semi-Volat	Water	Phenanthre	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Phenol	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	Pyrene	0.0500	0.0500	ug/L
EPA 8270D	Semi-Volat	Water	Pyridine	2.50	5.00	ug/L
EPA 8270D	Semi-Volat	Water	SURR: 2-Fluorophenol			ug/L
EPA 8270D	Semi-Volat	Water	SURR: Phenol-d5			ug/L
EPA 8270D	Semi-Volat	Water	SURR: Nitrobenzene-d5			ug/L
EPA 8270D	Semi-Volat	Water	SURR: 2-Fluorobiphenyl			ug/L
EPA 8270D	Semi-Volat	Water	SURR: 2,4,6-Tribromophenol			ug/L
EPA 8270D	Semi-Volat	Water	SURR: Terphenyl-d14			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: 1,4-Dichlorobenzene-d4			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: Naphthalene-d8			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: Acenaphthene-d10			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: Phenanthrene-d10			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: Chrysene-d12			ug/L
EPA 8270D	Semi-Volat	Water	ISTD: Perylene-d12			ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8082A	Polychlorin	Water	Aroclor 101	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (1)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (2)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (3)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (4)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (5)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 101	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (1) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (2) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (3) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (4) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1016 (5) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 122	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (1)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (2)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (3)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 122	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (1) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (2) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1221 (3) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 123	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (1)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (2)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (3)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (4)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (5)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 123	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (1) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (2) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (3) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (4) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1232 (5) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 124	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (1)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (2)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (3)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (4)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (5)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 124	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (1) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (2) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (3) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (4) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1242 (5) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 124	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (1)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (2)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (3)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (4)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (5)			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 124	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (1) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (2) [2C]			ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (3) [2C]			ug/L

EPA 8082A	Polychlorin	Water	Aroclor 1248 (4) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1248 (5) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 125	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (1)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (2)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (3)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (4)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (5)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 125	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (1) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (2) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (3) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (4) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1254 (5) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (1)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (2)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (3)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (4)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (5)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (1) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (2) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (3) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (4) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1260 (5) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (1)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (2)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (3)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (4)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (5)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (1) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (2) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (3) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (4) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1262 (5) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (1)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (2)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (3)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (4)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (5)		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 126	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (1) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (2) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (3) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (4) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Aroclor 1268 (5) [2C]		ug/L
EPA 8082A	Polychlorin	Water	Total PCBs	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Total PCBs	0.0500	0.0500	ug/L
EPA 8082A	Polychlorin	Water	Tetrachloro-m-xylene			ug/L
EPA 8082A	Polychlorin	Water	Tetrachloro-m-xylene [2C]			ug/L
EPA 8082A	Polychlorin	Water	Decachlorobiphenyl			ug/L

EPA 8082A	Polychlorin	Water	Decachlorobiphenyl [2C]	ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8081E	Pesticides,	Water	4,4'-DDD	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	4,4'-DDD [2	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	4,4'-DDE	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	4,4'-DDE [2	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	4,4'-DDT	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	4,4'-DDT [2	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Aldrin	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Aldrin [2C]	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	alpha-BHC	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	alpha-BHC	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	alpha-Chlo	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	alpha-Chlo	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	beta-BHC	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	beta-BHC [	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Chlordane,	0.0200	0.0200	ug/L
EPA 8081E	Pesticides,	Water	Chlordane,	0.0200	0.0200	ug/L
EPA 8081E	Pesticides,	Water	delta-BHC	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	delta-BHC	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Dieldrin	0.00200	0.00200	ug/L
EPA 8081E	Pesticides,	Water	Dieldrin [2C	0.00200	0.00200	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endosulfan	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endrin	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endrin [2C]	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Endrin alde	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	Endrin alde	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	Endrin ketc	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	Endrin ketc	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	gamma-BH	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	gamma-BH	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	gamma-Ch	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	gamma-Ch	0.0100	0.0100	ug/L
EPA 8081E	Pesticides,	Water	Heptachlor	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Heptachlor	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Heptachlor	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Heptachlor	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Methoxych	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Methoxych	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Toxaphene	0.100	0.100	ug/L
EPA 8081E	Pesticides,	Water	Toxaphene	0.100	0.100	ug/L
EPA 8081E	Pesticides,	Water	Mirex	0.00400	0.00400	ug/L
EPA 8081E	Pesticides,	Water	Decachlorobiphenyl			ug/L
EPA 8081E	Pesticides,	Water	Decachlorobiphenyl [2C]			ug/L
EPA 8081E	Pesticides,	Water	Tetrachloro-m-xylene			ug/L
EPA 8081E	Pesticides,	Water	Tetrachloro-m-xylene [2C]			ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8151A	HERB, 815	Water	2,4,5-T	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4,5-T [2C	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4,5-TP (S	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4,5-TP (S	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4-D	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4-D [2C]	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4-DB	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4-DB [2C	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	Dalapon	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	Dalapon [2	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	Dicamba	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	Dicamba [2	5.00	5.00	ug/L
EPA 8151A	HERB, 815	Water	2,4-Dichlorophenylacetic acid (DC			ug/L
EPA 8151A	HERB, 815	Water	2,4-Dichlorophenylacetic acid (DC			ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 6010D	Metals, Target Analyte	Water	Aluminum	0.050	0.050	mg/L
EPA 6010D	Metals, Target Analyte	Water	Antimony	0.025	0.025	mg/L
EPA 6010D	Metals, Target Analyte	Water	Arsenic	0.015	0.015	mg/L
EPA 6010D	Metals, Target Analyte	Water	Barium	0.025	0.025	mg/L
EPA 6010D	Metals, Target Analyte	Water	Beryllium	0.0005	0.0005	mg/L
EPA 6010D	Metals, Target Analyte	Water	Cadmium	0.003	0.003	mg/L
EPA 6010D	Metals, Target Analyte	Water	Calcium	0.050	0.050	mg/L
EPA 6010D	Metals, Target Analyte	Water	Chromium	0.005	0.005	mg/L
EPA 6010D	Metals, Target Analyte	Water	Cobalt	0.004	0.004	mg/L
EPA 6010D	Metals, Target Analyte	Water	Copper	0.020	0.020	mg/L
EPA 6010D	Metals, Target Analyte	Water	Iron	0.250	0.250	mg/L
EPA 6010D	Metals, Target Analyte	Water	Lead	0.005	0.005	mg/L
EPA 6010D	Metals, Target Analyte	Water	Magnesium	0.050	0.050	mg/L
EPA 6010D	Metals, Target Analyte	Water	Manganese	0.005	0.005	mg/L
EPA 6010D	Metals, Target Analyte	Water	Nickel	0.010	0.010	mg/L
EPA 6010D	Metals, Target Analyte	Water	Potassium	0.050	0.050	mg/L
EPA 6010D	Metals, Target Analyte	Water	Selenium	0.025	0.025	mg/L
EPA 6010D	Metals, Target Analyte	Water	Silver	0.005	0.005	mg/L
EPA 6010D	Metals, Target Analyte	Water	Sodium	0.500	0.500	mg/L
EPA 6010D	Metals, Target Analyte	Water	Thallium	0.025	0.025	mg/L
EPA 6010D	Metals, Target Analyte	Water	Vanadium	0.010	0.010	mg/L
EPA 6010D	Metals, Target Analyte	Water	Zinc	0.025	0.025	mg/L
EPA 6010D	Metals, Target Analyte	Water	Yttrium 371	.029		mg/L
EPA 7196A	Chromium, Hexavalent	Water	Chromium,	0.0100	0.0100	mg/L
Calculation	Chromium, Trivalent	Water	Chromium,	0.00800	0.0100	mg/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
SM 4500 C	Cyanide, T	Water	Cyanide, tc	0.0100	0.0100	mg/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA 8270D	Semi-Volat	Water	1,4-Dioxan	0.200	0.200	ug/L
EPA 8270D	Semi-Volat	Water	1,4-Dioxan	0.200	0.200	ug/L
EPA 8270D	Semi-Volat	Water	Tetrahydrofuran-d8			ug/L

SpecificMe	Analysis	Matrix	Analyte	MDL	MRL	Units
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1,1,2-Tet	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1,1-Trich	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1,2,2-Tet	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1,2-Trich	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1,2-Trich	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,1-Dichlor	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2,4-Trich	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2,4-Trime	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2-Dibrom	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,2-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,3,5-Trime	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,3-Butadie	0.30	0.30	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,3-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,3-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,4-Dichlor	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	1,4-Dioxan	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	2-Butanone	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	2-Hexanon	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	3-Chloropr	0.50	0.50	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	4-Methyl-2-	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Acetone	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Acrolein	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Acrylonitrile	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Benzene	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Benzyl chlo	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Bromodich	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Bromoform	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Bromometl	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Carbon dis	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Carbon tetı	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Chloroben:	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Chloroetha	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Chloroform	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Chlorometl	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	cis-1,2-Dic	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	cis-1,3-Dic	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Cyclohexa	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Dibromoch	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Dichlorodifl	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Ethanol	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Ethyl aceta	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Ethyl Benz	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Hexachlorc	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Isopropanc	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Isopropylbe	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Methyl Met	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Methyl tert-	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Methylene	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Naphthaler	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	n-Butylben:	0.10	0.10	ppbv

EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	n-Heptane	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	n-Hexane	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	n-Propylbe	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	o-Xylene	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	p- & m- Xyl	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	p-Ethyltolu	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	p-Isopropyl	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Propylene	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	sec-Butylb	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Styrene	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	tert-Butylb	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Tetrachlor	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Tetrahydro	0.20	0.20	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Toluene	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	trans-1,2-D	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	trans-1,3-D	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Trichloroet	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Trichloroflu	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Vinyl aceta	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Vinyl bromi	0.10	0.10	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Vinyl Chlor	0.025	0.025	ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Tentatively Identified Compounds			ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	SURR: p-Bromofluorobenzene			ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	Bromochloromethane			ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	ISTD: 1,4-Difluorobenzene			ppbv
EPA TO-15	Volatile Organics, EPA TO15 Full List	Air	ISTD: d5-Chlorobenzene			ppbv

ATTACHMENT C

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SAMPLE NOMENCLATURE

The sample nomenclature outlined below provides consistency between sample events and projects but, most importantly, establish unique sample IDs that will avoid confusion months or years after the sample has been collected. Furthermore, unique sample IDs are required for any data submitted to the NYSDEC in EDD format or being uploaded to an EQuIS database.

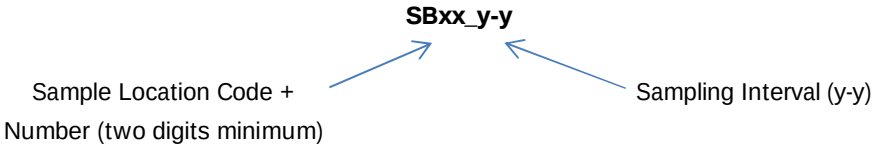
1.0 INVESTIGATION LOCATION CODES

SB	Soil Boring	SV	Soil Vapor Point
WC	Waste Characterization Boring	IA	Indoor Air
TP	Test Pit	AA	Ambient Air
EPSW	Endpoint Location (Sidewall)	SVE	Vapor Extraction Well
EPB	Endpoint Location (Bottom)	DS	Drum
MW	Monitoring Well	IDW	Investigation Derived Waste
TMW	Temporary Monitoring Well	SL	Sludge
SW	Surface Water	FP	Free Product

2.0 SAMPLE NOMENCLATURE

Each sample at a site must have a unique value.

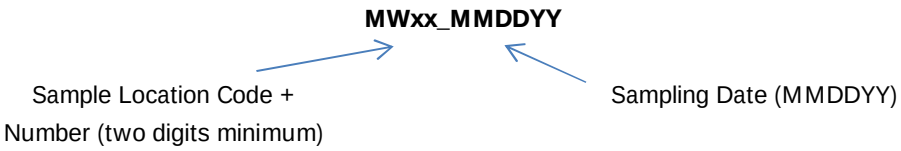
- **Soil/Sediment Samples:**



Sample Type	Sample Location Code	Sampling Depth or Interval (feet bgs or approx. elevation)	Sample Name
Phase II/Remedial Investigation			
Grab Soil Sample	SB01	2 to 4	SB01_2-4
	SB02	4	SB02_4
Waste Characterization			
Grab Soil Sample	WC01	2 to 4	WC01_2-4
	WC02	4	WC02_4
Composite Soil Sample from one or more locations	COMP01 or COMP02 + COMP03	0 to 10 (Fill)	COMP01_0-10

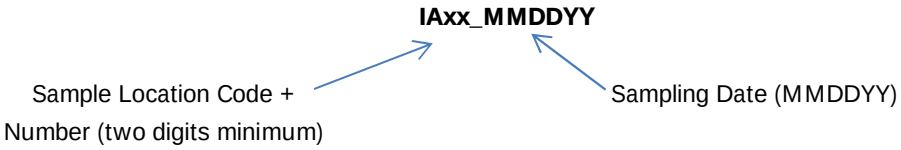
Sample Type	Sample Location Code	Sampling Depth or Interval (feet bgs or approx. elevation)	Sample Name
Endpoint Sampling			
Grab Soil Sample	EPSW01_N	5	EPSW01_N_5
	EPSW01_S	5	EPSW01_S_5
	EPSW01_E	5	EPSW01_E_5
	EPSW01_W	5	EPSW01_W_5
	EPB01	6	EPB01_6

- **Groundwater/Surface Water Samples:**



Sample Type	Sample Location Code	Sampling Date	Sample Name
Groundwater Sample	MW01	02/21/2013	MW01_022113

- **Air/Soil Vapor Samples:**



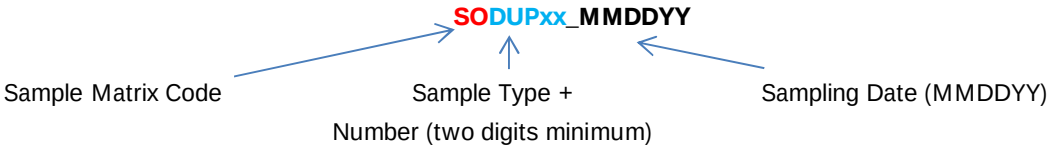
Sample Type	Sample Location Code	Date	Sample Name
Air Sample	IA01	02/21/2013	IA01_022113
Soil Vapor Sample	SV01	02/21/2013	SV01_022113
Vapor Extraction Well Sample	SVE01 (INLET/MIDPOINT/OUTLET)	02/21/2013	SVE01_IN_022113 SVE01_ MID_022113 SVE01_ OUT_022113

- **QA/QC Samples:**

Sample Matrix Codes

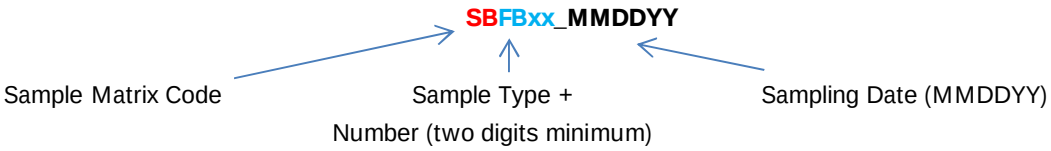
SO	Soil	AS	Air
SE	Sediment	SV	Soil Vapor
GW	Groundwater	SL	Sludge
SW	Surface Water	FP	Free Product

o Duplicates Samples



Sample Type	Parent Sample Code	Date	Sample Name
Groundwater Duplicate Sample (DUP)	MW01_022113	02/21/2013	GWDUP01_022113
Soil boring Duplicate Sample (DUP)	SBP01_022113	02/21/2013	SODUP01_022113
Grab Waste Characterization	WC01	02/21/2013	WCDUP01_022113
Composite Waste Characterization	COMP01	02/21/2013	COMPDUP01_022113

o Field Blanks and Trip Blanks



Sample Type	Date	Sample Name
Groundwater Field Blank (FB)	02/21/2013	GWFB01_022113
Groundwater Trip Blank (TB)	02/21/2013	GWTB01_022113
Soil Field Blank	02/21/2013	SOFB01_022113
Soil Trip Blank	02/21/2013	SOTB01_022113

o Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Parent Sample Name_MS or MSD

Sample Type	Sample Location	Parent Sample Name	Sample Name
Matrix Spike Soil (MS)	SB01	SB01_2-4	SB01_2-4_MS
Matrix Spike Soil Duplicate (MSD)	SB01	SB01_2-4	SB01_2-4_MSD
Matrix Spike GW (MS)	MW01	MW01	MW01_MS
Matrix Spike GW Duplicate (MSD)	MW01	MW01	MW01_MSD

3.0 NOTES

1. The sample location code should not exceed 20 characters and the sample name should not exceed 40 characters.
2. Sample location code (**SB01, MW01, etc.)** is a sequential number (starting with 01) and should be a minimum of two digits.
3. Sample Interval (SB01_**0-5**) is separated from the sample location code with an underscore, and the top and bottom interval with a dash. Soil and sediment sample intervals should always be in

feet. Soil and sediment sample intervals should contain no "/" or "()" or unit.

4. Sample date (MW01_**022113**) is separated from the sample location code with an underscore and should be provided in MMDDYY format [the date should contain no "/" or "-"].
5. If groundwater samples are collected from multiple intervals within one well, you may assign a letter designation (in lower case) to the well ID to differentiate between intervals (i.e., MW01a_022113, MW01b_022113, and MW01c_022113). The letter "a" would indicate the shallowest interval and "c" the deepest. The actual depth intervals should be documented in the project field book or field sheets and the letter designations should be used consistently between sampling events.
6. According to USEPA's Contract Laboratory Program (CLP) Guidance for Field Samplers (January 2011), field duplicate samples should remain "blind" to the laboratory (i.e., they should have separate CLP Sample numbers). Assign two separate (unique) CLP sample numbers (i.e., one number to the field sample and one to the duplicate). Submit blind to the laboratory. (http://www.epa.gov/superfund/programs/clp/download/sampler/CLPSamp-01-2011.pdf)

APPENDIX G

Remediation Schedule
Beach 21st Street Development
Far Rockaway, New York
Langan Project No. 170540601

Item #	Action	2019												2020												2021											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	Design, Investigation, and Permitting	■	■	■	■	■	■	■	■	■																											
2	RAWP Implementation												■	■	■	■	■																					
3	Balance of Construction																	■	■	■	■	■	■	■	■	■	■										
4	Final Engineering Report (FER)																	■	■	■																	
5	DEC FER Review/Approval																				■	■	■	■													
6	Certificate of Completion (03/2021)																								■												

Notes:

1. RAWP - Remedial Action Work Plan
2. The estimated scheduling of items 2 through 6 will be contingent on the timing of acceptance of the BCP Application and RAWP.
2. TCO - Temporary Certificate of Occupancy
3. CO - Certificate of Occupancy
4. A Track 1 cleanup is expected, so a Site Management Plan is not proposed.

APPENDIX H

Site Signage Requirements

The NYSDEC Department has specific requirements for a 4 foot by 8 foot sign to be posted to inform the public about the RA. The detailed NYSDEC requirements for Site signage are provided below.

Signage Instructions

Signs are required at sites where remedial actions are being performed under one of the following remedial programs: State Superfund, VCP, BCP, and Environmental Restoration Program (ERP). They will not be required during the investigation and design phases. The cost of the sign will be borne by the parties performing the remedial action based on the legal document the activities are being performed under (i.e. volunteers/participants would pay 100% of the cost under the BCP; municipalities would pay 100% and then would be reimbursed for the cost under the ERP).

Sign Requirements

Size:	Horizontal format - 96" wide by 48" high	
Construction Materials:	Aluminum or wood blank sign boards with vinyl sheeting.	
Inserts:	"Site Name", "Site Number", "Name of Party Performing Remedial Activities" and "Municipal Executive". Indicate position, size and topography for specific inserts.	
Color Scheme:	Copy surrounding DEC logo - "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION"	PMS 355
DEC logo:	PMS 301 Blue, PMS 355 Green	
Text:	Program:	PMS 301
	Brownfield Cleanup Program	
	Site Name, Site Number, Party Performing Remedial Activities	PMS 355
	Names of Governor, Commissioner, Municipal Executive	PMS 301
	Transform the Past…..Build for the Future	PMS 355
Type Specifications:	All type is Caslon 540, with the exception of the logotype. Format is: center each line of copy with small caps and initial caps.	
Production Notes:	96" wide x 48" high aluminum blanks will be covered with vinyl sheeting to achieve background color. Copy and logo will be silk screened on this surface.	

Program Name

Site Name
Site Number
Name of Party Performing Remedial Activities

Governor
Commissioner
Municipal Executive

Transform the Past…. Build for the Future