REMEDIAL INVESTIGATION REPORT

for

37-11 30th STREET
LONG ISLAND CITY, NEW YORK
BCP Site No. C241211

Prepared For:

37-11 30th Street Holdings LLC
c/o Slate Property Group
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New York, New York

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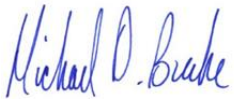

Michael D. Burke, PG, CHMM
Principal/Vice President

July 18, 2019

LANGAN

Langan Project No. 170512301

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LIST OF ACRONYMS

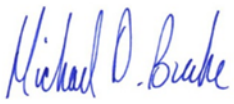
Acronym	Definition
AAI	All Appropriate Inquiries
AGV	Air Guidance Values
AOC	Area of Concern
AST	Aboveground Storage Tank
ASTM	ASTM International
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Grade Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAMP	Community Air Monitoring Program
COC	Contaminants of Concern
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DOT	Department of Transportation
DUSR	Data Usability Summary Report
E-Designation	Environmental Designation
el	Elevation
ELAP	Environmental Laboratory Approval Program
USEPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
ESA	Environmental Site Assessment
eV	Electron Volt
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FWRIA	Fish and Wildlife Resources Impact Analysis
GPR	Ground Penetrating Radar
GQS	Groundwater Quality Standards
HASP	Health and Safety Plan
ICP-AES	Inductively Coupled Plasma Atomic Emission Spectrometry
IDW	Investigation-Derived Waste
L/min	Liters per Minute
LNAPL	Light Non-Aqueous Phase Liquid
LTANK	Leaking Tanks
µg/m^3	Micrograms per Cubic Meter
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate

Acronym	Definition
NAPL	Non-Aqueous Phase Liquid
NAVD88	North American Vertical Datum of 1988
NTU	Nephelometric Turbidity Units
NYCRR	New York City Rules and Regulations
NYSDOH	New York State Department of Health
NYSDEC	New York State Department of Environmental Conservation
PAH	Polycyclic Aromatic Hydrocarbons
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PG	Restricted Protection of Groundwater
PFAS	Per- and Polyfluoroalkyl Substances
PFC	Perfluorinated Chemicals
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
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act (RCRA)
REC	Recognized Environmental Concerns
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RURR	Restricted Use – Restricted-Residential
RU	Restricted Use – Residential
SCO	Soil Cleanup Objective
SGVs	Ambient Water Quality Standards and Guidance Values for Class GA water
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
USEPA	United Stated Environmental Protection Agency
USGS	United States Geological Survey

Acronym	Definition
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

CERTIFICATION

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



Michael D. Burke, PG, CHMM

1.0 INTRODUCTION

This Remedial Investigation Report (RIR) was prepared on behalf of 37-11 30th Street Holdings LLC (the Applicant) for the proposed development located at 37-11 30th Street (Block 372, part of Lot 8) and 30-14 37th Avenue (Block 372, Lot 21) in the Long Island City neighborhood of Queens, New York (the site). The Volunteer will remediate the site in conjunction with new development under the New York State Brownfield Cleanup Program (BCP), pursuant to a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC), executed on July 9, 2018, for Site No. C241211.

This RIR presents environmental data and findings from the Remedial Investigation (RI) conducted from September 26, 2018 to October 5, 2018 and October 15 to 17, 2018. The RI was completed by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, DPC (Langan) and was conducted in accordance with Title 6 of the Official Compilation of New York Codes, Rules and Regulations (6 NYCRR) Part 375-1, 3.8, 6.8, NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10), and applicable New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, with updates. The objectives of this RI include:

- Define the nature and extent of contamination in all media at or emanating from the site
- Generate sufficient data to evaluate remedial action alternatives
- Generate sufficient data to evaluate the actual and potential threats to human health and the environment

The remainder of this report is organized as follows:

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

2.0 SITE PHYSICAL CHARACTERISTICS

2.1 Site Description

The site is located at 37-11 30th Street and 30-14 37th Avenue in the Long Island City neighborhood of Queens, New York and is identified as Block 372, Lot 21 and a part of Lot 8, on the Queens Borough Tax Map. A site location map is provided as Figure 1. The site encompasses an area of about 26,978 square-feet (0.61 acres) and is occupied by a three-story warehouse building with multiple partial cellar levels in the southern part of Lot 8 (37-11 30th Street), a stockyard/storage area in the northern part of Lot 8, and a vacant lot on Lot 21 (30-14 37th Avenue). A lighting, audio, and production rental and warehousing company most recently occupied the buildings in Lot 8, and a two story residential building demolished prior to execution of the BCA and implementation of the Remedial Investigation Work Plan (RIWP) formerly occupied the eastern part of Lot 21. . The site is bound by 37th Avenue to the north, 31st Street to the east, 38th Avenue to the south, and 30th Street to the west. The elevated N and Q subway tracks run north-south above 31st Street and are located about 100 feet east of the site. A site plan is provided in Figure 2.

2.2 Surrounding Property Land Use

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

Direction	Adjoining and Adjacent Properties			Surrounding Properties
	Block No.	Lot No.	Description	
North	599	1	37th Avenue followed by Supreme Glass and Windows (30-01 37th Avenue)	31st Street (N and Q subway lines beneath) followed by multi-story and multi-family residential, commercial, and industrial buildings
West	371	23	30th Street followed by a two - story industrial building (29-16 37th Avenue)	Old Ridge Road followed by multi-story and multi-family residential buildings and industrial buildings
		27	30th Street followed by a three-story industrial building (37-12 30th Street)	
		29	30th Street followed by a two-story industrial building (37-14 30th Street)	
		31	30th Street followed by a two-story industrial building (37-20 30th Street)	
		32	30th Street followed by a two-story commercial office building (37-22 30th Street)	
		33	30th Street followed by a one-story industrial building (37-24 30th Street)	
		34	30th Street followed by a two-story industrial building (37-28 30th Street)	
South	372	7	Two-story public institution building (37-31 30th Street)	Multi-story residential, mixed-use commercial and industrial buildings
		8	One-story industrial/ warehouse building (37-11 30th Street)	

Direction	Adjoining and Adjacent Properties			Surrounding Properties
	Block No.	Lot No.	Description	
East	372	22	Two-story residential-commercial mixed-use building (30-16 37th Avenue)	31st Street (N and Q subway lines beneath) followed by multi-story mixed-use residential-commercial and commercial office buildings
East	372	8	One-story industrial/ warehouse building (37-11 30th Street)	31st Street (N and Q subway lines beneath) followed by multi-story mixed-use residential-commercial and commercial office buildings

Public infrastructure (storm drains, sewers, and underground utility lines) exists within the streets surrounding the site.

Land use within a half-mile radius is urban and includes residential, commercial, institutional, and light industrial buildings and public parks. The nearest ecological receptor is Dutch Kills Green, located about 2,150 feet southwest of the site. Adjacent properties and land uses are shown on Figure 3. Sensitive receptors, as defined in DER-10, located within a half mile of the site include those listed below:

Number	Name (Approximate distance from site)	Address
1	Dutch Kills Playground (about 0.12 miles northwest of the site)	36th Avenue and Crescent Street Queens, NY 11106
2	The Oliver Wendell Holmes Intermediate School 204 (about 0.12 miles north of the site)	36-41 28th Street Queens, NY 11106
3	Queensbridge Early Childhood Development Center (about 0.15 miles west of the site)	38-11 37th Street Queens, NY 11101
4	PS 112 Dutch Kills (about 0.17 miles northwest of the site)	25-05 37th Avenue Queens, NY 11101

Number	Name (Approximate distance from site)	Address
5	Growing up Green Charter School (about 0.23 miles southwest of the site)	39-37 28th Street Queens, NY 11101
6	Baccalaureate School for Global Education (about 0.24 miles northeast of the site)	34-12 36th Avenue Queens, NY 11106
7	A.R.R.O.W. Field House (about 0.27 miles northeast of the site)	35-30 35th Street Queens, NY 11106
8	Newcomers High School (about 0.29 miles southeast of the site)	28-01 41st Avenue Queens, NY 11101
9	PS 166 Henry Gradstein (about 0.32 miles northeast of the site)	33-09 35th Avenue Queens, NY 11106
10	All Children's Child Care (about 0.34 miles northeast of the site)	35-01 24th Street Queens, NY 11106
11	Academy for New Americans (about 0.36 miles southeast of the site)	30-14 30th Street Queens, NY 11102
12	Andrew Landi Early Childhood Development Center (about 0.41 miles northeast of the site)	21-20 35th Avenue Queens, NY 11106
13	Sixteen Oaks Grove (about 0.41 miles northwest of the site)	13-19 37th Avenue Queens, NY 11101
14	PS 111 Jacob Blackwell (about 0.45 miles northeast of the site)	37-15 13th Street Queens, NY 11101
15	Jackson Developmental Center and Children's Services (about 0.47 miles northeast of the site)	36-02 14th Street Queens, NY 11106
16	Playground 35 XXXV (approximately 0.48 miles northeast of the site)	35-01 Steinway Street Queens, NY 11101

2.3 Site Physical Conditions

2.3.1 Topography

According to the architectural drawing entitled "Z-001.00" prepared by Aufgang Architects, surface sidewalk elevations (el) range from about el 41.55 feet[1] (at the southwest corner) to el

[1] Elevations in this RIR refer to North American Vertical Datum of 1988 (NAVD88), which is about 1.1 feet above mean sea level at Sandy Hook, NJ.

44.5 feet (on the north side). The topography of the site is generally level, with the surrounding land sloping toward the south/southwest.

2.3.2 Regional Geology

Soil and bedrock stratigraphy throughout Brooklyn typically consist of a layer of historic fill that overlies glacial till, decomposed unconsolidated bedrock, and bedrock. The glacial till deposits, also known as ground moraine, are a widespread dense layer of till material that typically consists of clay, silt, sand, gravel and boulders. According to the United States Geological Survey (USGS) Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York, dated 1994, bedrock beneath the site is the Hartland formation. The Hartland formation typically consists of gray sillimanite-garnet-microcline gneiss and fine-grained biotite-muscovite-quartz schist interlayered with quartz-plagioclase-muscovite pegmatite, hornblende amphibolite, and coarse granoblastic-textured amphibolite gneiss. Bedrock was not encountered during the RI. According to a geotechnical investigation completed by Langan in the vicinity of the site, the minimum depth of bedrock is expected to be 100 feet below grade surface (bgs).

2.3.3 Regional Hydrogeology

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected 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 vegetation cover, coverage by impervious surfaces, and subsurface structures. Other factors influencing groundwater include depth to bedrock, the presence of anthropogenic fill, and variability in local geology and groundwater sources or sinks.

2.3.4 Wetlands

Wetlands on or near the site were evaluated by reviewing the National Wetlands Inventory and NYSDEC regulated wetlands map. There are no wetlands on or adjacent to the site.

3.0 SITE BACKGROUND

This section describes historical site use, the proposed redevelopment, and provides a summary of the findings from previous environmental investigations. Potential Areas of Concern (AOCs) were developed based on a review of the previous reports and are summarized in Section 3.4.

3.1 Historical Site Usage

Historical Sanborn Fire Insurance Maps indicate that the site was an undeveloped vacant lot until at least 1898. The 1915 map indicates the northern portion of the site was occupied by "McLaughlins Garage" and a residential development, while the southern portion of the site remained vacant. By 1920, the existing on-site warehouse was constructed and beginning in 1930 was occupied by a plastics manufacturer. The Marblette Corp. Mfg. of Plastic Materials occupied the site from at least 1930 to about 1980. During this time period, plastic was typically made using a mixture of synthetic chemicals, chlorinated solvents, metals and petroleum products. Following 1980, the site was occupied by a warehousing and distribution center for lighting and staging equipment.

Historic documents indicate two underground storage tanks (UST), including a 2,000-gallon and 550-gallon UST, and a 5,000-gallon aboveground storage tank (AST) were closed-in-place on July 7, 2000. The documents were prepared by U.S.A. Tank Maintenance, Inc. and were provided to the NYC Fire Department for documentation purposes. The tanks were not registered on the NYSDEC Petroleum Bulk Storage (PBS) database. Historical records documented the 5,000-gallon AST was installed in 1947, the 2,000-gallon UST was installed in 1933, and the 550-gallon UST was installed in 1941. According to historic Sanborn Fire Insurance Maps, a 10,000-gallon tank was also depicted at the site from 1947 to 1950; however, the tank was not listed in any regulatory records. The property was listed in the Leaking Tanks (LTANK) database due to a tank test failure on April 21, 1998. According to records provided by the NYSDEC, three soil borings were advanced in the vicinity of the tank in February 2000 as part of an investigation for a proposed building expansion.

3.2 Proposed Redevelopment Plan

Current plans call for the development to include abatement and demolition of the existing three-story warehouse buildings within the southern part of the site (Tax Block 372, Lot 8). A new seven-story, mixed-use residential, commercial, and light manufacturing building will be constructed with a footprint of about 26,978 square feet. The new development will include one full cellar level with about 17,250 square feet of parking, about 3,000 square feet of tenant amenity space (i.e. recreation room, bicycle storage, lounge area), and remaining areas of the cellar occupied by utility rooms, a trash compactor room, corridors, stairs, elevators, and a detention tank. The first floor of the new development will include about 11,000 square feet of commercial/retail areas, about 10,750 square feet of light manufacturing areas, and the remaining

portions will include a residential lobby, mail room, corridors, a loading dock, and ADA-accessible apartment. The second through seventh floors of the new development will be occupied by 198 residential units, thirty percent of which will be designated for affordable housing.

3.3 Summary of Previous Environmental Investigations

The following previous environmental reports and investigations were reviewed as part of this RIR and are summarized below. The reports are included in Appendix A.

- Phase I Environmental Site Assessment (ESA), prepared by Hillman Consulting LLC, Dated April 8, 2014
- Focused Subsurface Site Investigation, prepared by Merritt Environmental Consulting Corp., Dated July 7, 2014
- Limited Subsurface Investigation, prepared by Hydro Tech Environmental Corp., dated December 2017

Phase I Environmental Site Assessment, prepared by Hillman Consulting LLC, Dated April 8, 2014

The Phase I ESA was completed in general accordance with ASTM International (ASTM) Standard E1527-13 and the United States Environmental Protection (USEPA) All Appropriate Inquiries (AAI) Rule. The following recognized environmental conditions (REC) were identified:

- REC 1 - Historical On-Site Operations: The site historically operated as a plastics manufacturer (The Marblette Corp. Mfg. of Plastic Materials) from at least 1930 to about 1980. During this time period, plastic was typically made using a mixture of synthetic chemicals, solvents, and petroleum products. Leaks or spills of petroleum products, solvents, and/or other hazardous materials associated with plastics manufacturing during the 50 years of operation may have adversely affected soil, groundwater and/or soil vapor at the site.
- REC 2 - Historic Petroleum Storage and Use: Documents indicate two USTs (2,000-gallon and 550-gallon USTs) and a 5,000-gallon AST were closed-in-place on July 7, 2000. Historical records documented the 5,000-gallon AST was installed in 1947, the 2,000-gallon UST was installed in 1933, and the 550-gallon UST was installed in 1941. According to historic Sanborn Fire Insurance Maps, a 10,000-gallon tank was also depicted within the site from 1947 to 1950; however the tank was not listed on any regulatory records. The property was listed in the Leaking Tanks (LTANK) database due to a tank test failure on April 21, 1998. According to records provided by NYSDEC, three soil borings were advanced in the vicinity of the tank in February 2000 as part of an investigation for a proposed building expansion. No evidence of impacts to the subsurface was noted during the investigation, and NYSDEC closed the LTANKS case on September 15, 2004;

however, undocumented spills or releases of petroleum products associated with the tanks or piping may have adversely affected soil, groundwater, or soil vapor beneath the site.

- REC 3 - Historical Use of Surrounding Properties: Historical uses of adjoining and surrounding properties included auto repair facilities (1936, 1947-1950, 1999-2010), gasoline filling stations (1947-1950, 1970-1996, 2001-2006) dry cleaners (2004-2009), and various manufacturing facilities (1970-1996, 2001-2006). Records identified multiple lots in the surrounding area assigned with an Environmental Designation (E-Designation) for Hazardous Materials. The Hazardous Materials E-Designation requires appropriate subsurface investigation and remediation, if necessary, of each property assigned prior to redevelopment. Undocumented spills or releases of petroleum products or hazardous substances associated with historical uses of nearby properties including petroleum bulk storage may have adversely affected groundwater or soil vapor beneath the site.

Focused Subsurface Site Investigation, prepared by Merritt Environmental Consulting Corp., Dated July 7, 2014

Merritt Environmental Consulting Corp. (Merritt) completed a Limited Subsurface Site Investigation in June 2014 to determine if soil and groundwater conditions were impacted as a result of the historical use as a plastics manufacturing and historical petroleum bulk storage on site. The investigation included a geophysical survey, advancement of six soil borings, installation of four temporary groundwater monitoring wells, and collection of soil and groundwater samples. Field observations and laboratory analytical results are summarized below:

- Geophysical Survey: The geophysical survey identified two subsurface anomalies in locations consistent with the reported closed-in-place 2,000-gallon, and 550-gallon USTs. The 2,000-gallon UST was identified in the sidewalk along 31st Street, which adjoins Lot 8 to the east. The 550-gallon UST was identified in the sidewalk along 30th Street, which adjoins Lot 8 to the west. Abandoned vent and fill lines were observed in the vicinity of the closed-in-place 5,000-gallon AST located in the east-central portion of Lot 8.
- Soil: Four soil borings were advanced up to 32 feet bgs using a track-mounted GeoProbe© rig in the vicinity of an oil/water separator and closed-in-place 2,000-gallon UST (B-3), along the western portion of the site (B-4), and in the northwest exterior stockyard/storage area (B-5 and B-6). Two soil borings (B-1 and B-2) were advanced to six feet bgs in the vicinity of the closed-in-place 5,000-gallon heating oil AST. No evidence of petroleum impacts (e.g., staining, odors or photoionization detector [PID] readings above background) was observed during the soil boring investigation. Soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs). With the exception of methylene chloride

(concentration of 0.004 milligrams per kilogram [mg/kg]), no VOCs were detected in soil samples. In addition, no SVOCs or PCBs were detected in soil samples.

- Groundwater: One VOC, chloroform (maximum concentration of 20 micrograms per liter [µg/L]), was detected in monitoring well B-3GW at a concentration above NYCRR Part 703.5 Groundwater Quality Standards (GQS). Chlorinated VOCs (CVOCs) including tetrachloroethene (PCE) (concentration of 3.5 µg/L in monitoring well B-3GW) and 1,1,1-trichloroethane (concentration of 2.2 µg/L in monitoring well B-4GW) were detected in two monitoring wells along the eastern and western perimeters of the site, but at concentrations below the NYSDEC GQS.

Limited Subsurface Investigation, prepared by Hydro Tech Environmental Corp., dated December 2017

Hydro Tech Environmental Corp. (Hydro Tech) performed a Limited Subsurface Investigation at the site in December 2017 to determine, to the extent practical, the nature and extent of contamination in soil, groundwater, and soil vapor. The investigation included advancement of nine soil borings, installation of five groundwater monitoring wells, installation of six sub-slab soil vapor sampling points, installation of three soil vapor sampling points, and collection of soil, groundwater, soil vapor, sub-slab vapor, indoor air, and outdoor ambient air samples. Langan was provided with copies of the site sampling location plan, and analytical result summary tables for soil, groundwater, and soil vapor samples collected during the limited investigation. Laboratory analytical results are summarized below:

- Soil: Metals including copper, mercury and lead were detected at concentrations above Title 6 NYCRR Part 375 Restricted Use Restricted-Residential (RURR) Soil Cleanup Objectives (SCO). Metals including barium, hexavalent chromium, copper, lead and zinc were detected at concentrations above Part 375 Unrestricted Use (UU) and/or RURR SCOs. One VOC, acetone, was detected at a concentration above the Part 375 UU SCOs.
- Groundwater: Dissolved metals including magnesium, manganese, and sodium were detected at concentrations above the NYSDEC GQS. PCE was detected at concentrations ranging between 0.3 and 1.5 µg/L in three monitoring wells located in the west-central portion of the site. Detected concentrations of PCE in groundwater samples were below the NYSDEC GQS.
- Indoor Air, Sub-Slab Vapor, and Soil Vapor: Indoor air analytical results were compared to the Air Guidance Values (AGV) specified in the NYSDOH guidance document. PCE was detected at concentrations of 66 to 68 micrograms per cubic meter (µg/m^3) in indoor air sample, which are two-times greater than the NYSDOH AGV of 30 µg/m^3. PCE concentrations detected in sub-slab vapor samples ranged from 7 µg/m^3 to 12,000 µg/m^3. Trichloroethene (TCE) concentrations detected in sub-slab vapor samples ranged from 7.70 µg/m^3 to 16 µg/m^3.

In addition, NYSDOH provides decision matrices for eight chlorinated VOCs ([CVOC] carbon tetrachloride, 1,1-dichloroethene, cis-1,2-dichloroethene, TCE, methylene chloride, PCE, 1,1,1-trichloroethane, and vinyl chloride). The decision matrices recommend a range of activities (e.g., monitor, mitigate) based on the sub-slab and indoor air sample results collected. Two of the eight VOCs that can be evaluated using the NYSDOH decision matrices were detected in sub-slab soil vapor samples (PCE and TCE). Based on the concentrations detected, the NYSDOH decision matrices recommend mitigation for PCE and monitoring for TCE.

3.4 Summary of Potential Areas of Concern

Based on site observations, the site development history, and the findings of the previous environmental reports, potential AOCs were identified and investigated during this RI and are described in detail below. A Potential AOC map is provided on Figure 4

Potential AOC 1: Historic Fill

Material from unknown sources may have been used as backfill during various phases of the site development history. According to boring logs from the 2014 Focused Subsurface Investigation performed by Merritt, the fill layer extends up to 5 feet bgs across the site and consists of sand with crushed brick, concrete and construction debris. Soil samples collected during the 2017 Limited Subsurface Investigation performed by Hydro Tech identified metals, including copper, lead, and mercury, in shallow fill exceeding the RURR SCOs.

Potential AOC 2: Historical Site Use

The site historically operated as a plastics manufacturer (The Marblette Corp. Mfg. of Plastic Materials) from at least 1930 to about 1980. During this time period, plastic was typically made using a mixture of synthetic chemicals, solvents, metals and petroleum products. Releases of petroleum products, solvents, and/or other hazardous materials associated with plastics manufacturing during the 50 years of on-site operations may have adversely affected soil, groundwater and/or soil vapor.

Potential AOC 3: Historical and Suspect Petroleum Storage on Site

Historical records indicate one 550-gallon UST located in the sidewalk adjoining the site along 30th Street was installed in 1941 and closed-in-place on July 7, 2000. According to Sanborn Fire Insurance Maps, a 10,000-gallon tank was also depicted at the site from 1947 to 1950 in the east-central part of the site; however, the tank was not listed on any regulatory records. Undocumented releases of petroleum products associated with the closed-in-place UST or suspect 10,000-gallon UST or associated piping may have adversely affected soil, groundwater, or soil vapor.

Potential AOC 4: PCE and TCE Impacted Soil Vapor

During the 2017 Limited Subsurface Investigation by Hydro Tech, chlorinated solvents, including PCE and TCE, were detected in soil vapor and sub-slab vapor samples throughout the site. PCE was detected at a concentrations of 66 to 68 µg/m^3 in indoor air, which is more than two-times greater than the NYSDOH AGV of 30 µg/m^3. PCE concentrations detected in sub-slab vapor samples ranged from 7 to 12,000 µg/m^3. TCE concentrations were detected in three soil vapor samples collected throughout the western part of Lot 8 (within the proposed BCP site boundary) and range from 7.70 to 16 µg/m^3. Based on a comparison of PCE and TCE concentrations detected in sub-slab vapor in 2017 to NYSDOH decision matrices, mitigation was recommended for PCE and monitoring for TCE.

Potential AOC 5: Historical Use of Adjoining Properties

Historical uses of adjoining and surrounding properties included auto repair facilities (1936, 1947-1950, 1999-2010), gasoline filling stations (1947-1950, 1970-1996, 2001-2006) dry cleaners (2004-2009), plastics manufacturing (1930-1980), and various manufacturing facilities (1970-1996, 2001-2006). In addition, 37-29 31st Street (about 230 feet southeast and upgradient of the site) was formerly an auto repair and gasoline filling station (1936, 1970-1996) and was identified by NYSDEC as a Significant Threat Site based on documented concentrations of chlorinated solvents in soil vapor. Undocumented spills or releases of petroleum products or hazardous substances associated with historical uses of nearby properties may have adversely affected groundwater or soil vapor beneath the site.

4.0 REMEDIAL INVESTIGATION

The RI was completed from September 26, 2018 to October 17, 2018 to investigate potential AOCs and to determine, to the extent practical, the nature and extent of contamination in soil, groundwater, and soil vapor. The scope of the RI included the field tasks listed below to supplement the data and findings of previous investigations. A summary of samples collected and rationale for each investigation point in relation to the potential AOCs is provided in Table 1. Sample locations are presented on Figure 5.

The RI consisted of the following:

- A geophysical survey to identify potential USTs, underground structures, and utilities
- Advancement of 11 soil borings to depths of about 30 to 40 feet bgs and advancement of two deep soil borings to depths of about 70 to 72 feet bgs, from which 45 soil samples (including 3 quality assurance/quality control [QA/QC] duplicate samples) were collected
- Advancement of 10 shallow soil borings up to 6 feet bgs and collection of 35 soil samples (including two QA/QC duplicate samples) to delineate hazardous levels of chromium.
- Installation of 11 groundwater monitoring wells (9 at select shallow boring locations and 2 at deep borings coupled with select shallow monitoring wells) and collection of 18 groundwater samples (including 3 QA/QC duplicate samples)
- Survey and gauging of monitoring wells to evaluate groundwater elevation, flow direction, and depth to product, if any
- Installation of 3 temporary soil vapor probes and 3 temporary sub-slab vapor points and collection of 7 soil vapor samples (including 1 duplicate sample), 3 co-located indoor air samples, and 1 ambient air sample

The RI was conducted in accordance with NYCRR DER-10 Technical Guidance for Site Investigation and Remediation (May 2010), the NYSDEC Draft Brownfield Cleanup Program Guide (May 2004), and NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006) and the NYSDEC-approved RIWP (September 2018).

4.1 Geophysical Survey and Utility Location

On September 26, 2018, NOVA Geophysical Services Inc. (NOVA) of Douglaston, New York completed a geophysical survey under the supervision of a Langan field engineer. NOVA used ground-penetrating radar (GPR) to identify potential USTs and locate buried utilities near each boring location. Borings were relocated as necessary to avoid subsurface utilities and anomalies (other subsurface impediments). A copy of the geophysical survey report presenting these findings is included in Appendix B.

4.2 Soil Investigation

4.2.1 Soil Boring Investigation Methodology

Thirteen soil borings (SB01 through SB13) were completed during the RI by AARCO Environmental Services Corp. (AARCO) of Lindenhurst, New York. Boring locations were selected to evaluate potential AOCs listed in Section 3.4 and to supplement the previous environmental investigations. Nine soil borings (SB01 through SB06, SB10, SB11 and SB13) were advanced with Sonic drilling methodologies using a Geoprobe® 8140LC Sonic drill rig, two soil borings (SB07 and SB12) were advanced with direct push methodologies using a Geoprobe® 6610DT drill rig, and two soil borings (SB08 and SB09) were advanced with direct push methodologies using a Geoprobe® 7822DT drill rig. A map showing the boring locations is presented on Figure 4. The following table indicates which borings are associated with each potential AOC.

Potential AOC	Associated Soil Borings
AOC 1 – Historic Fill with Elevated Metals Concentrations	SB01 through SB13
AOC 2 – Historical Site Use	SB01 through SB07, SB09, SB11 through SB13
AOC 3 – Historical and Suspect Petroleum Storage	SB03 and SB04
AOC 4 – PCE and TCE Impacts to Soil Vapor	SB01, SB02, SB04 through SB07 and SB13
AOC 5 – Historical Use of Adjoining Properties	SB02, SB04, SB05 through SB07, SB09, through SB12

The soil borings were advanced to about 30 to 40 feet bgs, with the exception of two deep environmental borings SB05 and SB13, as summarized below:

- Boring SB06 was advanced to 30 feet bgs
- Borings SB07 and SB12 were advanced to 32 feet bgs
- Borings SB02, SB04, SB10, and SB11 were advanced to 35 feet bgs
- Borings SB08 and SB09 were advanced to 36 feet bgs
- Borings SB01 and SB03 were advanced to 40 feet bgs
- Borings SB05 and SB13 were advanced to 70 and 72 feet bgs, respectively

Discrete soil samples were collected from the surface to the final depth of each boring and were visually classified for soil type, grain size, texture, and moisture content. Samples were collected

in 5-foot long plastic bag liners from the sonic drill core barrel, and 4-foot long acetate liners from the direct push Geoprobe® 7822DT and Geoprobe® 6610DT.

The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of VOCs was performed with a PID equipped with a 10.6-electron volt (eV) lamp. A Langan engineer documented the work, logged the soil type, screened the soil samples for environmental impacts, and collected environmental samples for laboratory analyses. Soil boring logs are presented in Appendix C. Following sample collection, nine borings (SB01 through SB07, SB10, and SB13) were converted to groundwater monitoring wells. Additional permanent monitoring wells were installed at boring locations SB05 and SB13, adjacent to the original boring location, in order to create a coupled monitoring well set. The coupled monitoring wells were labeled MW05A and MW05B at location SB05, and MW13A and MW13B at location SB13. Soil cuttings were backfilled into the original boring locations that were not converted into permanent monitoring wells and/or containerized into UN/Department of Transportation (DOT)-approved 55-gallon steel drums.

4.2.3 Soil Sampling Methodology

During implementation of the RI, 45 grab soil samples, including three field duplicates, were collected for laboratory analysis. A minimum of three grab soil samples were collected for laboratory analysis from each boring location to investigate potential AOCs and to provide vertical and horizontal delineation of identified impacts. For AOC 1, samples were collected within the historic fill material. For AOCs 2, 4 and 5, samples were collected from native material and the interval of the groundwater interface. For AOC 3, representative samples were collected since visual, olfactory, or instrumental evidence of a chemical or petroleum release was not apparent.

Samples submitted for VOC analysis were collected directly from the plastic bag or acetate liner via laboratory-supplied Terra Core soil samplers. The remaining sample volume was homogenized and placed in appropriate laboratory-supplied containers for all additional analyses. The sample containers were labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of 4±2°C). The sample coolers were picked up and delivered via courier under standard chain-of-custody protocol to Alpha Analytical Laboratories, Inc. (Alpha) in Westborough, Massachusetts, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory (ELAP ID No. 11148).

Soil samples from all of the borings were analyzed for Part 375/Target Compound List (TCL) VOCs and SVOCs, PCBs, pesticides, herbicides, and Part 375/Target Analyte List (TAL) metals including hexavalent and trivalent chromium, and total cyanide. Only soil samples collected from the fill material were analyzed for pesticides and herbicides. A sample summary is provided as Table 1.

4.2.3 Hazardous Chromium Soil Delineation

Hexavalent and Trivalent Chromium were identified in shallow soil collected from soil boring SB04 at potentially hazardous concentrations. Subsequent TCLP analysis identified chromium above the USEPA Resource Conservation and Recovery Act (RCRA) Characteristics of Hazardous Waste in two samples (SB04_1-2 and SB04_2-3). To further define the extent of chromium impacts at this location, 10 shallow delineation borings were advanced on November 20, 2018. During the hazardous chromium delineation, one boring was advanced adjacent to the original SB04 boring location (SB04A) to 6 feet bgs. Nine additional soil borings were advanced in three radial directions (SB04.1 to SB04.9) around the boring location SB04A, and grab soil samples were collected from 1 to 3 feet bgs, 3 to 5 bgs, and 5 to 6 bgs to delineate the extent of chromium impacted soil.

4.2.4 Hazardous Chromium Delineation Sampling Methodology

Samples from hazardous chromium delineation boring SB04A and each respective step-out boring (SB04.1 to SB04.9) were collected to delineate shallow chromium impacts from 1 to 6 feet bgs. A total of 35 discrete (grab) samples were collected (including two QA/QC duplicate samples). Soil samples were collected in the field from the delineation soil borings; however, not all samples were analyzed initially. The samples collected closest to the known hazardous material (SB04) were analyzed first. When sample analysis indicated hazardous concentrations, the next closest samples were analyzed. When sample analysis indicated non-hazardous concentrations, no additional samples were analyzed. In total, 14 discrete samples were submitted for analysis of total and TCLP chromium.

4.3 Groundwater Investigation

A Langan field engineer documented conversion of 11 soil borings into permanent groundwater monitoring wells by AARCO. One groundwater sample was collected from each monitoring well to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs. Three duplicate groundwater samples were also collected. Groundwater monitoring wells were installed to investigate potential impacts to groundwater associated with the identified AOCs and to characterize groundwater conditions.

Nine of the borings (SB01, SB02, SB03, SB04, SB05, SB06, SB07, SB10 and SB13) were converted into groundwater monitoring wells: MW01, MW02, MW03, MW04, MW05A, MW06, MW07, MW10, and MW13A, respectively. Additional permanent monitoring wells were installed at boring locations SB05 and SB13, adjacent to the original boring location, to create coupled monitoring well sets. The coupled monitoring wells were labeled MW05A and MW05B at location SB05, and MW13A and MW13B at location SB13. Monitoring wells with labels ending in 'A' denote the deeper of the two coupled monitoring wells and wells with labels ending in 'B' denote the shallower of the two coupled monitoring wells. AOCs 2 and 4 were investigated with

the installation of monitoring wells MW01 through MW04, MW05A/5B, MW06, MW07, MW10, and MW13A/B. AOC 3 was investigated with the installation of monitoring wells MW03 and MW04. AOC 5 was investigated with the installation of monitoring wells MW02, MW04, MW05A/B, MW06, MW07, and MW10.

4.3.1 Monitoring Well Installation and Development Methodology

Following completion of soil borings, the monitoring wells (with the exception of MW05A and MW13A) were constructed using 2-inch diameter polyvinyl chloride (PVC) riser pipes attached to 10 to 12-foot-long 0.01-inch slotted screens. Monitoring wells were constructed so that the well screen straddled the observed groundwater table. The well annulus around the screen of each well was backfilled with No. 1 sand up to about the top of the screen. A minimum of about 1- to 2-foot thick hydrated bentonite seal was installed above the sand pack, and the borehole annulus was backfilled with soil cuttings to the surface. The monitoring wells were finished with flush-mount metal manhole covers encased in concrete.

Monitoring wells MW05A and MW13A were constructed using 2-inch diameter PVC riser pipes attached to 5-foot-long 0.01-inch slotted screens, with the slotted screen in MW05A placed between 60 and 65 feet bgs and the slotted screen in MW13A placed between 65 and 70 feet bgs. The annulus of the borehole was backfilled to about 2 feet above the screen with No. 1 sand and a 2-foot hydrated bentonite seal above the pack. The remainder of the annulus was backfilled with soil cuttings and a hydrated bentonite seal at the surface. To minimize the potential for drag-down of observed contamination to beneath the impermeable layer, all wells were installed as a double-cased well using a Sonic drill rig. An outer casing was advanced to the targeted well depth, and the inner casing was advanced through the outer casing to the targeted depth. The annular space between the outer casing and borehole wall was filled with No. 1 sand and sealed with 2 feet of bentonite approximately 2 feet above the well screen. The remainder of the annular space was backfilled with drill cuttings to the surface.

Following installation, each well was surged and developed with a submersible pump until the water became clear (having turbidity less than 50 Nephelometric Turbidity Units [NTU]). Purged groundwater was stored in labeled 55-gallon drums and staged on-site for future disposal.

Monitoring well locations are provided on Figure 4, construction details are included in Table 2, and construction logs are found in Appendix D.

The top of casing elevations of monitoring wells MW01, MW02, MW03, MW04, MW05A/B, MW06, MW07, MW10, and MW13A/B were surveyed by Langan on October 17, 2018. A Langan field engineer completed synoptic groundwater gauging on October 15, 16 and 17, 2018 using a Solinst 122 oil/water interface probe. Groundwater elevations ranged from el 16.25 to el 18.02 and are presented in Table 3. A groundwater contour map based on the synoptic groundwater levels of the wells is presented as Figure 4.

4.3.2 Groundwater Sampling

Groundwater samples were collected one week following well development on October 15, 16, and 17, 2018. Samples were collected in accordance with the procedures in the USEPA's low-flow groundwater sampling procedure ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EQASOP-GW 001, January 19, 2010) to allow for collection of a representative sample. Monitoring wells were gauged for static water levels and purged, and physical and chemical parameters (e.g., temperature, dissolved oxygen, oxygen reduction potential, and turbidity) were allowed to stabilize to ranges specified in the USEPA guidance before they were sampled.

Wells MW01, MW02, MW03, MW04, MW05B, MW06, MW10, and MW13B were sampled using a submersible Monsoon Pump with dedicated Teflon-lined polyethylene tubing. Wells MW05A, MW-07, and MW13A were sampled using a Waterra submersible pump and dedicated high density polyethylene tubing. Due to poor well volume recovery during sampling, monitoring wells MW05B, MW06, and MW07 were fully evacuated of groundwater and allowed to recharge prior to the collection of groundwater samples. Purge water was containerized into labeled 55-gallon drums for off-site disposal. Groundwater sampling logs are included in Appendix E.

Eighteen groundwater samples — including one sample from each well, additional samples from MW01, MW05A, and MW07 for emerging contaminants, and three duplicate samples —were collected into laboratory-supplied glassware, packed with ice to maintain a temperature of 4°C, and transported via courier service to Alpha Analytical Laboratories under chain-of-custody protocol. In addition, nine QA/QC samples (including three duplicates, four matrix spike/ matrix spike duplicate [MS/MSD] samples, and two field blanks) were collected. Groundwater samples were analyzed for Part 375/TCL VOCs, SVOCs, and PCBs, Part 375/TAL total and dissolved metals, pesticides, and herbicides. Three samples were analyzed for emerging contaminants (including 1,4-dioxane, and per- and polyfluoroalkyl substances [PFAS]).

In addition, groundwater testing was performed during the RI to support the identification and evaluation of remedial alternatives. The results of the additional analyses were used to inform the remedial alternatives analysis section of the RAWP.

4.4 Soil Vapor Investigation

NYSDEC DER-10 requires an assessment of soil vapor for contaminated sites to evaluate the health risk associated with potential exposure to VOCs through vapor intrusion into occupied spaces. Three soil vapor points (SV01 through SV03) were installed in an attempt to identify impacts associated with historic site use in the northern portion of the property. Three sub-slab soil vapor points (SSV01 through SSV03) were collected to investigate potential soil vapor intrusion within the on-site buildings in the southwest area of the site in Lot 8. Three indoor air samples (IA01 through IA03) were co-located with the sub-slab samples. One duplicate soil vapor

and one ambient air sample were collected for QA/QC purposes. Soil vapor, sub-slab vapor, indoor air, and ambient air sample locations are presented on Figure 4.

4.4.1 Soil Vapor Point Installation

Soil vapor points SV01 through SV03 were installed by AARCO using a Geoprobe® 7822DT drill rig and advanced to depths of about 5 feet bgs. Sub-slab vapor points SSV01 through SSV03 were installed just below the concrete slab within the existing on-site buildings using a Bosch hammer drill with a 7/8th-inch drill bit. A polyethylene vapor implant (2 inches in diameter, and approximately 1-7/8th inches in length) was threaded to Teflon-lined, polyethylene tubing (1/4-inch diameter) and lowered to the bottom of the hole in accordance with the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. A sand filter pack was installed around the screen implant by pouring No. 1 sand into the annulus. The remainder of the annulus was filled to grade surface with a hydrated bentonite seal. Soil vapor construction/sampling logs are provided in Appendix F.

4.4.2 Soil Vapor Sampling and Analysis

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

Each soil vapor point was purged using a MultiRAE meter at a rate less than 0.2 liters per minute (L/min) to evacuate a minimum of three sample tubing volumes prior to sample collection. The purged soil vapor was also monitored for VOCs and the values were recorded. After purging was completed, the soil vapor samples were collected into laboratory-supplied, batch-certified Summa® canisters. Soil vapor and sub-slab vapor samples were collected into 2.7-liter Summa® canisters that were calibrated for a sampling rate of about 0.0045 L/min for 8 hours of sampling. Soil vapor construction/sampling logs are provided in Appendix F.

Summa® canisters were labeled and transported via courier to Alpha in Westborough, Massachusetts, a NYSDOH ELAP-certified laboratory (ELAP ID #57869), under standard chain-of-custody protocol. Soil vapor and sub-slab vapor air samples were analyzed for VOCs by USEPA Method TO-15.

4.4.3 Indoor and Ambient Air Sampling and Analysis

Concurrently with sub-slab and soil vapor sampling, three co-located indoor air samples (IA01_100818, IA02_100818, and IA03_100818) and one ambient air sample (AA01_100818) were collected at about 4 to 5 feet above ground (i.e., at breathing height) to evaluate the

potential for soil vapor intrusion to impact indoor air quality and external influences on soil vapor quality.

Ambient and indoor air sampling was conducted in general accordance with the NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion in New York. Prior to sample collection, the areas were screened using a MultiRAE meter to identify potential sources of organic vapors that may interfere with sampling. The co-located indoor air samples were collected into laboratory-supplied, batch-certified, 2.7-liter Summa® canisters calibrated for a rate of 0.0045 L/min over an 8-hour sampling period. The samples were collected at heights between about 4 and 5 feet above surface grade to represent the breathing zone.

Summa® canisters were labeled and transported via courier to Alpha in Westborough, Massachusetts, a NYSDOH ELAP-certified laboratory (ELAP ID #57869), under standard chain-of-custody protocol. Indoor air and ambient air samples were analyzed for VOCs by USEPA Method TO-15 and TO-15 SIM.

4.5 Quality Control Sampling

Field blanks, trip blanks, field duplicate samples, and MS/MSD samples were collected and submitted for laboratory analysis for QA/QC purposes. QA/QC samples are detailed in Table 1 and are summarized below:

4.5.1 Soil QA/QC Samples

- Three field duplicate samples
- Three MS/MSD samples
- Three field rinsate blanks
- Seven trip blanks

4.5.2 Groundwater QA/QC Samples

- Two field duplicate samples
- Two MS/MSD samples
- Two field rinsate blanks
- Three trip blanks

4.5.3 Soil Vapor QA/QC Samples

- One field duplicate sample
- One ambient air sample

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

MS/MSD samples were collected to assess the effect of the sample matrix on the recovery of target compounds or target analytes. MS/MSD samples were collected from the same material as the primary sample by splitting the volume of the homogenized sample collected in the field into three sample containers.

The field duplicates were collected to assess the precision of the analytical methods relative to the sample matrix. The duplicates were collected from the same material as the primary sample by splitting the volume of homogenized sample collected in the field into two sample containers.

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

4.6 Data Validation

Analytical data was submitted to a Langan validator for review in accordance with USEPA and NYSDEC validation protocols. Data usability summary reports (DUSR) and the data validator's credentials are provided in Appendix G.

4.6.1 Data Usability Summary Report Preparation

A DUSR was prepared for each delivery group following data validation. The DUSR presents the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. For each of the organic analytical methods, the following was assessed:

- Holding times
- Instrument tuning
- Instrument calibrations
- Blank results
- System monitoring compounds or surrogate recovery compounds (as applicable)

- Internal standard recovery results
- MS/MSD results
- Target compound identification
- Chromatogram quality
- Compound quantization and reported detection limits
- System performance
- Results verification

For each of the inorganic compounds, the following was assessed:

- Holding times
- Calibrations
- Blank results
- Interference check sample
- Laboratory check samples
- Duplicates
- Matrix Spike
- Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) QC
- ICP serial dilutions
- Results verification and reported detection limits

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

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

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

4.7 Field Equipment Decontamination

A monsoon or Wattera pump with dedicated tubing was used to sample each groundwater monitoring well. The groundwater sampling equipment, including interface probe and water quality meter, and submersible pump were cleaned with Alconox and rinsed with deionized water between sampling locations during groundwater sample collection. Decontamination occurred at the sampling locations and all liquids were temporarily contained in 5 gallon buckets. Decontamination wastewater was placed in 55-gallon DOT-approved drums for future off-site disposal at a permitted facility.

4.8 Investigation-Derived Waste Management

Soil cuttings and groundwater investigation-derived wastes (IDW) were containerized in 55-gallon, DOT-approved drums. Decontamination and well development/purging fluids were placed in DOT-approved fluid drums with closed tops. All drums were properly labeled, sealed, and waste characterized as necessary. The drums were staged in a secured area onsite pending transport by a licensed waste hauler for disposal at an approved facility.

5.0 FIELD OBSERVATIONS AND ANALYTICAL RESULTS

5.1 Geophysical Investigation Findings

Geophysical anomalies consistent with utilities (i.e., gas, electric, sewer line, and water line) were identified throughout the site. A geophysical anomaly potentially indicative of a UST was identified in the northeast corner of the one-story warehouse building within Lot 8. An associated fill port was identified within the sidewalk adjacent to the anomaly. Two partial basements and anomalies indicative of potential drywells were also identified during the geophysical survey. A copy of the October 2018 Geophysical Engineering Survey Report is included in Appendix B.

5.2 Geology and Hydrogeology

Provided below is a description of the geological and hydrogeological observations made during the RI. A groundwater contour map is provided as Figure 5, and cross-sectional diagrams showing inferred soil profiles are shown on Figure 6. Boring logs are provided in Appendix C.

5.2.1 Historic Fill

The concrete-paved surfaces are underlain by a historic fill layer that extends from surface grade to between about 2 to 8.5 feet bgs. The fill layer was most shallow in the southern portion of the site (SB05 and SB06) and deepest in the northern portion of the site (SB01, SB10 and SB13). The historic fill predominantly consists of brown, medium-grained sand with varying amounts of gravel, silt, brick, coal, metal, clay, slag, glass, ceramics and concrete.

5.2.2 Native Soil Layers

Fill material is underlain by a native brown, fine- to coarse-grained sand layer observed to depths of about 32 to 69 feet bgs (about el 8 and el -25, respectively), with occasional layers of silt ranging in thickness from about 4 inches to 3 feet. In one deep boring advanced to 70 feet bgs (SB05), the sand layer is underlain by an olive clay layer, which was observed to depths of about 59 to 70 feet bgs (about el -16.7 to -27.7, respectively). In a second deep boring advanced in the northern portion of the site (SB13), weathered rock fragments, potentially indicative of weathered bedrock or glacial till were observed between 69 and 72 feet bgs (about el -25 to el -28).

5.2.3 Bedrock

The USGS "Bedrock and Engineering Geologic Maps of Bronx County and Parts of New York and Queens Counties, New York" indicates that the bedrock underlying the site is part of the Hartland Formation. Competent bedrock was not encountered during this RI.

5.2.4 Hydrogeology

Synoptic groundwater level measurements were collected on October 15, 16, and 17, 2018. Depth to groundwater was measured between about 22.76 to 27.77 feet bgs, with corresponding groundwater elevations ranging from about el 16.25 to el 18.02 NAVD88. The groundwater elevation is highest in the northern region of the site and appears to flow south toward the Sunnyside Yards and Newtown Creek. The relative progression of the contours demonstrates a horizontal flow pattern across the site, with a downward vertical gradient toward the south. Groundwater elevations are summarized in Table 3, and a groundwater contour map is presented as Figure 5

5.2.5 Surface Water and Drainage

The northeast portion of the site (Block 372, Lot 21) is vacant and the existing cover includes vegetation which is subject to rainwater infiltration during storm events. Portions of discontinuous concrete were observed in the northern stockyard area of Lot 8 which is also subject to rainwater infiltration during storm events. The remainder of the BCP site is primarily improved with buildings and paved surfaces that are impervious to rainwater. Runoff from the surrounding area typically drains through catch basins into city sewers.

According to the Federal Emergency Management Agency (FEMA) Preliminary Flood Insurance Rate Map (FIRM) dated December 5, 2013 (Map Number 3604970093G), the site is located in Zone X, which is an area designated for 0.2 percent annual chance flood; 1 percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood.

5.3 Soil Findings

5.3.1 Soil Boring Field Observations

Petroleum-like impacts, evidenced by odors, staining, and/or sheen were not encountered during this RI. PID readings above background were apparent in 2 of the 13 borings at depths ranging from 2.5 to 26.5 feet bgs, as summarized in the following table.

Soil Boring ID	Maximum PID Reading	Staining/Odors Observed
SB03	22.0 parts per million (ppm) VOCs at 26 feet bgs	None
SB04	5.0 ppm VOCs at 2.5 feet bgs	None

5.3.2 Analytical Results

Forty-five grab soil samples, including three field duplicates, were collected and analyzed for Part 375/TCL VOCs, SVOCs, PCBs, total cyanide, hexavalent and trivalent chromium, and Part

375/TAL metals. In addition, 24 soil samples, including two duplicate samples, were collected from shallow fill material and analyzed for Part 375/TCL pesticides and herbicides. A summary of laboratory detections for soil samples collected during the RI is provided in Table 4A (VOCs and SVOCs), Table 4B (PCBs, pesticides and inorganics) with comparisons to NYSDEC Part 375 UU SCOs, RURR SCOs, and Restricted Protection of Groundwater (PG) SCOs and Table 4C (total and TCLP chromium). Full laboratory reports for the RI are included in Appendix H. Soil sample results that exceed SCOs for samples collected during the RI are shown on Figure 7.

The following contaminants were detected at concentrations exceeding NYSDEC Part 375 UU (normal text), RURR (bolded and underlined text) and/or Restricted Protection of Groundwater (PG) SCOs (red and bolded text):

VOCs

One VOC was detected at a concentration exceeding the UU, and PG SCOs in one soil sample from soil boring SB12 collected at a depth from 0 to 2 feet bgs. The following table provides a summary of VOC that were detected above UU and/or PG SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU, RURR, and PG SCOs	Frequency of Detection above SCO
Acetone	**0.17** mg/kg in SB12_0-2		UU: 0.05 mg/kg RURR: 100 mg/kg PG: 0.05 mg/kg	1 of 45

SVOCs

Seven polycyclic aromatic hydrocarbons (PAH) were detected at concentrations exceeding the UU, RURR, and/or PG SCOs in four samples from soil borings SB02, SB05, SB09, and SB11 collected at depths ranging from 0 to 2 feet bgs. PAH impacted material is confined within the historic fill. The following table provides a summary of PAHs that were detected above UU, RURR, and/or PG SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU, RURR, and PG SCOs	Frequency of Detection above SCO
Benzo(a)anthracene	**1.4 mg/kg** in SB11_0-1	**6.1 mg/kg** in SB09_0.5-1.5	UU: 1 mg/kg RURR: 1 mg/kg PG: 1 mg/kg	3 of 45
Benzo(a)pyrene	**1.3 mg/kg** in SB11_0-1	**4.5 mg/kg** in SB09_0.5-1.5	UU: 1 mg/kg RURR: 1 mg/kg PG: 22 mg/kg	3 of 45
Benzo(b)fluoranthene	**1.1 mg/kg** in SB02_0.5-1.5	**6.2 mg/kg** in SB09_0.5-1.5	UU: 1 mg/kg RURR: 1 mg/kg PG: 1.7 mg/kg	4 of 45
Benzo(k)fluoranthene	0.97 mg/kg in SB05_0-2	1.7 mg/kg in SB09_0.5-1.5	UU: 0.8 mg/kg RURR: 3.9 mg/kg PG: 1.7 mg/kg	2 of 45
Chrysene	**1.6 mg/kg** in SB11_0-1	**5.2 mg/kg** in SB09_0.5-1.5	UU: 1 mg/kg RURR: 3.9 mg/kg PG: 1 mg/kg	3 of 45
Dibenzo(a,h)anthracene	**0.65 mg/kg** in SB09_0.5-1.5		UU: 0.33 mg/kg RURR: 0.33 mg/kg PG: 1,000 mg/kg	1 of 45
Indeno(1,2,3-cd)pyrene	**0.91 mg/kg** in SB11_0-1	**3.2 mg/kg** in SB09_0.5-1.5	UU: 0.5 mg/kg RURR: 0.5 mg/kg PG: 8.2 mg/kg	3 of 45

1. Concentrations in boldface and underlined exceed RURR SCOs.
2. Concentrations in boldface and red exceed PG SCOs
3. Concentrations in boldface, underline and red exceed both RURR and PG SCOs

Pesticides

One pesticide (4,4'-DDT) was detected at concentrations exceeding the UU SCO in one sample collected from shallow fill at a depth from 0.5 to 1.5 feet bgs, from boring SB02. No pesticides

were detected above RURR or PG SCOs. The following table provides a summary of the pesticide that was detected above the UU SCO:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU, RURR, and PG SCOs	Frequency of Detection above SCO
4,4'-DDT	0.00553 mg/kg in SB02_0.5-1.5		UU: 0.0033 mg/kg RURR: 7.9 mg/kg PG: 136 mg/kg	1 of 45

Herbicides

No herbicides were detected at concentrations exceeding the UU, RRU and/or PG SCOs.

PCBs

No PCBs were detected at concentrations exceeding the UU, RRU and/or PG SCOs.

Inorganics

Six metals were detected at concentrations exceeding the UU, RURR, and/or PG SCOs in samples collected at depths ranging from 0 to 7.5 feet bgs from soil borings SB01, SB02, SB05, SB06, SB09, and SB11, SB12, and SB13. Metal-impacted soil is confined within the historic fill material. The following table provides a summary of metals that were detected above UU, RURR, and/or PG SCOs:

Parameter	Minimum Detected Concentration above SCO	Maximum Detected Concentration above SCO	UU, RURR, and PG SCOs	Frequency of Detection above SCO
Hexavalent Chromium	**1,080 mg/kg** in SB04_0-1		UU: 1 mg/kg RURR: 110 mg/kg PG: 19 mg/kg	1 of 45
Trivalent Chromium (Chromium III)	**1,800 mg/kg** in SB04_0-1		UU: 30 mg/kg RURR: 180 mg/kg PG: ~ mg/kg	1 of 45
Copper	71.5 mg/kg in SB04_0-1	265 mg/kg in SB06_1-2	UU: 50 mg/kg RURR: 270 mg/kg PG: 1,720 mg/kg	3 of 45
Lead	73.8 mg/kg in SB12_0-2	**8,750 mg/kg** in SB06_0-2	UU: 63 mg/kg RURR: 400 mg/kg PG: 450 mg/kg	7 of 45
Mercury	0.182 mg/kg in SB01_0.5-1.5	**29.9 mg/kg** in SB02_0.5-1.5	UU: 0.18 mg/kg RURR: 0.81 mg/kg PG: 0.73 mg/kg	6 of 45
Nickel	38.5 mg/kg in SB04_0-1		UU: 30 mg/kg RURR: 310 mg/kg PG: 130 mg/kg	1 of 45
Zinc	119 mg/kg in SB12_0-2	950 mg/kg in SB06_1-2	UU: 109 mg/kg RURR: 10,000 mg/kg PG: 2,480 mg/kg	6 of 45

1. Concentrations in boldface and underline face exceed RURR SCOs.
2. Concentrations in boldface and red exceed PG SCOs
3. Concentrations in boldface, underline and red exceed both RURR and PG SCOs
4. Concentrations not in bold or red exceed UU SCOs

Hazardous Chromium

Hexavalent and Trivalent Chromium were identified in shallow soil collected from soil boring SB04 at potentially hazardous concentrations. Subsequent TCLP analysis identified chromium above the USEPA RCRA Characteristic Hazardous Waste limit in two samples (SB04_1-2 and SB04_2-3). To further define the extent of chromium impacts at this location, a supplemental delineation investigation was performed by Langan on November 20, 2018. During the hazardous chromium delineation, 31 additional grab soil samples were collected (14 were analyzed) from 1 to 3 feet bgs, 3 to 5 bgs, and 5 to 6 bgs to delineate the extent of hazardous chromium.

Of the 14 samples analyzed, 9 exceeded the USEPA RCRA Characteristic Hazardous Waste criteria. The vertical extent of the hazardous chromium centered on RI boring SB04 extends from

the surface to 8 feet bgs (vertically delineated by sample SB04_8-9), and is horizontally delineated by step-off samples SB04.7_1-3, SB04.5_1-3, and SB04.2_1-3. This area covers a roughly 18-foot by 15-foot region in the northeast part of the 3-story vacant warehouse building.

5.4 Groundwater Findings

5.4.1 Field Observations

Monitoring wells were gauged for non-aqueous phase liquid (NAPL) with an oil-water interface probe. NAPL was not encountered in monitoring wells. PID headspace readings ranged from 0.0 ppm to 4.9 ppm (highest reading in monitoring well MW05) during groundwater sampling. Depth to groundwater was measured between about 22.76 to 27.77 feet bgs, with corresponding groundwater elevations ranging from about el 16.25 to el 18.02. Groundwater generally flows to the south.

5.4.2 Analytical Data

Twelve groundwater samples, including one QA/QC duplicate, were collected and analyzed for Part 375/TCL VOCs, SVOCs, pesticides, herbicides, PCBs, hexavalent and trivalent chromium, total cyanide and Part 375/TAL total and dissolved metals. A summary of the groundwater sample laboratory detections compared to NYSDEC Title 6 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 (collectively known as NYSDEC SGVs) is presented in Table 5. Groundwater sample locations and results that exceed the NYSDEC SGVs are presented in Figure 8.

The NYSDEC requested that groundwater samples for emerging contaminants, including PFAS and 1,4-dioxane, be collected in response to the Department-wide initiative to understand the presence of these constituents in the environment aross New York State. Three groundwater samples, plus two QA/QC duplicates, were collected and analyzed for PFAS and 1,4-dioxane compounds from monitoring wells MW01, ME05A, and MW07. A summary of the groundwater sample laboratory detections is presented in Table 5.

The following contaminants were detected at concentrations exceeding the NYSDEC SGVs:

VOCs

Groundwater samples collected from MW04, MW06, MW07, MW10 and MW13A contained concentrations of one VOC above NYSDEC SGVs, as shown in the following table:

Parameter	Minimum Detected Concentration above SGVs	Maximum Detected Concentration above SGVs	SGVs	Frequency of Detection above SGVs
Chloroform	9.9 µg/L in MW10_101518	36 µg/L in MW04_101718	7 µg/L	6 of 12

SVOCs

Groundwater samples collected from the MW01, MW05B, MW06, MW07, and MW13A contained concentrations of up to six PAHs above the NYSDEC SGVs, as shown in the following table:

Parameter	Minimum Detected Concentration above SGVs	Maximum Detected Concentration above SGVs	SGVs	Frequency of Detection above SGVs
Benzo(a)anthracene	0.03 µg/L in MW05B_101718 and MW13A_101718	0.06 µg/L in MW01_101718	0.002 µg/L	3 of 12
Benzo(a)pyrene	0.02 µg/L in MW01_101718, MW05B_101718, and MW13A_101718		0.002 µg/L	3 of 12
Benzo(b)fluoranthene	0.01 µg/L in MW06_101618 and GWDUP01_101718	0.04 µg/L in MW01_101718, MW05B_101718, and MW13A_101718	0.002 µg/L	5 of 12
Benzo(k)fluoranthene	0.02 µg/L in MW01_101718, MW05B_101718, and MW13A_101718		0.002 µg/L	3 of 12
Chrysene	0.03 µg/L in MW05B_101718 and MW13A_101718	0.06 µg/L in MW01_101718	0.002 µg/L	3 of 12
Indeno(1,2,3-cd)pyrene	0.02 µg/L in MW01_101718, MW05B_101718, and MW13A_101718		0.002 µg/L	3 of 12

Pesticides

Pesticides were not detected above the NYSDEC SGVs in any groundwater samples.

Herbicides

Herbicides were not detected above the NYSDEC SGVs in any groundwater samples.

PCBs

PCBs were not detected above the NYSDEC SGVs in any groundwater samples.

Total Metals

Groundwater samples collected from monitoring wells MW01, MW02, MW04, MW05A, MW05B, MW06, MW07, MW10, MW13A and MW13B contained concentrations of one or more of nine total metals that exceeded the NYSDEC SGVs in groundwater samples as shown in the following table:

Parameter	Minimum Detected Concentration above NYSDEC SGVs	Maximum Detected Concentration above NYSDEC SGVs	NYSDEC SGVs	Frequency of Detection above NYSDEC SGVs
Antimony	3.52 µg/L in MW07_101718		3 µg/L	1 of 12
Hexavalent Chromium	654 µg/L in MW04_101718		50 µg/L	1 of 12
Total Chromium	65.25 µg/L in MW05A_101718	1,146 µg/L in MW04_101718	50 µg/L	2 of 12
Iron	732 µg/L in MW013B_101518	37,400 µg/L in MW05A_101718	300 µg/L	8 of 12
Lead	36.97 µg/L in MW06_101618		25 µg/L	1 of 12
Magnesium	43,600 µg/L in MW01_101718	81,500 µg/L in MW05A_101718	35,000 µg/L	3 of 12
Manganese	312.5 µg/L in MW05B_101718	1,554 µg/L in MW05A_101718	300 µg/L	4 of 12
Sodium	34,900 µg/L in MW05B_101718	322,000 µg/L in MW01_101718	20,000 µg/L	10 of 12
Thallium	0.52 µg/L in MW05A_101718		0.5 µg/L	1 of 12

Dissolved Metals

Groundwater samples collected from monitoring wells MW01, MW02, MW04, MW05A, MW05B, MW06, MW07, MW10, MW13A and MW13B contained concentrations of one or more of five dissolved metals that exceeded the NYSDEC SGVs as shown in the following table:

Parameter	Minimum Detected Concentration above NYSDEC SGVs	Maximum Detected Concentration above NYSDEC SGVs	NYSDEC SGVs	Frequency of Detection above NYSDEC SGVs
Antimony	4.09 µg/L in MW07_101718		3 µg/L	1 of 12
Chromium	62.24 µg/L in MW13A_101718	698.6 µg/L in MW04_101718	50 µg/L	2 of 12
Magnesium	36,600 µg/L in MW13B_101518	51,900 µg/L in MW02_101518	35,000 µg/L	4 of 12
Manganese	322.6 µg/L in MW10_101518	817.4µg/L in MW02_101518	300 µg/L	4 of 12
Sodium	35,000 µg/L in MW05B_101718	337,000 µg/L in MW01_101718	20,000 µg/L	10 of 12

Perfluorinated Chemicals (PFCs - 21-Compound List)

Groundwater samples collected from monitoring wells MW01, MW05A, and MW07 were sampled for emerging contaminates per- and polyfluoroalkyl substances and 1,4-dioxane per

NYSDEC's initiative to understand the presence of these constituents in the environment across New York State. There are no NYSDEC TOGS SGVs for these compounds.

Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS) were not detected in any of the groundwater samples above the USEPA health advisory of 70 parts per trillion (ppt). Analytical results are shown in Table 5B.

5.5 Soil Vapor Findings

Four sub-slab vapor samples (including one duplicate), three soil vapor samples, three co-located indoor air samples, and one outdoor ambient air sample were collected and submitted for laboratory analysis for USEPA TO-15 VOCs. In addition, the indoor and ambient air samples were analyzed for USEPA TO-15 SIM analysis. No standard currently exists for soil vapor samples in New York State. Sub-slab soil vapor and indoor air detections of PCE and TCE were compared to the NYSDOH Soil Vapor Decision Matrices. Soil vapor sample results are summarized in Table 6A and sub-slab soil vapor sample results are summarized in Table 6B. The soil vapor sample results are shown on Figure 9, and the laboratory analytical reports can be found in Appendix H.

5.5.1 Soil Vapor Analytical Data

Total VOCs in soil vapor samples ranged from 832 micrograms per cubic meter (µg/m³) in SV01 to 1,100 µg/m³ in SV02. Total VOCs in the outdoor ambient air sample AA01 were detected at 45.8 µg/m³. VOCs detected in soil vapor samples include:

- 1,2,4-trimethylbenzene
- Ethylbenzene
- 2-Butanone
- o-Xylenes
- 2-Hexanone
- Carbon Disulfide
- Isopropanol
- n-Heptane
- Tert-Butyl Alcohol
- Acetone
- p,m-xylene
- n-Hexane
- Tetrachloroethene
- Toluene

PCE concentrations detected in soil vapor ranged from about 7.39 µg/m^3 in SV03 to 26.9 µg/m^3 in SV02. PCE was detected in the ambient air sample at a concentration of 1.3 µg/m^3. PCE's daughter product, TCE, was not detected in soil vapor samples collected. Cis-1,2-dichloroethene and vinyl chloride were not detected in soil vapor samples. Petroleum-related compounds including benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at concentrations detected in soil vapor ranged from about 35.33 µg/m^3 in SV01 to 42.77 µg/m^3 in SV02; BTEX compounds were detected in the ambient air sample at a of 7.86 µg/m^3.

5.5.2 Sub-Slab Vapor and Indoor Air Analytical Data

The sub-slab soil vapor samples (SSV01, SSV02, and SSV03) were collected within the existing buildings in Lot 8 in order to evaluate potential soil vapor intrusion. Co-located indoor air samples

(IA01, IA02, and IA03) were collected concurrently with the sub-slab vapor samples to assess indoor air quality. The sub-slab soil vapor and co-located indoor air sample results were compared to the NYSDOH Soil Vapor Decision Matrices.

The NYSDOH decision matrices present recommended actions based on the concentrations of 1,1-dichloroethene, 1,1,1-trichloroethane, cis-1,2-dichloroethene, carbon tetrachloride, methylene chloride, TCE, PCE, and vinyl chloride in sub-slab soil vapor and indoor air. The decision matrices recommend a range of activities (e.g., monitor, mitigate) based on the sub-slab/ soil vapor and indoor air sample results. Based on the results of the 2018 RI, three of the eight VOCs that can be evaluated using the NYSDOH decision matrices were detected in sub-slab vapor samples and include PCE, TCE, and carbon tetrachloride.

PCE was detected in the sub-slab soil vapor sample SSV01 at a concentration of 64.6 µg/m³ and in the co-located indoor air sample (IA01) at a concentration of 1.44 µg/m³; in the sub-slab soil vapor sample SSV02 at a concentration of 8,270 µg/m³ and in the co-located indoor air sample (IA02) at a concentration of 6.66 µg/m³; and in the sub-slab soil vapor sample SSV03 at a concentration of 3,420 µg/m³ (2,860 µg/m³ in the duplicate sample) and in the co-located indoor air sample (IA03) at a concentration of 1.47 µg/m³. Based on the detected concentrations of PCE, the NYSDOH decision matrix (Matrix B) recommendation is to "Mitigate".

TCE was detected in the sub-slab soil vapor sample SSV03 and duplicate sample at a concentration of 21.8 and 22.3 µg/m³, respectively, and in the co-located indoor air sample (IA03) at a concentration of 0.156 µg/m³. Based on the detected concentrations of TCE the NYSDOH decision matrix (Matrix A) recommendation is "No Further Action".

Carbon tetrachloride was detected in the sub-slab soil vapor sample duplicate of SSV03 at a concentration of 11.3 µg/m³, and in the co-located indoor air sample (IA03) at a concentration of 0.472 µg/m³. Based on the detected concentrations of carbon tetrachloride the NYSDOH decision matrix (Matrix A) recommendation is "Monitor".

5.6 Quality Control Results

Duplicates, MS/MSDs, field rinsate blanks, and trip blanks were collected during the RI and are detailed in Table 1. The duplicates, field blanks, and MS/MSD sample pairs for soil and groundwater were collected at a frequency of 1 per 20 primary samples. Quality control sample results were evaluated during data validation, and the laboratory analytical reports are provided in Appendix H.

5.7 Data Usability

Category B laboratory reports for soil, groundwater, soil vapor, and air samples were provided by Alpha and were forwarded to Langan's data validator. DUSRs are provided in Appendix G. The results of the data validation review are summarized below.

The data were determined to be acceptable. Completeness, defined as the percentage of analytical results that are judged to be valid, is 100 percent. No major deficiencies were identified. All data is considered useable as qualified.

5.8 Evaluation of Areas of Concern

This section discusses the results of the RI with respect to the AOCs described in detail in Section 3.4. AOC locations are shown on Figure 4.

5.8.1 AOC 1: Historic Fill

Historic fill material located throughout the site contains VOCs, PAHs, metals, and pesticides at concentrations above the Part 375 UU, RRU, and/or PG SCOs. The historic fill layer, which extends to depths ranging from about 2 to 8.5 feet bgs, was most shallow in the southern part of the site (SB05 and SB06) and deepest in the northern part of the site (SB01, SB10 and SB13). The historic fill predominantly consists of brown, medium-grained sand with varying amounts of gravel, silt, brick, coal, metal, clay, slag, glass, ceramics and concrete. The historic fill layer was encountered across the site. A summary of the analytical results from historic fill for AOC 1 are summarized as follows:

AOC 1 - Soil

- Acetone was detected above the Part 375 UU and RURR SCOs in historic fill in SB12. Acetone is a common laboratory contaminant (although not detected in the batch blank) and is likely not representative of soil conditions.
- Seven PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected above the Part 375 UU, RURR and/or PG SCOs in samples collected from the historic fill layer in soil borings SB02, SB05, SB09, and SB11.
- Metals, including chromium, copper, lead, mercury, nickel, and zinc were detected above the UU, RURR and/or PG SCOs in historic fill samples collected throughout the site.
- Chromium was detected above the RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic. The area was horizontally and vertically delineated to about 8 feet bgs in an approximate 18-foot by 15-foot area centered on SB04/SB04A.
- One pesticide, 4,4'-DDT, was detected above UU SCOs in historic fill in soil boring SB02.
- Total PCBs and herbicides were not detected above UU SCOs in soil samples collected from historic fill.

AOC 1 - Groundwater

- Six PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene) were detected above the SGVs in groundwater samples.
- Metals (including antimony, chromium, iron, lead, magnesium, sodium and thallium) were detected at concentrations above the NYSDEC SGVs in groundwater samples. Dissolved iron, lead and thallium were not detected in groundwater samples; therefore, the detections in unfiltered samples are likely the result of suspended solids in groundwater derived from historic fill. Antimony, magnesium, manganese, and sodium were detected in dissolved groundwater samples above SGVs and are characteristic of naturally-occurring groundwater conditions. Dissolved chromium was detected at concentrations greater than the SGV. Dissolved chromium is not typically found in historic fill and is most likely attributed to historic site use.

AOC 1 – Soil Vapor

Historic fill does not appear to have impacted soil vapor.

AOC 1 - Conclusions

Historic fill, which is ubiquitous across the site footprint, was encountered to depths ranging from 2 to 8.5 feet bgs. VOCs, SVOCs, metals, and pesticides were detected at concentrations above the Part 375 UU, PG and/or RURR SCOs in samples of historic fill, with the deepest exceedance identified at 7.5 feet bgs. Concentrations of PAHs and metals are likely associated with the general quality of the fill placed at the site or historical industrial uses of the site. The origin of chromium in historic fill material is associated with historical plastic manufacturing.

Similar compounds detected in soil were also identified in groundwater at concentrations above NYSDEC SGVs. SVOC and metals concentrations detected in groundwater are likely related to entrained sediments that may be related to on-site historic fill. Magnesium, manganese, and sodium are regionally present in groundwater throughout New York City. The analytical data indicate that the contaminants associated with historic fill have not impacted soil vapor.

5.8.2 AOC 2: Historical Site Use

Releases of petroleum products, solvents, and/or other hazardous materials associated with plastics manufacturing during the 50 years of on-site operations may have adversely affected soil, groundwater and/or soil vapor. PCE and TCE impacted soil vapor is discussed in AOC 4. A summary of the findings for AOC 2 is provided below:

- Petroleum-related VOCs were not detected at concentrations exceeding UU SCOs. Petroleum impacts, including PID readings above background, odors, or staining, were not encountered during the RI.

- PAHs and metals, with the exception of chromium, were detected at concentrations exceeding the UU, RURR and/or PG SCOs; but at concentrations generally more representative of historic fill material than at concentrations representative of a release associated with historical operations.
- Chromium was detected above the RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic. The area was horizontally and vertically delineated to a depth of 8 feet bgs in an approximate 18-foot by 15-foot area centered on SB04/ SB04A.
- Total and dissolved chromium were detected at a concentration (maximum of 698.6 µg/L dissolved chromium) exceeding the NYSDEC SGV in groundwater samples collected from MW-4. Total lead was detected at a concentration (maximum of 36.97 µg/L total lead) exceeding its NYSDEC SGVs in groundwater samples collected from MW-4, however was not detected in the dissolved metals analysis.
- One VOC, chloroform, was identified in six monitoring wells at concentrations above the NYSDEC SGVs. Six PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene) were detected above the SGVs in groundwater samples. Concentrations of dissolved metals including antimony, chromium, magnesium, manganese, and sodium above the NYSDEC SGVs were identified. The source of chloroform in groundwater is likely from the interaction of chlorinated potable water with organic material in soil and is not associated with historical use of the site.
- Emerging contaminants (including PFOA and PFOS) were not detected in groundwater samples above the USEPA health advisory.

AOC 2 Conclusions

Concentrations of several PAHs and metals are likely associated with the general quality of the historic fill material. Chromium-impacted soil and groundwater may be associated with chrome plating related to the historical use of the site as a plastics manufacturer. Chloroform detected above NYSDEC SGVs is typically associated with the breakdown of chlorinated drinking water. Chloroform and PCE were detected in soil samples collected from the former plastics manufacturing warehouses on site and the former stock yard, but at concentrations below the UU and/ or PG SCOs. A source of VOCs associated with historical use of the site was not identified in soil or groundwater. The source of PCE in soil vapor is either an unidentified site source associated with historical site us as a plastics manufacturer or an off-site source.

5.8.3 AOC 3: Historical and Suspect Petroleum Storage on Site

Historical records indicate one 550-gallon UST located in the sidewalk adjoining the site along 30th Street was installed in 1941 and closed-in-place on July 7, 2000. According to Sanborn Fire Insurance Maps, a 10,000-gallon tank was also depicted at the site from 1947 to 1950 in the east-

central part of the site; however, the tank was not listed on any regulatory records. A summary of the analytical results and observations associated with AOC 3 are summarized as follows:

AOC 3 – Geophysical Survey

A geophysical anomaly potentially indicative of a UST was identified in the northeast corner of the one-story warehouse building within Lot 8. An associated fill port was identified on the sidewalk adjacent to the anomaly.

AOC 3 - Soil

No petroleum-related VOCs were detected at concentrations exceeding UU SCOs. No petroleum impacts, as evidenced by elevated PID readings, odors, or staining, were apparent during the RI. PID readings above background were measured in 2 of the 13 borings at depths ranging from 2.5 to 26.5 feet bgs (5.0 ppm VOCs and 22.0 ppm VOCs, respectively).

AOC 3 - Groundwater

No petroleum-related VOCs or SVOCs were detected at concentrations exceeding NYSDEC SGVs. Free product was not detected in monitoring wells during the RI, and petroleum-like odors were not observed in purged groundwater or during collection of headspace readings. PID headspace readings of the monitoring wells ranged from 0.0 ppm to 4.9 ppm (highest reading in monitoring well MW05) during gauging activities.

AOC 3 - Soil Vapor

BTEX concentrations detected in sub-slab soil vapor ranged from 8.06 µg/m^3 in SSV03 to 21 µg/m^3 in SSV01 compared to co-located indoor air concentrations of 8.27 µg/m^3 (IA03) to 10.44 µg/m^3 (IA01), respectively.

AOC 3 Conclusions

Petroleum-related contamination was not observed in soil, groundwater or soil vapor samples at the site. At least one of the former petroleum storage tanks remain on site and must be decommissioned and registered in accordance with NYSDEC PBS regulations. Evidence of a petroleum release associated with AOC 3 was not identified.

5.9.4 AOC 4: PCE and TCE Impacted Soil Vapor

During the 2017 Limited Subsurface Investigation by Hydro Tech, PCE and TCE were detected in soil vapor and sub-slab vapor samples throughout the site. A summary of the findings for AOC 4 is provided below:

- PCE concentrations detected in soil vapor ranged from about 7.39 µg/m^3 in SV03 to 26.9 µg/m^3 in SV02. PCE was detected in the ambient air sample at a concentration of 1.3 µg/m^3.

- PCE was detected in the sub-slab soil vapor samples at concentrations ranging from 64.6 µg/m^3 in SSV01 to 8,270 µg/m^3 in SSV02. PCE's daughter product, TCE, was detected in sub-slab soil vapor at concentrations ranging from 21.8 µg/m^3 in SSV03 to 22.3 µg/m^3 in the duplicate sample of SSV03. Carbon tetrachloride was also detected in the sub-slab soil vapor sample duplicate of SSV03 at a concentration of 11.3 µg/m^3.

AOC 4 Conclusions

A source of PCE was not identified. The elevated PCE concentrations in sub-slab soil vapor are either attributed to an off-site source (e.g., auto repair facilities and dry cleaners) or an unidentified site source associated with historical site use. Based on a comparison of PCE concentrations detected in indoor air and sub-slab vapor to NYSDOH decision matrices, mitigation is recommended.

5.8.5 AOC 5: Historical Use of Adjoining Properties

Auto repair facilities, gasoline filling stations, dry cleaners, machine and plastics manufacturing facilities occupied the adjoining properties between 1930 and 2010. COCs associated with AOC 5 include petroleum compounds and chlorinated solvents. A summary of the findings for AOC 5 is provided below:

- PCE was detected in each of the three the soil vapor samples collected in the northwest and northeast regions of the site. PCE concentrations detected in soil vapor ranged from about 7.39 µg/m^3 in SV03 to 26.9 µg/m^3 in SV02. PCE was detected in the ambient air sample at a concentration of 1.3 µg/m^3.
- PCE was detected in the sub-slab soil vapor samples at concentrations ranging from 64.6 µg/m3 in SSV01 to 8,270 µg/m^3 in SSV02 PCE's daughter product, TCE, was detected in sub-slab soil vapor at concentrations ranging from 21.8 µg/m^3 in SSV03 to 22.3 µg/m^3 in the duplicate sample of SSV03. Carbon tetrachloride was also detected in the sub-slab soil vapor sample duplicate of SSV03 at a concentration of 11.3 µg/m^3.
- PCE was detected in soil vapor samples collected from the northern part of the site during the September to October 2018 RI. PCE and TCE were detected in sub-slab soil vapor samples collected throughout the southern part of the site.

AOC 5 Conclusions

A source of PCE in soil vapor was not identified. In addition, TCE was not detected in the three soil vapor samples (SV01, SV02, and SV03) collected in the northern portion of the site. Potential off-site sources include historical use of up- and cross-gradient properties, including machine manufacturing (Block 371, Lots 31 and 32), dry cleaning (Block 371, Lot 33), and auto repair (Block

372, Lot 23). Because AOCs 4 and 5 overlap and are essentially identical, references to AOC 5 will be eliminated and will be referred to as AOC 4 when evaluating the site remedy.

6.0 QUALITATIVE HUMAN AND FISH/WILDLIFE EXPOSURE ASSESSMENT

Human health exposure risk was evaluated for both current and future site and off-site conditions, in accordance with the May 2010 NYSDEC Final DER-10 Technical Guidance for Site Investigation and Remediation. 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, NYSDEC DER-10 requires an on-site and off-site Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, there was no need to prepare an FWRIA for the site.

6.1 Current Conditions

The 26,978-square-foot (0.61 acres) site is developed with a three-story warehouse building with multiple partial cellar levels in the southern portion of Lot 8 (37-11 30th Street), a stockyard/storage area in the northern portion of Lot 8 and a vacant land on Lot 21 (30-14 37th Avenue). The warehouse building on Lot 8 is vacant and was most recently occupied by a lighting, audio, and production rental and warehousing company. Lot 21 is vacant and was most recently developed a two-story single-family residence. The site is situated on the northwest corner of the block bound by 37th Avenue to the north, 31st Street to the east, 38th Avenue to the south, and 30th Street to the west. The elevated N and Q subway tracks run north-south above 31st Street, which are about 100 feet east of the proposed BCP property. Land use within a half mile of the site is urbanized and characterized by manufacturing and mixed-use buildings, residences, schools, and major transportation and infrastructure including underground utility lines, storm drains, and sewers.

6.2 Proposed Conditions

A new seven-story, mixed-use residential, commercial, and light manufacturing building will be constructed with a footprint of about 26,978 square feet. The new development will include one full cellar level and about 12,500 square feet of commercial/ retail areas, about 10,000 square feet of light manufacturing areas, about 2,500 square feet of parking, and about 1,800 square feet of residential amenity space on the first floor. The second through seventh floors of the new development will be occupied by 198 residential units, thirty percent of which will be designated for affordable housing.

6.3 Summary of Environmental Conditions

AOCs include historic fill, historical site use, historical and suspect petroleum storage on site, and PCE and TCE impacted soil vapor. Petroleum-related contamination was not identified in soil, groundwater or soil vapor samples; however, geophysical anomalies indicative of at least one

UST were identified. COCs associated with the AOCs include VOCs, SVOCs, pesticides, and metals.

VOCs (acetone only), SVOCs, metals and pesticides were detected at concentrations above the Part 375 UU, RURR and/or PG SCOs in samples collected from historic fill. Chromium associated with historical site use as a plastic manufacturing facility was detected above the RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic within historic fill material. Langan performed a supplemental hazardous chromium delineation on November 20, 2018 and the area was horizontally and vertically delineated to a depth of 8 feet bgs centered on SB04/ SB04A. Concentrations of several PAHs and metals, with the exception of chromium, were detected at concentrations that are typical of fill material in New York City.

Chloroform was identified in six monitoring wells at concentrations above the NYSDEC SGVs. Chloroform is a water disinfection byproduct typically associated with chlorinated drinking water. PCE was detected, but at a concentrations below the NYSDEC SGVs. The source of SVOCs and metals (with the exception of chloroform) detected in groundwater are is historic fill. Chromium in groundwater is associated with historical site use as a plastics manufacturing facility. Emerging contaminants (including PFOA and PFOS) were not detected in groundwater samples above the USEPA health advisory.

PCE was detected in three soil vapor samples collected in the northern part of the site. Elevated concentrations of PCE were detected in sub-slab soil vapor samples collected in the central and southern part of the site. A site source of PCE was not identified; the source of PCE in soil vapor is either an unidentified site source or an off-site source. TCE was not detected in the three soil vapor samples (SV01, SV02, and SV03) collected in the northern portion of the site. Based on a comparison of carbon tetrachloride, PCE and TCE concentrations detected in indoor air and sub-slab vapor to NYSDOH decision matrices, no further action is recommended for TCE, monitoring is recommended for carbon tetrachloride, and mitigation is recommended for PCE.

6.4 Conceptual Site Model

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

6.4.1 Potential Sources of Contamination

Potential sources of contamination have been identified and include historic fill, historic site usage, and possible off-site sources.

Chromium detected in soil and groundwater is potentially related to chrome plating associated with the former use of the site as a plastic manufacturer.

Historic fill material encountered beneath surface cover to depths ranging from about 2 to 8.5 feet bgs originated from unidentified source areas and was placed as backfill at an unknown time, prior to the development of the current on-site buildings. SVOCs and metals detected at concentrations above the Part 375 UU, PG and RURR SCOs, with the exception of chromium, is related to the nature of the historic fill.

CVOCs were detected in soil vapor; however, the site investigation found no on-site sources of chlorinated VOCs in soil or groundwater. CVOC concentrations in sub-slab/soil vapor originate from an unidentified site source or an off-site source.

6.4.2 Exposure Media

Impacted media include soil, groundwater, and soil vapor. Analytical data suggests that historic fill contains SVOCs, metals and pesticides up to about 7.5 feet bgs in exceedance of UU SCOs. Historic fill-related metals, including hazardous chromium (central-east portion of the site only) were detected across the site. PAHs were identified in historic fill material in the northeast corner of the site. Groundwater was observed at depths ranging from 22.76 to 27.77 feet bgs, and impacts include VOCs, SVOCs, and metals. Soil vapor is impacted with CVOCs including PCE and TCE (limited to sub-slab soil vapor samples).

6.4.3 Receptor Populations

The site is currently vacant and secured with locked roll-up gates and/or construction fencing, with receptors restricted to authorized personnel. Under future conditions, human receptors may include construction and remediation workers, authorized guests visiting the site, and the public adjacent to the site, as well as potential future building occupants.

6.5 Potential Exposure Pathways – On-Site

6.5.1 Current Conditions

Human exposure to contaminated soil is limited as impermeable building structures and a concrete slab is present throughout the existing building on Lot 8, and the majority of the open stockyard in the northern portion of Lot 8. In places where no building slab exists or may be compromised (i.e. within Lot 21), human exposure is limited to site owners and authorized visitors. Access to the site is restricted by wooden construction fences and/or locked gates;

therefore, human exposure to contaminated soil is limited. The potential pathway is through dermal absorption, inhalation and ingestion.

Groundwater in this area of New York City is not used as a potable water source. There is a potential exposure pathway during groundwater sampling associated with site investigation. The potential pathway is through dermal absorption, inhalation and ingestion.

Soil vapor is impacted by VOCs and CVOCs. There is a potential exposure pathway during sub-slab soil vapor sampling associated with investigation and intrusion through potential cracks in the building's slabs. The potential pathway is through inhalation. The sub-slab soil vapor analytical results for the existing on-site building in Lot 8 suggest that this pathway may exist, as the detected PCE concentrations categorized by the NYSDOH Guidance Matrix 2 recommend mitigation. The building is currently vacant and is only accessible to the owners and authorized visitors.

6.5.2 Construction/Remediation Conditions

Construction and remediation may result in potential exposures to site contaminants in the absence of a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP). Construction and remedial activities will likely include demolition, 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 contaminants 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.

6.5.3 Proposed Future Conditions

Currently, the contemplated project includes a mixed-use residential, commercial, and light manufacturing development with one full cellar level. New development will incorporate a cover system across the site and vapor mitigation measures. These measures will prevent human exposure to impacted soil and groundwater and potential soil vapor intrusion.

There is no pathway for ingesting groundwater COCs, since the site and surrounding areas obtain their drinking water supply from surface water reservoirs located upstate and not from groundwater. Future conditions will likely have a deed restriction on site and groundwater use to prevent exposure to residual contamination.

As necessary, institutional controls will require maintenance of engineering controls and will serve to further mitigate exposure under future conditions.

6.6 Potential Exposure Pathways – Off-Site

Soil vapor may migrate off-site vertically through the subsurface and dissipate and dilute with ambient air in instances where the vacant Lot 21 surface is compromised or during site construction/remediation.

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

- The site is located in an urban area and predominantly covered with continuous relatively impervious surface covering (i.e. building foundations and concrete paving)
- During site redevelopment remediation and construction, the following protective measures will be implemented:
    - A site-specific HASP including a CAMP will be implemented to protect on-site personnel and to monitor the perimeter of the site to mitigate off-site migration of particulates and VOCs during construction.
    - Air monitoring will be conducted for particulates (i.e., dust) and VOCs during intrusive activities as part of a CAMP. Dust and/or vapor suppression techniques will be employed to limit 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.

6.7 Evaluation of Human Health Exposure

Based upon the CSM and the review of environmental data, partial on-site exposure pathways appear to be present under current conditions, and in the absence of institutional and engineering controls, complete on-site exposure pathways could potentially exist in construction/remediation and future conditions.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population.

6.7.1 Current Conditions

Contaminant sources include historic fill with elevated levels of SVOCs, metals, and pesticides; PAH and metals impacted soil and groundwater; and CVOC-impacted soil vapor.

Contaminant release and transport mechanisms include contaminated soil transported as dust (dermal, ingestion, inhalation), and existing soil vapor contaminants (inhalation). Under current conditions, the likelihood of human exposure is limited, as 1) Site access is restricted to employees, ownership and authorized visitors; and 2) impermeable concrete surfaces and building foundations cover the majority of the site.

6.7.2 Construction/Remediation Activities

During development and remediation, the contaminant sources are the same as for current conditions. Points of exposure include disturbed and exposed soil during excavation, dust and organic vapors generated during excavation, and contaminated groundwater that will be encountered during excavation and/or dewatering operations. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of organic vapors arising from contaminated soil and groundwater, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers and, to a lesser extent, the public adjacent to the site.

The potential for completed exposure pathways is present since all five elements exist; however, the risk will be minimized by the implementation of appropriate health and safety measures, 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).

6.7.3 Proposed Future Conditions

For the proposed future conditions, residual contaminants may remain on-site, depending on the selected remedy, and would, to a lesser extent, include those listed under current conditions. If institutional and/or engineering controls are not implemented, points of exposure include potential cracks in the foundation or lower-level slab of the proposed development, and exposure during any future soil-disturbing activities. Routes of exposure would be limited to inhalation of vapors entering the buildings. The receptor population includes potential building tenants and/or employees, visitors and maintenance workers. The possible routes of exposure can be avoided or mitigated by the installation of engineering controls, such as soil vapor mitigation measures and/or a site capping system, and the implementation of institutional controls, such as a Site Management Plan (SMP).

6.7.4 Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion and inhalation of soil, soil vapor, or groundwater

by authorized site visitors in instances where the integrity of the impermeable site cover is compromised. 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 intrusive activities.

2. In the absence of institutional and engineering controls, there is a moderate risk of exposure during the construction and remediation activities. The primary exposure pathways are:

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

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

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

3. The existence of a complete exposure pathway for site contaminants to human receptors under future conditions is unlikely, as contaminant sources will likely be removed during site development, and if any residual soil remains, the impermeable foundation cover would serve as a cap. Regional groundwater is not used as a potable water source in New York City, so exposure to regional groundwater contaminants is unlikely. The potential pathway for soil vapor intrusion into the buildings would be addressed through the use of soil vapor mitigation measures (e.g., vapor barrier, sub-membrane depressurization system, or ventilated parking garage), thereby minimizing the risk of exposure to contaminated sub-slab soil vapor.

4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during investigation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and, if necessary, engineering controls may be implemented (e.g. site-wide cap and a waterproofing/ vapor barrier) to prevent completion of this pathway.

7.0 NATURE AND EXTENT OF CONTAMINATION

This section evaluates the nature and extent of soil, groundwater and soil vapor contamination. The nature and extent of the contamination is derived from a combination of field observations and analytical data that were discussed in Section 5.0, and incorporates field observations and analytical data from the September to October 2018 RI.

7.1 Soil Contamination

Contaminants related to historic fill material include SVOCs, pesticides, and metals. Historic fill is present across the site to depths ranging from about 2 to 8.5 feet bgs. Four soil samples collected from the historic fill contained concentrations of SVOCs (including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) above the UU, RURR, and/or PG SCOs. Nine soil samples, predominantly in the historic fill layer up to 7.5 feet bgs, contained concentrations of metals (including copper, chromium, lead, mercury, nickel, and zinc) above the UU, RURR, and/or PG SCOs. One pesticide, 4,4'-DDT, was detected in one fill sample in the northern portion of Lot 21 above the UU SCO.

Hexavalent and trivalent chromium were identified in soil from SB04 at potentially hazardous concentrations. Subsequent TCLP analysis identified chromium above the USEPA RCRA characteristics hazardous waste limit in two samples (SB04_1-2 and SB04_2-3). The extent of hazardous chromium was delineated and determined to extend to a depth of 8 feet bgs over a roughly 18-foot by 15-foot area in the northeast part of the 3-story vacant warehouse building. The source of chromium-impacted soil is historical site use as a plastics manufacturer.

7.2 Groundwater Contamination

Evaluation of the groundwater analytical results identified VOCs, SVOCs, chromium, and naturally occurring metals above applicable regulatory standards. Total and hexavalent chromium were detected at concentrations above SGVs and are related to historical site use as a plastics manufacturer. The source of SVOC and other metals concentrations detected in groundwater is historic fill material, and not indicative of a release associated with historical site use. Antimony, magnesium, manganese, and sodium are also regionally present in groundwater throughout New York City. Chloroform, which is a disinfection byproduct associated with chlorinated drinking water, was also detected at concentrations above the NYSDEC SGVs in six groundwater samples. PCE was detected at a concentrations below the NYSDEC SGVs. A site source of PCE was not identified.

7.3 Soil Vapor Contamination

Total VOCs in soil vapor samples ranged from 832 µg/m³ in SV01 to 1,100 µg/m³ in SV02. Total VOCs in the outdoor ambient air sample AA01 were detected at 45.8 µg/m³. PCE was detected

at concentrations ranging from 7.39 µg/m^3 in SV03 to 26.9 µg/m^3 in SV02 (PCE concentration in ambient air was 1.3 µg/m^3). PCE was detected in the sub-slab soil vapor samples at concentrations ranging from 64.6 µg/m^3 in SSV01 to 8,270 µg/m^3 in SSV02. A comparison of the sub-slab soil vapor and indoor air analytical data to the NYSDOH Decision Matrix (Matrix B) indicates that mitigation is recommended for PCE.

8.0 CONCLUSIONS

1. Stratigraphy: The site stratigraphy consists of a historic fill layer beneath concrete-paved surfaces that is predominately brown, medium-grained sand with varying amounts of gravel, silt, brick, coal, metal, clay, slag, glass, ceramics and concrete to depths ranging from 2 to 8.5 feet bgs. Fill material was underlain by a native brown fine- to coarse-grained sand layer observed to depths of about 32 to 69 feet bgs (about el 8 and el -25, respectively), with occasional layers of silt. In one deep boring advanced to 70 feet bgs (SB05), the sand layer is underlain by an olive clay layer, which was observed to depths of about 59 to 70 feet bgs (about el -16.7 to -27.7, respectively). In a second deep boring advanced in the northern portion of the site (SB13), weathered rock fragments, potentially indicative of weathered bedrock or glacial till were observed between 69 and 72 feet bgs (about el -25 to el -28). Continental glaciation at the end of the Pleistocene and beginning of the Holocene epochs likely caused this distinctive stratigraphy identified beneath the fill layer. Melting of the Wisconsin Glacier contributed glacial outwash deposits to the region. Bedrock was not encountered in any of the soil borings.

2. Hydrogeology: Depth to groundwater was measured between about 22.76 to 27.77 feet bgs, with corresponding groundwater elevations ranging from about el 16.25 to el 18.02. The groundwater elevation is highest in the northern region of the site and appears to flow south toward Sunnyside Yards and Newtown Creek. The relative progression of the contours demonstrates a horizontal flow pattern across the site, with a downward vertical gradient toward the south.

3. Historic Fill: Fill material was identified below surface cover to depths ranging from 2 to 8.5 feet bgs. Contaminants related to historic fill material include SVOCs, metals, and pesticides which were detected at concentrations above UU, RURR and/or PG SCOs within this layer. SVOCs and dissolved metals potentially attributed to historic fill were also identified in groundwater at concentrations above the SGVs.

4. Hazardous Chromium in Historic Fill: Chromium was detected above the RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic in an 18-foot by 15-foot area of shallow fill (up to 8 feet) centered on boring SB04. In addition, groundwater beneath this location contained hexavalent and total chromium at concentrations above SGVs. Hazardous chromium and chromium impacts to groundwater may be associated with chrome plating related to the historical use of the site as a plastics manufacturer.

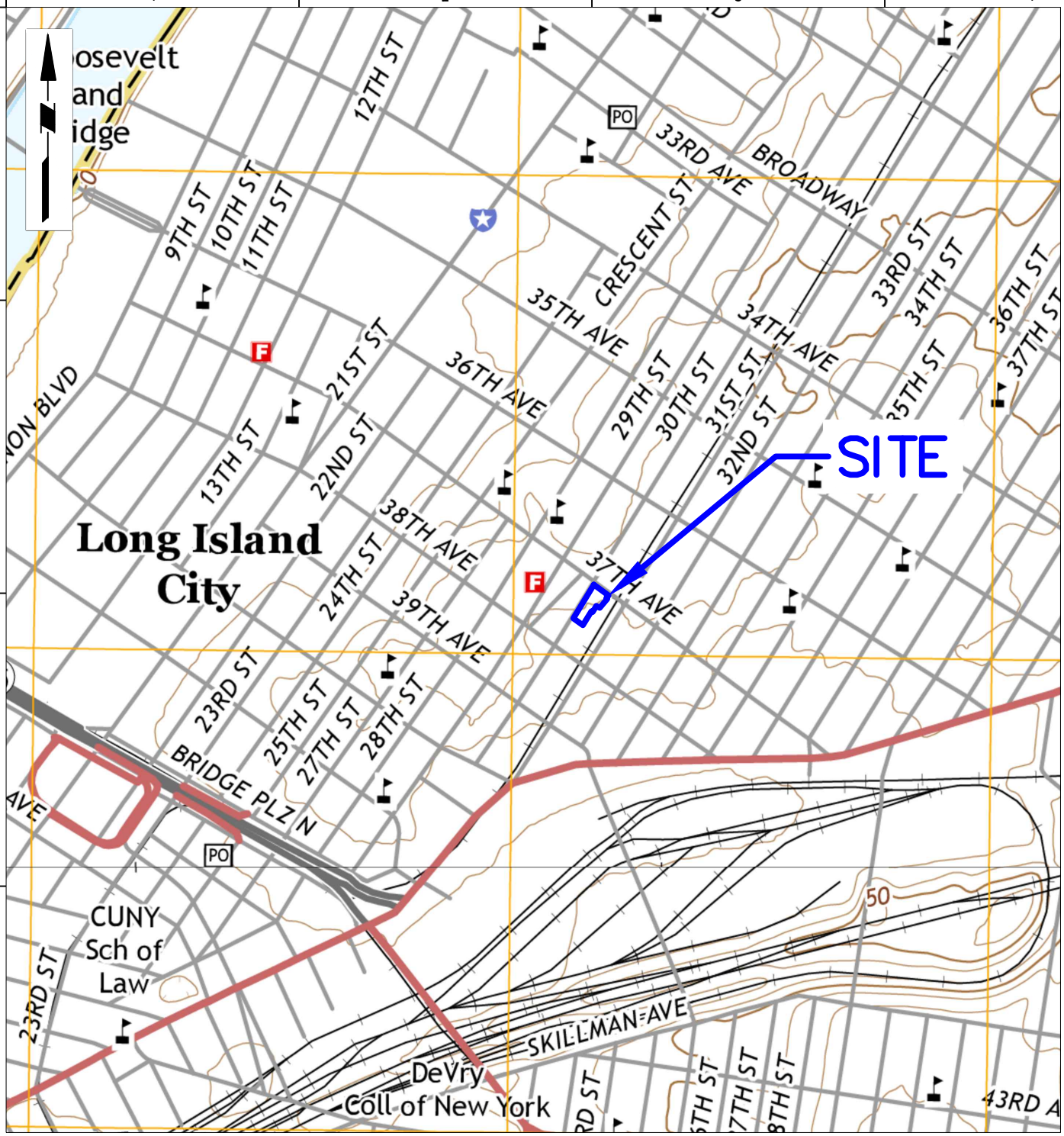
5. CVOC-Impacted Soil Vapor: PCE was detected in soil vapor and sub-slab vapor samples collected across the site. Based on a comparison of PCE concentrations in sub-slab vapor and indoor air to the NYSDOH Decision Matrices, vapor mitigation is recommended for the future development. A site source of PCE was not identified.

6. Sufficient analytical data were gathered during the RI, together with previous studies, to establish soil cleanup levels and to develop a remedy for the Site. The final remedy will be detailed in the forthcoming Remedial Action Work Plan (RAWP) to be prepared in accordance with NYS BCP guidelines. The remedy will need to address historic fill impacted with metals, SVOCs, and pesticides and CVOC-impacted soil vapor.

9.0 REFERENCES

1. Phase I ESA, prepared by Hillman Consulting LLC, dated April 8, 2014
2. Focused Subsurface Site Investigation, prepared by Merritt Environmental Consulting Corp., dated July 7, 2014
3. Limited Subsurface Investigation, prepared by Hydro Tech Environmental Corp., dated December 2017
4. BCP Citizen Participation Plan for 37-11 West 30th Street, prepared by NYSDEC, dated October 2018
5. New York State Department of Health, Final Guidance for the Evaluation of Soil Vapor Intrusion in the State of New York, dated October 2006, revised May 2017
6. New York State Department of Environmental Conservation, Division of Environmental Remediation, Draft Brownfield Cleanup Program Guide, dated May 2004
7. New York State Department of Environmental Conservation, DER-10 Technical Guidance for Site Investigation and Remediation, issued May 3, 2010; effective June 18, 2010
8. New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) dated June 1998
9. United States Environmental Protection Agency, Low Flow Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, EQASOP-GW 001, January 19, 2010
10. New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006
11. Baskerville, Charles A. United States Geological Survey. "Bedrock and Engineering Geologic Maps of Bronx County and Parts of New York and Queens Counties, New York." 1992
12. Federal Emergency Management Agency Flood Insurance Rate Map, (Map Number 3604970093, Panel 93, Suffix G), effective November 16, 1983 and revised December 5, 2013

FIGURES



NOTE:

BASE MAPS ADAPTED FROM UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5-MINUTE CENTRAL PARK AND BROOKLYN TOPOGRAPHIC QUADRANGLES, DATED 2016.

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Project	37-11 30TH STREET BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21 QUEENS NEW YORK
Figure Title	SITE LOCATION MAP
Project No.	170512301
Date	10/03/2018
Drawn By	NEK
Checked By	ES
Figure No.	1
Sheet	1 of 11

LEGEND:

BROWNFIELD CLEANUP PROGRAM APPROXIMATE SITE BOUNDARY

APPROXIMATE BUILDING FOOTPRINT

NOTES:

1. BASE MAP TAKEN FROM http://maps.nyc.gov/taxmap/map.htm ACCESSED ON JANUARY 16, 2018.

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Project	37-11 30TH STREET BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21 QUEENS NEW YORK
Figure Title	SITE PLAN
Project No.	170512301
Date	10/19/2018
Drawn By	NEK
Checked By	ELS
Figure No.	2
Sheet	2 of 11

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 2 - Site Plan.dwg Date: 1/8/2019 Time: 18:06 User: nkung Style Table: Langan.stb Layout: Figure 2

THREE-STORY BUILDING
37-12 30TH STREET
OWNER: DIAMATARIS PROPERTIES, LTD
OPERATOR: GREEK NATIONAL HERALD DAILY

TWO-STORY BUILDING
37-14 30TH STREET
OWNER: 37-14 ALVE REALTY LLC
OPERATOR: DURAMERICA BROKERAGE

TWO-STORY BUILDING
37-20 30TH STREET
OWNER: ASHLAR REALTY COMPANY
OPERATOR: ASHLAR MECHANICAL CORPORATION

TWO-STORY COMMERCIAL BUILDING
37-22 30TH STREET
OWNER: ARTHUR KLANSKY
OPERATOR: UNKNOWN

ONE-STORY BUILDING
37-24 30TH STREET
OWNER: WILBEE CORPORATION
OPERATOR: UNKNOWN

TWO-STORY BUILDING
37-28 30TH STREET
OWNER: WILBEE CORPORATION
OPERATOR: UNKNOWN

PARKING
29-05 38TH AVENUE
OWNER: PEMAS, LLC
OPERATOR: UNKNOWN

TWO-STORY COMMERCIAL BUILDING
37-39 30TH STREET
OWNER: LIZA AGHAJIAN
OPERATOR: TWIN PEAKS , INC.

TWO-STORY COMMERCIAL BUILDING
30-03 38TH AVENUE
OWNER: G & A QUEENS PLAZA REALTY LLC
OPERATOR: UNKNOWN

TWO-STORY COMMERCIAL BUILDING
30-05 38TH AVENUE
OWNER: 38TH AVENUE MANAGEMENT
OPERATOR: THE CHEMIST SHOP PHARMACY.

TWO-STORY BUILDING
29-16 37TH AVENUE
OWNER: AL7 REALTY CORPORATION
OPERATOR: AVAILABLE LIGHT NEW YORK

TWO-STORY BUILDING
29-09 37TH AVENUE
OWNER: GOLDEN CENTURY REALTY CORPORATION
OPERATOR: UNKNOWN

ONE-STORY BUILDING
30-01 37TH AVENUE
OWNER: W B WERWAISS REALTY LLC
OPERATOR: SUPREME GLASS AND WINDOWS

TWO-STORY MIXED-USE RESIDENTIAL BUILDING
30-16 37TH AVENUE
OWNER: EFFIE DOUVOGIANNIS
OPERATOR: UNKNOWN

TWO-STORY COMMERCIAL BUILDING
30-18 37TH AVENUE
OWNER: EFFIE DOUVOGIANNIS
OPERATOR: EVALGELOS DOUVOGIANNIS
AUTO REPAIR SHOP

ONE-STORY BUILDING
37-11 30TH STREET
OWNER: 37-21 30TH STREET CORP.
OPERATOR: SAME (VACANT)

TWO-STORY BUILDING
37-31 30TH STREET
OWNER AND OPERATOR: ARCHITECTURAL
IRON REALTY CORPORATION

ONE-STORY BUILDING
37-37 30TH STREET
OWNER AND OPERATOR: ARCHITECTURAL
IRON REALTY CORPORATION

TWO-STORY COMMERCIAL BUILDING
37-36 31ST STREET
OWNER: PFAS REALTY CORPORATION
OPERATOR: DUTCH KILLS CROSSFIT

TWO-STORY COMMERCIAL BUILDING
37-40 31ST STREET
OWNER: PFAS REALTY CORPORATION
OPERATOR: BRIGHT STAR INDUSTRIES INC.

LEGEND:

- BROWNFIELD CLEANUP PROGRAM APPROXIMATE SITE BOUNDARY
- 1 & 2 FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- MIXED USE
- OPEN SPACE & OUTDOOR RECREATION
- COMMERCIAL
- INSTITUTIONS
- INDUSTRIAL
- PARKING
- TRANSPORTATION/UTILITIES
- VACANT LOTS
- CENSUS TRACT 33 BOUNDARY
  ENZONE TYPE B
- CENSUS TRACT 51 BOUNDARY
  ENZONE TYPE AB

NOTES:

1. BASE MAP ACCESSED FROM http://oasisnyc.net/map.aspx ON JANUARY 17, 2018.

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Project
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BLOCK No. 372, P/O LOT No. 8
AND LOT NO. 21
QUEENS NEW YORK

Figure Title
ADJACENT PROPERTY AND SURROUNDING LAND USE MAP

Project No.	170512301
Date	10/03/2018
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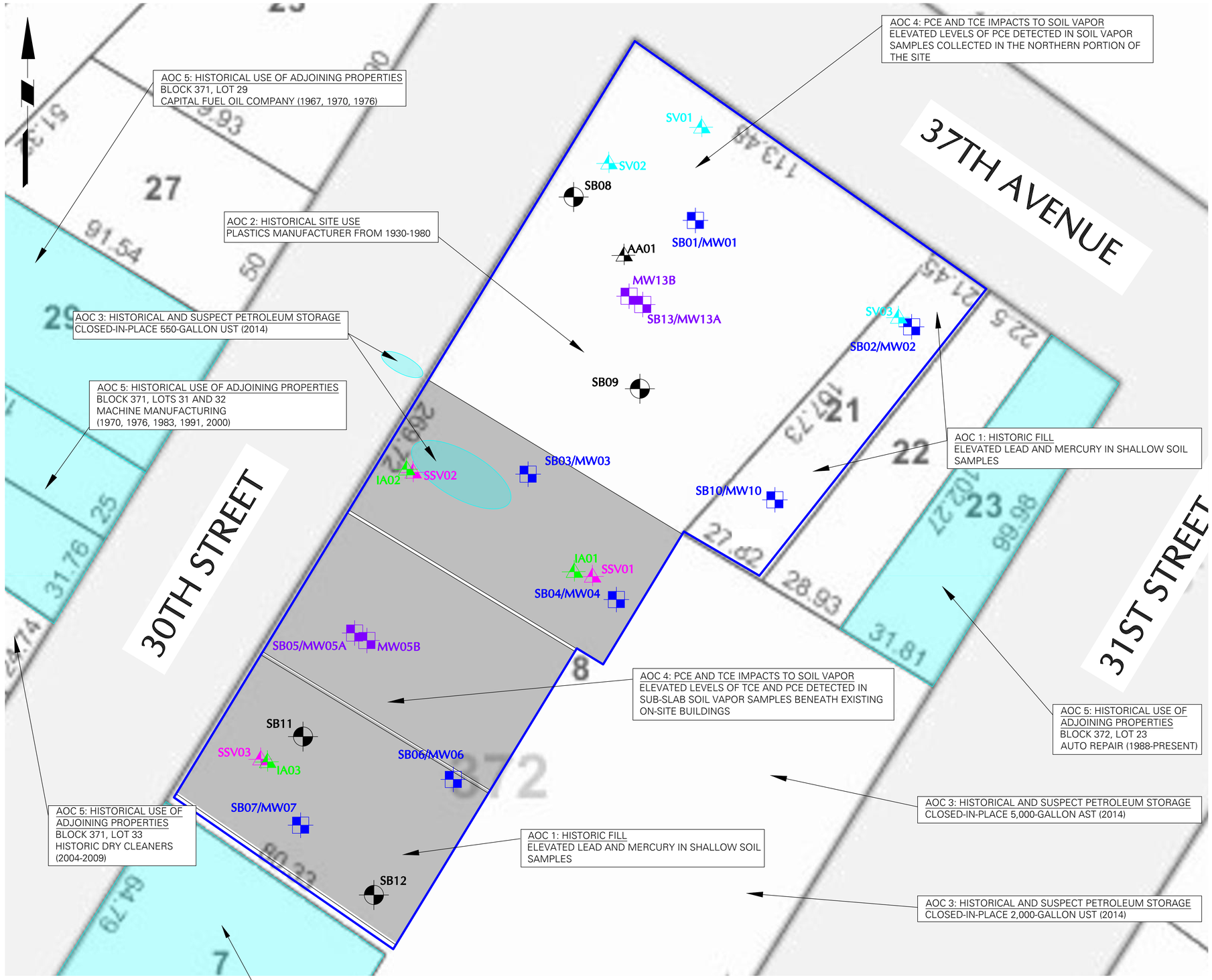
Checked By	ELS

Figure No. 3

Sheet 3 of 11

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 3 - Adjacent Property and Surrounding Land Use Map.dwg Date: 1/8/2019 Time: 18:11 User: nkung Style Table: Langan.stb Layout: Figure 3



LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB01 — SOIL SAMPLE LOCATION
- SB02/MW02 — SHALLOW GROUNDWATER/SOIL SAMPLE LOCATION
- SB01/MW01A — DEEP GROUNDWATER/SOIL SAMPLE LOCATION WITH COUPLED SHALLOW WELLS
- SSV01 — SUB-SLAB SOIL VAPOR SAMPLE LOCATION
- IA01 — INDOOR AIR SAMPLE LOCATION
- AA01 — AMBIENT AIR SAMPLE LOCATION
- SV01 — SOIL VAPOR SAMPLE LOCATION
- AREA OF CONCERN
- APPROXIMATE BUILDING FOOTPRINT

AREAS OF CONCERN (AOC):

1. AOC 1 = HISTORIC FILL WITH ELEVATED METALS CONCENTRATIONS
2. AOC 2 = HISTORICAL SITE USE
3. AOC 3 = HISTORICAL AND SUSPECT PETROLEUM STORAGE
4. AOC 4 = TETRACHLOROETHENE (PCE) AND TRICHLOROETHENE (TCE) IMPACTS TO SOIL VAPOR
5. AOC 5 = HISTORICAL USE OF ADJOINING PROPERTIES
6. NOTE: AOCs 1 AND 2 ENCOMPASS THE ENTIRE SITE FOOTPRINT

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SAMPLE LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. AST = ABOVEGROUND STORAGE TANK
4. UST = UNDERGROUND STORAGE TANK
5. PCE = TETRACHLOROETHENE
6. TCE = TRICHLOROETHENE

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Project
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BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21
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Figure Title
POTENTIAL AREAS OF CONCERN AND SAMPLE LOCATION MAP

Project No.	170512301
Date	10/15/2018
Drawn By	NEK
Checked By	ELS

Figure No. **4**
Sheet 4 of 11

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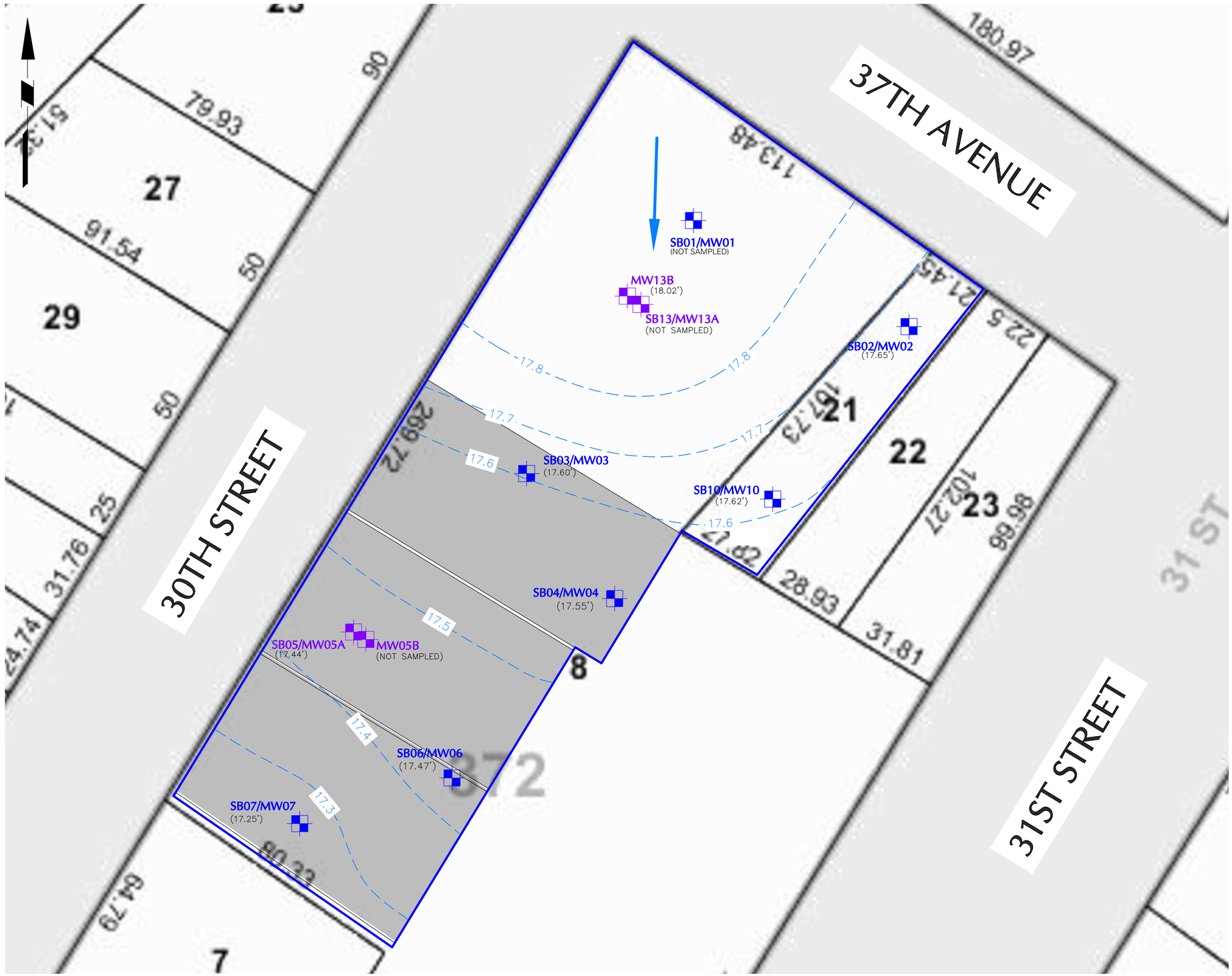
PROJECT NO. 170512301

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 4 - Areas of Concern and Sample Location Map.dwg Date: 1/8/2019 Time: 20:25 User: nkung Style Table: Langan.stb Layout: Figure 4



LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB02/MW02 — SHALLOW GROUNDWATER/SOIL SAMPLE LOCATION
- SB01/MW01A — DEEP GROUNDWATER/SOIL SAMPLE LOCATION WITH COUPLED SHALLOW MONITORING WELLS
- — 17.5 · — APPROXIMATE GROUNDWATER CONTOUR ELEVATION
- INFERRED GROUNDWATER FLOW DIRECTION
- APPROXIMATE BUILDING FOOTPRINT
- (18.02') GROUNDWATER ELEVATION

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SAMPLE LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. GROUNDWATER CONTOUR LINES ARE SHOWN IN 0.1 FOOT INTERVALS. GROUNDWATER ELEVATIONS ARE BASED ON MEASUREMENTS TAKEN ON OCTOBER 15, 2018 AS PART OF THE REMEDIAL INVESTIGATION.
4. ALL ELEVATIONS ARE PRESENTED IN THE UNITED STATES GEOLOGICAL SURVEY (USGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
5. MW-01 AND MW-05B GROUNDWATER ELEVATIONS ARE NOT INCLUDED IN THE CONTOUR MAP.

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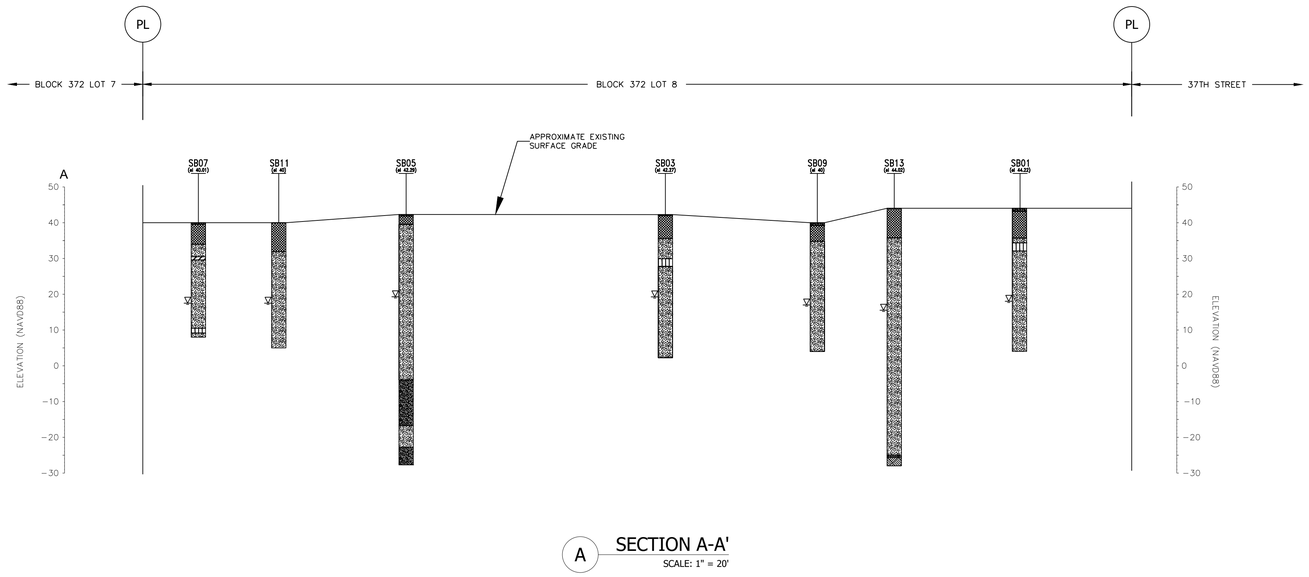
Project
37-11 30TH STREET
BLOCK No. 372, P/O LOT No. 8
AND LOT NO. 21
QUEENS NEW YORK

Figure Title
GROUNDWATER CONTOUR MAP

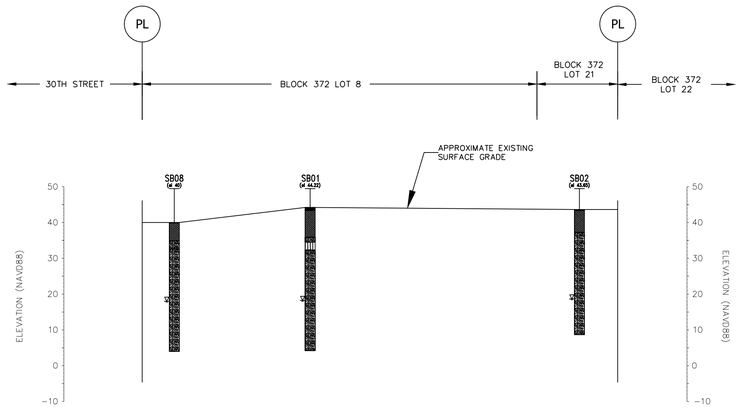
Project No.	Figure No.
170512301	5
Date	
10/29/2018	
Drawn By	
NEK	
Checked By	
ELS	Sheet 5 of 11

LANGAN
PROJECT NO. 170512301

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 5 - Groundwater Contour Map.dwg Date: 1/8/2019 Time: 19:20 User: nkung Style Table: Langan.stb Layout: Figure 5



A SECTION A-A'
SCALE: 1" = 20'



B SECTION B-B'
SCALE: 1" = 20'

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB01 — SOIL SAMPLE LOCATION
- SB02/MW02 — SHALLOW GROUNDWATER/SOIL SAMPLE LOCATION
- SB01/MW01A — DEEP GROUNDWATER/SOIL SAMPLE LOCATION WITH COUPLED SHALLOW MONITORING WELLS
- SSV01 — SUB-SLAB SOIL VAPOR SAMPLE LOCATION
- IA01 — INDOOR AIR SAMPLE LOCATION
- AA01 — AMBIENT AIR SAMPLE LOCATION
- SV01 — SOIL VAPOR SAMPLE LOCATION
- APPROXIMATE BUILDING BOUNDARY
- CONCRETE
- FILL
- SAND
- GLACIAL TILL / CLAY
- WEATHERED BEDROCK
- CLAY
- SILT
- GROUNDWATER INTERFACE

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SAMPLE LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. NO SUBSURFACE ANOMALIES WERE IDENTIFIED DURING THE GEOPHYSICAL SURVEY.
4. SUBSURFACE STRATIGRAPHY INTERPRETED FROM RECOVERED SOIL SAMPLES DURING THE OCTOBER 2018 REMEDIAL INVESTIGATION, PERFORMED BY LANGAN. REFER TO BORING LOGS (APPENDIX C) FOR ADDITIONAL INFORMATION.
5. MACROCORE SLEEVES / ACETATE LINERS AND PLASTIC BAG LINERS WERE BETWEEN 4 AND 5 FEET LONG, DEPENDING ON THE DRILL RIG USED.
6. ELEVATIONS ARE REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD8).

20 0 5 10 20
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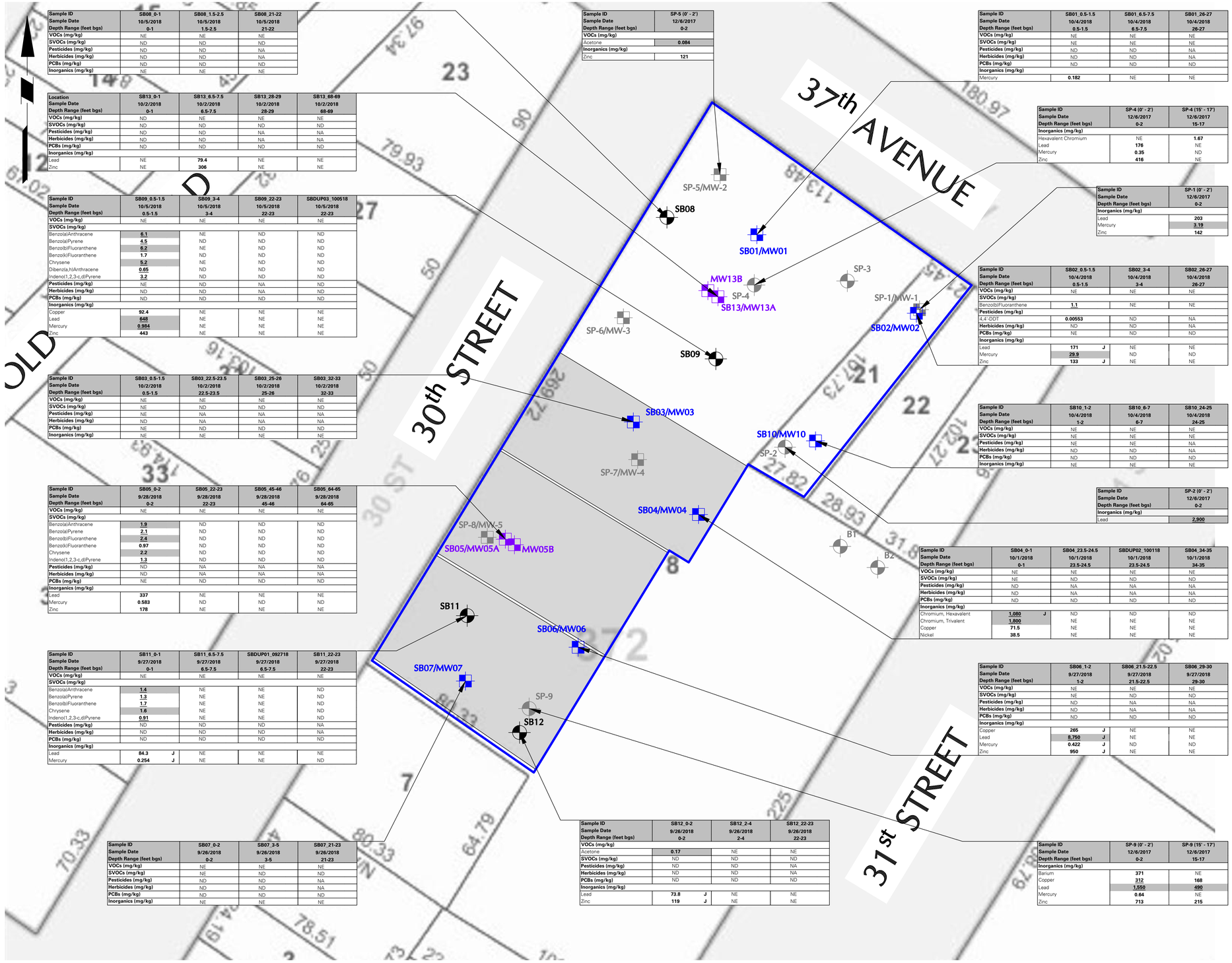
Figure Title
SUBSURFACE PROFILES

Project No.	Figure No.
170512301	6
Date: 11/14/2018	
Drawn By: NEK	
Checked By: ELS	Sheet 6 of 11

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 6 - Subsurface Profiles.dwg Date: 4/3/2019 Time: 14:56 User: nkung Style Table: Langan.stb Layout: ARCHD-BL

LANGAN
PROJECT NO. 170512301



Sample ID	SB08_0-1	SB08_1.5-2.5	SB08_21-22
Sample Date	10/5/2018	10/5/2018	10/5/2018
Depth Range (feet bgs)	0-1	1.5-2.5	21-22
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)	ND	ND	ND
Pesticides (mg/kg)	ND	ND	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)	NE	NE	NE

Location	SB13_0-1	SB13_6.5-7.5	SB13_28-29	SB13_68-69
Sample Date	10/2/2018	10/2/2018	10/2/2018	10/2/2018
Depth Range (feet bgs)	0-1	6.5-7.5	28-29	68-69
VOCs (mg/kg)	ND	NE	NE	NE
SVOCs (mg/kg)	ND	ND	ND	ND
Pesticides (mg/kg)	ND	ND	NA	NA
Herbicides (mg/kg)	ND	ND	NA	NA
PCBs (mg/kg)	ND	ND	ND	ND
Inorganics (mg/kg)				
Lead	NE	**79.4**	NE	NE
Zinc	NE	**306**	NE	NE

Sample ID	SB09_0.5-1.5	SB09_3-4	SB09_22-23	SBDUP03_100518
Sample Date	10/5/2018	10/5/2018	10/5/2018	10/5/2018
Depth Range (feet bgs)	0.5-1.5	3-4	22-23	22-23
VOCs (mg/kg)	NE	NE	NE	NE
SVOCs (mg/kg)				
Benzo(a)Anthracene	**6.1**	NE	ND	ND
Benzo(a)Pyrene	**4.5**	ND	ND	ND
Benzo(b)Fluoranthene	**6.2**	NE	ND	ND
Benzo(k)Fluoranthene	**1.7**	ND	ND	ND
Chrysene	**5.2**	NE	ND	ND
Dibenz(a,h)Anthracene	**0.65**	ND	ND	ND
Indeno(1,2,3-c,d)Pyrene	**3.2**	ND	ND	ND
Pesticides (mg/kg)	NE	ND	NA	ND
Herbicides (mg/kg)	ND	ND	NA	ND
PCBs (mg/kg)	ND	ND	ND	ND
Inorganics (mg/kg)				
Copper	**92.4**	NE	NE	NE
Lead	**648**	NE	NE	NE
Mercury	**0.984**	NE	NE	NE
Zinc	**443**	NE	NE	NE

Sample ID	SB03_0.5-1.5	SB03_22.5-23.5	SB03_25-26	SB03_32-33
Sample Date	10/2/2018	10/2/2018	10/2/2018	10/2/2018
Depth Range (feet bgs)	0.5-1.5	22.5-23.5	25-26	32-33
VOCs (mg/kg)	NE	NE	NE	NE
SVOCs (mg/kg)	NE	ND	ND	ND
Pesticides (mg/kg)	NE	NA	NA	NA
Herbicides (mg/kg)	ND	NA	NA	NA
PCBs (mg/kg)	NE	ND	ND	ND
Inorganics (mg/kg)	NE	NE	NE	NE

Sample ID	SB05_0-2	SB05_22-23	SB05_45-46	SB05_64-65
Sample Date	9/28/2018	9/28/2018	9/28/2018	9/28/2018
Depth Range (feet bgs)	0-2	22-23	45-46	64-65
VOCs (mg/kg)	NE	NE	NE	NE
SVOCs (mg/kg)				
Benzo(a)Anthracene	**1.9**	ND	ND	ND
Benzo(a)Pyrene	**2.1**	ND	ND	ND
Benzo(b)Fluoranthene	**2.4**	ND	ND	ND
Benzo(k)Fluoranthene	**0.97**	ND	ND	ND
Chrysene	**2.2**	ND	ND	ND
Indeno(1,2,3-c,d)Pyrene	**1.3**	ND	ND	ND
Pesticides (mg/kg)	ND	NA	NA	NA
Herbicides (mg/kg)	ND	NA	NA	NA
PCBs (mg/kg)	NE	ND	ND	ND
Inorganics (mg/kg)				
Lead	**337**	NE	NE	NE
Mercury	**0.583**	ND	ND	ND
Zinc	**178**	NE	NE	NE

Sample ID	SB11_0-1	SB11_6.5-7.5	SBDUP01_092718	SB11_22-23
Sample Date	9/27/2018	9/27/2018	9/27/2018	9/27/2018
Depth Range (feet bgs)	0-1	6.5-7.5	6.5-7.5	22-23
VOCs (mg/kg)	NE	NE	NE	NE
SVOCs (mg/kg)				
Benzo(a)Anthracene	**1.4**	NE	NE	ND
Benzo(a)Pyrene	**1.3**	NE	NE	ND
Benzo(b)Fluoranthene	**1.7**	NE	NE	ND
Chrysene	**1.6**	NE	NE	ND
Indeno(1,2,3-c,d)Pyrene	**0.91**	NE	NE	ND
Pesticides (mg/kg)	ND	ND	ND	NA
Herbicides (mg/kg)	ND	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND	ND
Inorganics (mg/kg)				
Lead	**84.3** J	NE	NE	NE
Mercury	**0.254** J	NE	NE	ND

Sample ID	SB07_0-2	SB07_3-5	SB07_21-23
Sample Date	9/26/2018	9/26/2018	9/26/2018
Depth Range (feet bgs)	0-2	3-5	21-23
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)	NE	ND	ND
Pesticides (mg/kg)	ND	ND	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)	NE	NE	NE

Sample ID	SP-5 (0' - 2')
Sample Date	12/6/2017
Depth Range (feet bgs)	0-2
VOCs (mg/kg)	
Acetone	**0.084**
Inorganics (mg/kg)	
Zinc	**121**

Sample ID	SB12_0-2	SB12_2-4	SB12_22-23
Sample Date	9/26/2018	9/26/2018	9/26/2018
Depth Range (feet bgs)	0-2	2-4	22-23
VOCs (mg/kg)			
Acetone	**0.17**	NE	NE
SVOCs (mg/kg)	ND	ND	ND
Pesticides (mg/kg)	ND	ND	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)			
Lead	**73.8** J	NE	NE
Zinc	**119** J	NE	NE

Sample ID	SB01_0.5-1.5	SB01_6.5-7.5	SB01_26-27
Sample Date	10/4/2018	10/4/2018	10/4/2018
Depth Range (feet bgs)	0.5-1.5	6.5-7.5	26-27
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)	NE	NE	NE
Pesticides (mg/kg)	ND	ND	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)			
Mercury	**0.182**	NE	NE

Sample ID	SP-4 (0' - 2')	SP-4 (15' - 17')
Sample Date	12/6/2017	12/6/2017
Depth Range (feet bgs)	0-2	15-17
Inorganics (mg/kg)		
Hexavalent Chromium	NE	**1.67**
Lead	**176**	NE
Mercury	**0.35**	ND
Zinc	**416**	NE

Sample ID	SP-1 (0' - 2')
Sample Date	12/6/2017
Depth Range (feet bgs)	0-2
Inorganics (mg/kg)	
Lead	**203**
Mercury	**3.19**
Zinc	**142**

Sample ID	SB02_0.5-1.5	SB02_3-4	SB02_26-27
Sample Date	10/4/2018	10/4/2018	10/4/2018
Depth Range (feet bgs)	0.5-1.5	3-4	26-27
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)			
Benzo(b)Fluoranthene	**1.1**	NE	NE
Pesticides (mg/kg)			
4,4'-DDT	**0.00553**	ND	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	NE	ND	ND
Inorganics (mg/kg)			
Lead	**171** J	NE	NE
Mercury	**29.9**	ND	ND
Zinc	**133** J	NE	NE

Sample ID	SB10_1-2	SB10_6-7	SB10_24-25
Sample Date	10/4/2018	10/4/2018	10/4/2018
Depth Range (feet bgs)	1-2	6-7	24-25
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)	NE	NE	NE
Pesticides (mg/kg)	NE	NE	NA
Herbicides (mg/kg)	ND	ND	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)	NE	NE	NE

Sample ID	SP-2 (0' - 2')
Sample Date	12/6/2017
Depth Range (feet bgs)	0-2
Inorganics (mg/kg)	
Lead	**2,900**

Sample ID	SB04_0-1	SB04_23.5-24.5	SBDUP02_100118	SB04_34-35
Sample Date	10/1/2018	10/1/2018	10/1/2018	10/1/2018
Depth Range (feet bgs)	0-1	23.5-24.5	23.5-24.5	34-35
VOCs (mg/kg)	NE	NE	NE	NE
SVOCs (mg/kg)	NE	ND	ND	ND
Pesticides (mg/kg)	ND	NA	NA	NA
Herbicides (mg/kg)	ND	NA	NA	NA
PCBs (mg/kg)	ND	ND	ND	ND
Inorganics (mg/kg)				
Chromium, Hexavalent	**1,080** J	ND	ND	ND
Chromium, Trivalent	**1,800**	NE	NE	NE
Copper	**71.5**	NE	NE	NE
Nickel	**38.5**	NE	NE	NE

Sample ID	SB06_1-2	SB06_21.5-22.5	SB06_29-30
Sample Date	9/27/2018	9/27/2018	9/27/2018
Depth Range (feet bgs)	1-2	21.5-22.5	29-30
VOCs (mg/kg)	NE	NE	NE
SVOCs (mg/kg)	NE	ND	ND
Pesticides (mg/kg)	ND	NA	NA
Herbicides (mg/kg)	ND	NA	NA
PCBs (mg/kg)	ND	ND	ND
Inorganics (mg/kg)			
Copper	**265** J	NE	NE
Lead	**8,750** J	NE	NE
Mercury	**0.422** J	ND	ND
Zinc	**950** J	NE	NE

Sample ID	SP-9 (0' - 2')	SP-9 (15' - 17')
Sample Date	12/6/2017	12/6/2017
Depth Range (feet bgs)	0-2	15-17
Inorganics (mg/kg)		
Barium	**371**	NE
Copper	**312**	**168**
Lead	**1,550**	**490**
Mercury	**0.64**	NE
Zinc	**713**	**215**

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB01 — SOIL SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- SB02/MW02 — SHALLOW GROUNDWATER/SOIL SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- SB01/MW01A — DEEP GROUNDWATER/SOIL SAMPLE LOCATION WITH COUPLED SHALLOW MONITORING WELLS (OCTOBER 2018 REMEDIAL INVESTIGATION)
- APPROXIMATE BUILDING FOOTPRINT
- SP-8/MW-5 — GROUNDWATER/SOIL SAMPLE LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017
- B1 — SOIL SAMPLE LOCATION, INSTALLED BY MERRITT IN JUNE 2014
- SP-9 — SOIL SAMPLE LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SAMPLE LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. SAMPLE LOCATIONS ARE TAKEN FROM THE DECEMBER 2017 LIMITED SUBSURFACE SITE INVESTIGATION, PREPARED BY HYDRO TECH ENVIRONMENTAL CORP. (HYDRO TECH) AND THE JUNE 2014 LIMITED SUBSURFACE INVESTIGATION REPORT, PREPARED BY MERRITT ENVIRONMENTAL CORP. (MERRITT). ALL SAMPLE LOCATIONS ARE APPROXIMATE.
4. 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, RESTRICTED USE - PROTECTION OF GROUNDWATER, AND RESTRICTED USE RESTRICTED - RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCOs).
5. ONLY COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THEIR RESPECTIVE SCOs ARE SHOWN.
6. FOR SAMPLES COLLECTED BY OTHERS IN 2014 AND 2017, ONLY COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THE COMPARISON CRITERIA ARE SHOWN.
7. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE UNRESTRICTED USE SCOs ARE BOLDED.
8. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE - PROTECTION OF GROUNDWATER SCOs ARE SHADED.
9. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE RESTRICTED - RESIDENTIAL ARE UNDERLINED.
10. SAMPLE SBDUP02_100118 IS A DUPLICATE SAMPLE OF SB04_23.5-24.5; SAMPLE SBDUP03_100518 IS A DUPLICATE SAMPLE OF SB09_22-23; AND SAMPLE SBDUP01_092718 IS A DUPLICATE SAMPLE OF SB11_6.5-7.5.
11. VOCs = VOLATILE ORGANIC COMPOUNDS
12. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
13. PCBs = POLYCHLORINATED BIPHEYNYLS
14. mg/kg = MILLIGRAM PER KILOGRAM
15. bgs = BELOW GRADE SURFACE
16. ND = NOT DETECTED
17. NE = NO EXCEEDANCE
18. NA = NOT ANALYZED
19. J =THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.

Analyte	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential SCOs
VOCs (mg/kg)			
Acetone	0.05	0.05	100
SVOCs (mg/kg)			
Benzo(a)Anthracene	1	1	1
Benzo(a)Pyrene	1	22	1
Benzo(b)Fluoranthene	1	1.7	1
Benzo(k)Fluoranthene	0.8	1.7	3.9
Chrysene	1	1	3.9
Dibenz(a,h)Anthracene	0.33	1,000	0.33
Indeno(1,2,3-c,d)Pyrene	0.5	8.2	0.5
Pesticides (mg/kg)			
4,4'-DDT	0.0033	136	7.9
Inorganics (mg/kg)			
Barium	350	820	400
Chromium, Hexavalent	1	19	110
Chromium, Trivalent	30	--	180
Copper	50	1,720	270
Lead	63	450	400
Mercury	0.18	0.73	0.81
Nickel	30	130	310
Zinc	109	2,480	10,000

WARNING:
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Project: 37-11 30TH STREET
BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21
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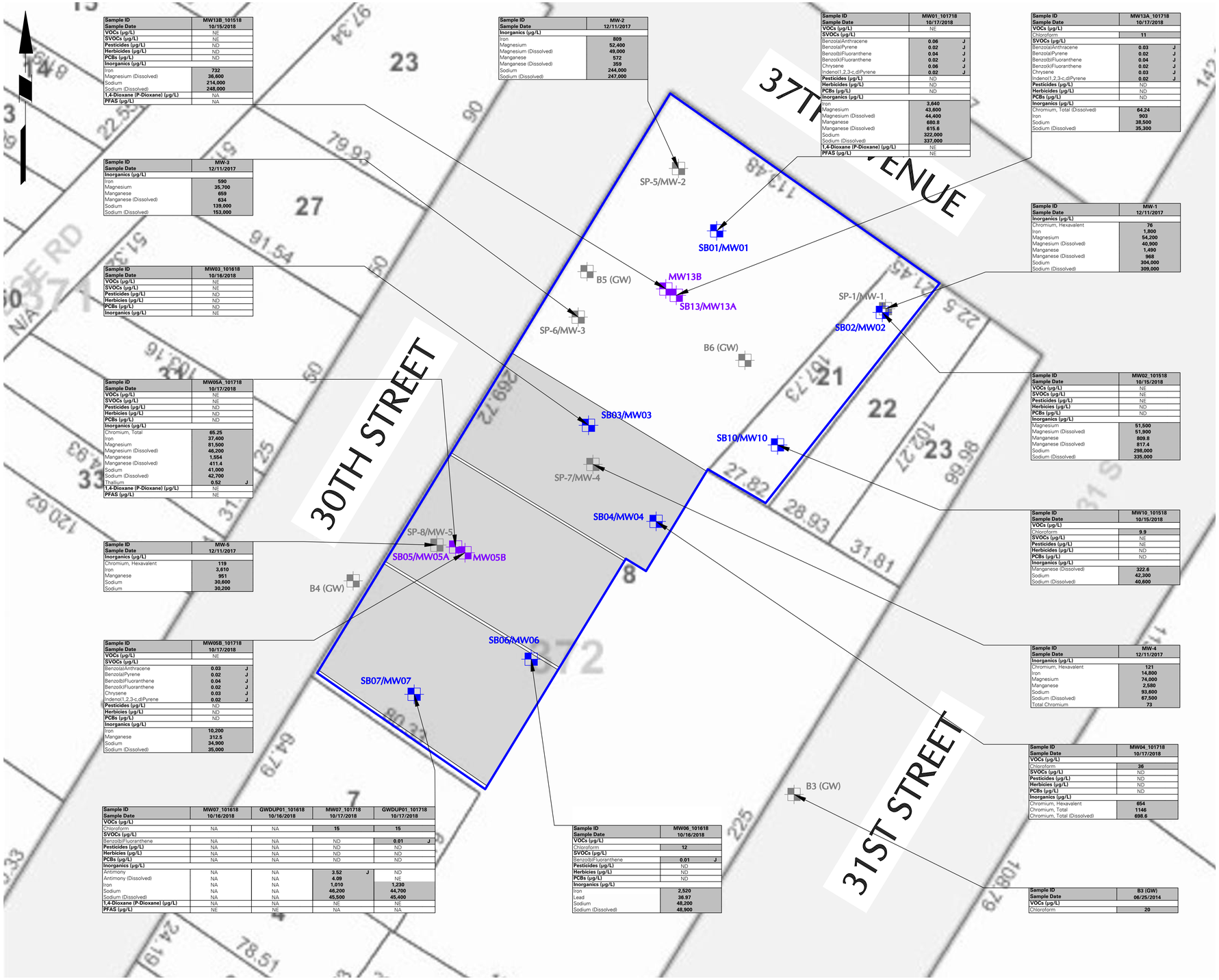
Figure Title: SOIL ANALYTICAL RESULTS MAP

Project No. 170512301
Date 04/02/2019
Drawn By NEK
Checked By ELS
Figure No. 7
Sheet 7 of 11

PROJECT NO. 170512301

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 7 - Soil Analytical Results Map.dwg Date: 4/3/2019 Time: 14:03 User: nkung Style Table: Langan.stb Layout: Figure 7



Sample ID	MW13B_101518
Sample Date	10/15/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	732
Magnesium (Dissolved)	36,600
Sodium	214,000
Sodium (Dissolved)	248,000
1,4-Dioxane (P-Dioxane) (µg/L)	NA
PFAS (µg/L)	NA

Sample ID	MW-2
Sample Date	12/11/2017
Inorganics (µg/L)	
Iron	809
Magnesium	52,400
Magnesium (Dissolved)	49,000
Manganese	572
Manganese (Dissolved)	359
Sodium	244,000
Sodium (Dissolved)	247,000

Sample ID	MW01_101718	
Sample Date	10/17/2018	
VOCs (µg/L)	NE	
SVOCs (µg/L)		
Benzo(a)Anthracene	0.06	J
Benzo(a)Pyrene	0.02	J
Benzo(b)Fluoranthene	0.04	J
Benzo(k)Fluoranthene	0.02	J
Chrysene	0.06	J
Indeno(1,2,3-c,d)Pyrene	0.02	J
Pesticides (µg/L)	ND	
Herbicides (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Iron	3,640	
Magnesium	43,600	
Magnesium (Dissolved)	44,400	
Manganese	680.8	
Manganese (Dissolved)	615.6	
Sodium	322,000	
Sodium (Dissolved)	337,000	
1,4-Dioxane (P-Dioxane) (µg/L)	NE	
PFAS (µg/L)	NE	

Sample ID	MW13A_101718	
Sample Date	10/17/2018	
VOCs (µg/L)		
Chloroform	11	
SVOCs (µg/L)		
Benzo(a)Anthracene	0.03	J
Benzo(a)Pyrene	0.02	J
Benzo(b)Fluoranthene	0.04	J
Benzo(k)Fluoranthene	0.02	J
Chrysene	0.03	J
Indeno(1,2,3-c,d)Pyrene	0.02	J
Pesticides (µg/L)	ND	
Herbicides (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Chromium, Total (Dissolved)	64.24	
Iron	903	
Sodium	38,500	
Sodium (Dissolved)	35,300	

Sample ID	MW-3
Sample Date	12/11/2017
Inorganics (µg/L)	
Iron	590
Magnesium	35,700
Manganese	659
Manganese (Dissolved)	634
Sodium	139,000
Sodium (Dissolved)	153,000

Sample ID	MW-1
Sample Date	12/11/2017
Inorganics (µg/L)	
Chromium, Hexavalent	76
Iron	1,800
Magnesium	54,200
Magnesium (Dissolved)	40,900
Manganese	1,490
Manganese (Dissolved)	968
Sodium	304,000
Sodium (Dissolved)	309,000

Sample ID	MW03_101618
Sample Date	10/16/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	NE

Sample ID	MW02_101518
Sample Date	10/15/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	NE
Herbicies (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Magnesium	51,500
Magnesium (Dissolved)	51,900
Manganese	809.8
Manganese (Dissolved)	817.4
Sodium	298,000
Sodium (Dissolved)	335,000

Sample ID	MW05A_101718	
Sample Date	10/17/2018	
VOCs (µg/L)	NE	
SVOCs (µg/L)	NE	
Pesticides (µg/L)	ND	
Herbicies (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Chromium, Total	65.25	
Iron	37,400	
Magnesium	81,500	
Magnesium (Dissolved)	46,200	
Manganese	1,554	
Manganese (Dissolved)	411.4	
Sodium	41,000	
Sodium (Dissolved)	42,700	
Thallium	0.52	J
1,4-Dioxane (P-Dioxane) (µg/L)	NE	
PFAS (µg/L)	NE	

Sample ID	MW10_101518
Sample Date	10/15/2018
VOCs (µg/L)	
Chloroform	9.9
SVOCs (µg/L)	NE
Pesticides (µg/L)	NE
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Manganese (Dissolved)	322.6
Sodium	42,300
Sodium (Dissolved)	40,600

Sample ID	MW-5
Sample Date	12/11/2017
Inorganics (µg/L)	
Chromium, Hexavalent	119
Iron	3,610
Manganese	951
Sodium	30,600
Sodium	30,200

Sample ID	MW-4
Sample Date	12/11/2017
Inorganics (µg/L)	
Chromium, Hexavalent	121
Iron	14,800
Magnesium	74,000
Manganese	2,580
Sodium	93,600
Sodium (Dissolved)	67,500
Total Chromium	73

Sample ID	MW05B_101718
Sample Date	10/17/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.03 J
Benzo(a)Pyrene	0.02 J
Benzo(b)Fluoranthene	0.04 J
Benzo(k)Fluoranthene	0.02 J
Chrysene	0.03 J
Indeno(1,2,3-c,d)Pyrene	0.02 J
Pesticides (µg/L)	ND
Herbicies (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	10,200
Manganese	312.5
Sodium	34,900
Sodium (Dissolved)	35,000

Sample ID	MW04_101718
Sample Date	10/17/2018
VOCs (µg/L)	
Chloroform	36
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
Herbicies (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Chromium, Hexavalent	654
Chromium, Total	1146
Chromium, Total (Dissolved)	698.6

Sample ID	MW07_101618	GWDUP01_101618	MW07_101718	GWDUP01_101718
Sample Date	10/16/2018	10/16/2018	10/17/2018	10/17/2018
VOCs (µg/L)				
Chloroform	NA	NA	15	15
SVOCs (µg/L)				
Benzo(b)Fluoranthene	NA	NA	ND	0.01 J
Pesticides (µg/L)	NA	NA	ND	ND
Herbicies (µg/L)	NA	NA	ND	ND
PCBs (µg/L)	NA	NA	ND	ND
Inorganics (µg/L)				
Antimony	NA	NA	3.52 J	ND
Antimony (Dissolved)	NA	NA	4.09	NE
Iron	NA	NA	1,010	1,230
Sodium	NA	NA	46,200	44,700
Sodium (Dissolved)	NA	NA	45,500	45,400
1,4-Dioxane (P-Dioxane) (µg/L)	NA	NA	NE	ND
PFAS (µg/L)	NE	NE	NA	NA

Sample ID	MW06_101618
Sample Date	10/16/2018
VOCs (µg/L)	
Chloroform	12
SVOCs (µg/L)	
Benzo(b)Fluoranthene	0.01 J
Pesticides (µg/L)	ND
Herbicies (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	2,520
Lead	36.97
Sodium	48,200
Sodium (Dissolved)	48,900

Sample ID	B3 (GW)
Sample Date	06/25/2014
VOCs (µg/L)	
Chloroform	20

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB02/MW02 — SHALLOW GROUNDWATER/SOIL SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- SB01/MW01A — DEEP GROUNDWATER/SOIL SAMPLE LOCATION WITH COUPLED SHALLOW MONITORING WELLS (OCTOBER 2018 REMEDIAL INVESTIGATION)
- APPROXIMATE BUILDING FOOTPRINT
- SP-8/MW-5 — GROUNDWATER/SOIL SAMPLE LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017
- B6(GW) — GROUNDWATER/SOIL SAMPLE LOCATION, INSTALLED BY MERRITT IN JUNE 2014

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. MONITORING WELL LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. SAMPLE LOCATIONS ARE TAKEN FROM THE DECEMBER 2017 LIMITED SUBSURFACE SITE INVESTIGATION, PREPARED BY HYDRO TECH ENVIRONMENTAL CORP. (HYDRO TECH) AND THE JUNE 2014 LIMITED SUBSURFACE INVESTIGATION REPORT, PREPARED BY MERRITT ENVIRONMENTAL CORP. (MERRITT). ALL SAMPLE LOCATIONS ARE APPROXIMATE.
4. GROUNDWATER SAMPLE 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 OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER (NYSDEC SGVs).
5. REGULATORY CRITERIA DO NOT EXIST FOR PERFLUORINATED AND POLYFLUORINATED ALKYL SUBSTANCES (PFAS) AND 1,4-DIOXANE IN NEW YORK STATE. PFAS AND 1,4-DIOXANE ARE COMPARED TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) HEALTH ADVISORY LEVEL.
6. ONLY ANALYTICAL RESULTS DETECTED AT CONCENTRATIONS ABOVE THEIR RESPECTIVE NYSDEC SGVs ARE SHOWN.
6. FOR SAMPLES COLLECTED BY OTHERS IN 2014 AND 2017, ONLY COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THE COMPARISON CRITERIA ARE SHOWN.
7. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE NYSDEC SGVs ARE BOLDED AND SHADED.
8. SAMPLE GWDUP01_101618 IS A DUPLICATE SAMPLE OF MW07_101618 AND SAMPLE GWDUP01_101718 IS A DUPLICATE SAMPLE OF MW07_101718.
9. VOCs = VOLATILE ORGANIC COMPOUNDS
10. SVOCs = SEMIVOLATILE ORGANIC COMPOUNDS
11. PCBs = POLYCHLORINATED BIPHENYLS
12. PFAS = PER AND POLYFLUOROALKYL SUBSTANCES
13. µg/L = MICROGRAMS PER LITER
14. NE = ND EXCEEDANCE
15. ND = NOT DETECTED
16. NA = NOT ANALYZED
17. J = THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.

Analyte	NYSDEC SGVs
VOCs (µg/L)	
Chloroform	7
SVOCs (µg/L)	
Benzo(a)Anthracene	0.002
Benzo(a)Pyrene	0
Benzo(b)Fluoranthene	0.002
Benzo(k)Fluoranthene	0.002
Chrysene	0.002
Indeno(1,2,3-c,d)Pyrene	0.002
Inorganics (µg/L)	
Antimony	3
Chromium, Hexavalent	50
Chromium, Total	50
Iron	300
Lead	25
Magnesium	35,000
Manganese	300
Sodium	20,000
Thallium	0.5

Analyte	USEPA Health Advisory Level
PFAS (µg/L)	
Perfluorooctanesulfonic acid	0.07
Perfluorooctanoic acid	0.07

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

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SCALE IN FEET

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Project: 37-11 30TH STREET
BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21
QUEENS NEW YORK

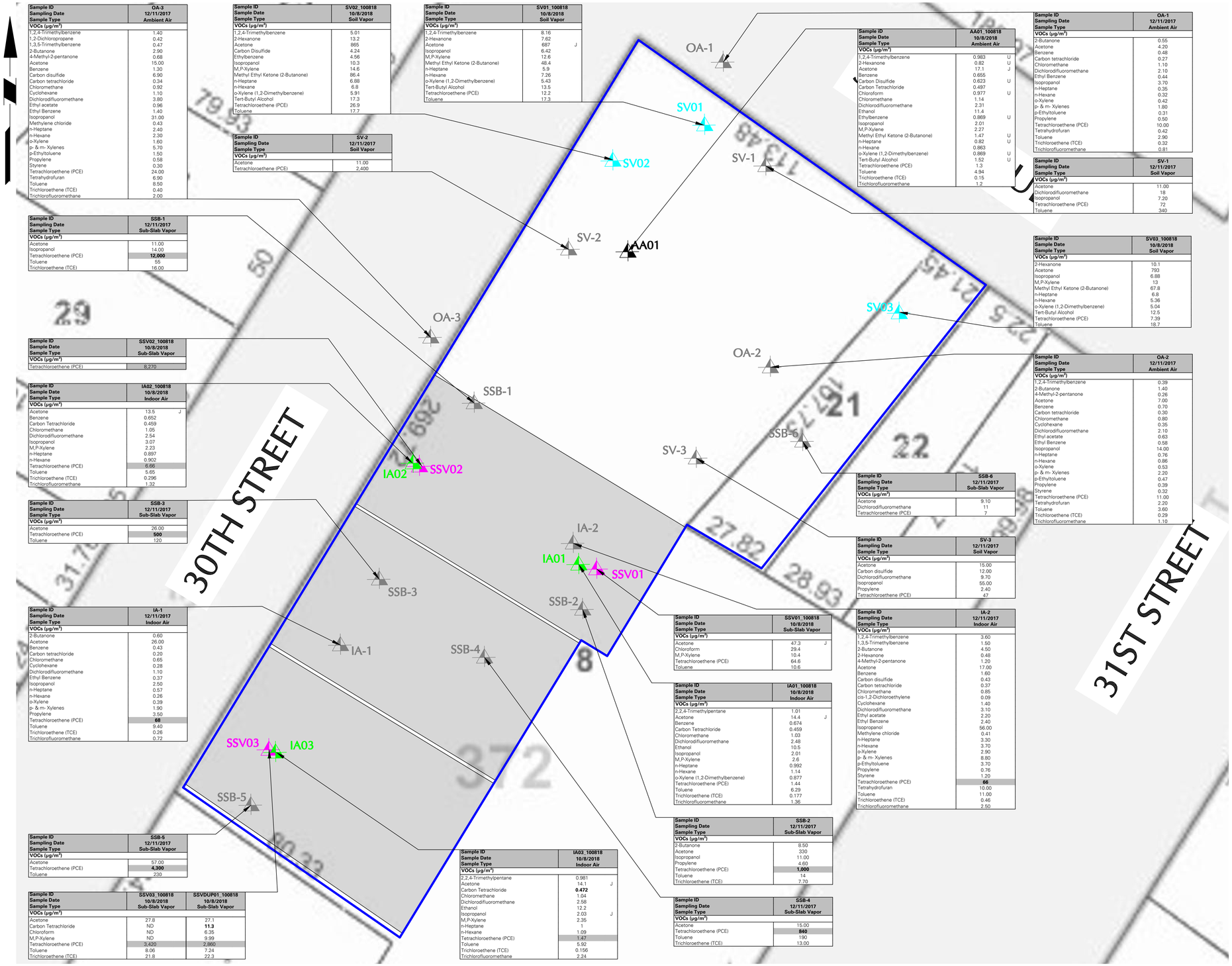
Figure Title: GROUNDWATER ANALYTICAL RESULTS MAP

Project No. 170512301
Date 04/02/2019
Drawn By NEK
Checked By ELS

Figure No. 8
Sheet 8 of 11

PROJECT NO. 170512301

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 8 - Groundwater Sample Location and Analytical Results Map.dwg Date: 4/3/2019 Time: 14:40 User: nkung Style Table: Langan.stb Layout: Figure 8



Sample ID Sampling Date Sample Type	OA-3 12/11/2017 Ambient Air
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	1.40
1,2-Dichloropropane	0.42
1,3,5-Trimethylbenzene	0.47
2-Butanone	2.90
4-Methyl-2-pentanone	0.68
Acetone	15.00
Benzene	1.30
Carbon disulfide	6.90
Carbon tetrachloride	0.34
Chloromethane	0.92
Cyclohexane	1.10
Dichlorodifluoromethane	3.80
Ethyl acetate	0.96
Ethyl Benzene	1.40
Isopropanol	31.00
Methylene chloride	0.43
n-Heptane	2.40
n-Hexane	2.30
o-Xylene	1.60
p- & m- Xylenes	5.70
p-Ethyltoluene	1.50
Propylene	0.58
Styrene	0.30
Tetrachloroethene (PCE)	24.00
Tetrahydrofuran	6.90
Toluene	8.50
Trichloroethene (TCE)	0.40
Trichlorofluoromethane	2.00

Sample ID Sampling Date Sample Type	SV02_100818 10/8/2018 Soil Vapor	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	5.01	
2-Hexanone	13.2	
Acetone	865	J
Carbon Disulfide	4.24	
Ethylbenzene	4.56	
Isopropanol	10.3	
M,P-Xylene	14.6	
Methyl Ethyl Ketone (2-Butanone)	86.4	
n-Heptane	6.88	
n-Hexane	6.8	
o-Xylene (1,2-Dimethylbenzene)	5.91	
Tert-Butyl Alcohol	17.3	
Tetrachloroethene (PCE)	26.9	
Toluene	17.7	

Sample ID Sampling Date Sample Type	SV01_100818 10/8/2018 Soil Vapor	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	8.16	
2-Hexanone	7.62	
Acetone	687	J
Isopropanol	6.42	
M,P-Xylene	12.6	
Methyl Ethyl Ketone (2-Butanone)	48.4	
n-Heptane	5.9	
n-Hexane	7.26	
o-Xylene (1,2-Dimethylbenzene)	5.43	
Tert-Butyl Alcohol	13.5	
Tetrachloroethene (PCE)	12.2	
Toluene	17.3	

Sample ID Sampling Date Sample Type	SV-2 12/11/2017 Soil Vapor
VOCs (µg/m³)	
Acetone	11.00
Tetrachloroethene (PCE)	2,400

Sample ID Sampling Date Sample Type	AA01_100818 10/8/2018 Ambient Air	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	0.983	U
2-Hexanone	0.82	U
Acetone	17.1	J
Benzene	0.655	
Carbon Disulfide	0.623	U
Carbon Tetrachloride	0.497	
Chloroform	0.977	U
Chloromethane	1.14	
Dichlorodifluoromethane	2.31	
Ethanol	11.4	
Ethylbenzene	0.869	U
Isopropanol	2.01	
M,P-Xylene	2.27	
Methyl Ethyl Ketone (2-Butanone)	1.47	U
n-Heptane	0.82	U
n-Hexane	0.863	
o-Xylene (1,2-Dimethylbenzene)	0.869	U
Tert-Butyl Alcohol	1.52	U
Tetrachloroethene (PCE)	1.3	
Toluene	4.94	
Trichloroethene (TCE)	0.15	
Trichlorofluoromethane	1.2	

Sample ID Sampling Date Sample Type	OA-1 12/11/2017 Ambient Air
VOCs (µg/m³)	
2-Butanone	0.55
Acetone	4.20
Benzene	0.48
Carbon tetrachloride	0.27
Chloromethane	1.10
Dichlorodifluoromethane	2.10
Ethyl Benzene	0.44
Isopropanol	3.70
n-Heptane	0.35
n-Hexane	0.32
o-Xylene	0.42
p- & m- Xylenes	1.80
p-Ethyltoluene	0.31
Propylene	0.50
Tetrachloroethene (PCE)	10.00
Tetrahydrofuran	0.42
Toluene	2.90
Trichloroethene (TCE)	0.32
Trichlorofluoromethane	0.81

Sample ID Sampling Date Sample Type	SV-1 12/11/2017 Soil Vapor
VOCs (µg/m³)	
Acetone	11.00
Dichlorodifluoromethane	18
Isopropanol	7.20
Tetrachloroethene (PCE)	72
Toluene	340

Sample ID Sampling Date Sample Type	SSB-1 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
Acetone	11.00
Isopropanol	14.00
Tetrachloroethene (PCE)	**12,000**
Toluene	55
Trichloroethene (TCE)	16.00

Sample ID Sampling Date Sample Type	SV03_100818 10/8/2018 Soil Vapor
VOCs (µg/m³)	
2-Hexanone	10.1
Acetone	793
Isopropanol	6.88
M,P-Xylene	13
Methyl Ethyl Ketone (2-Butanone)	67.8
n-Heptane	6.8
n-Hexane	5.36
o-Xylene (1,2-Dimethylbenzene)	5.04
Tert-Butyl Alcohol	12.5
Tetrachloroethene (PCE)	7.39
Toluene	18.7

Sample ID Sampling Date Sample Type	SSV02_100818 10/8/2018 Sub-Slab Vapor
VOCs (µg/m³)	
Tetrachloroethene (PCE)	8,270

Sample ID Sampling Date Sample Type	IA02_100818 10/8/2018 Indoor Air	
VOCs (µg/m³)		
Acetone	13.5	J
Benzene	0.652	
Carbon Tetrachloride	0.459	
Chloromethane	1.05	
Dichlorodifluoromethane	2.54	
Isopropanol	3.07	
M,P-Xylene	2.23	
n-Heptane	0.897	
n-Hexane	0.802	
Tetrachloroethene (PCE)	6.66	
Toluene	5.65	
Trichloroethene (TCE)	0.296	
Trichlorofluoromethane	1.32	

Sample ID Sampling Date Sample Type	SSB-6 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
Acetone	9.10
Dichlorodifluoromethane	11
Tetrachloroethene (PCE)	7

Sample ID Sampling Date Sample Type	OA-2 12/11/2017 Ambient Air
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	0.39
2-Butanone	1.40
4-Methyl-2-pentanone	0.26
Acetone	7.00
Benzene	0.70
Carbon tetrachloride	0.30
Chloromethane	0.80
Cyclohexane	0.35
Dichlorodifluoromethane	2.10
Ethyl acetate	0.63
Ethyl Benzene	0.58
Isopropanol	14.00
n-Heptane	0.76
n-Hexane	0.86
o-Xylene	0.53
p- & m- Xylenes	2.20
p-Ethyltoluene	0.47
Propylene	0.39
Styrene	0.32
Tetrachloroethene (PCE)	11.00
Tetrahydrofuran	2.20
Toluene	3.60
Trichloroethene (TCE)	0.29
Trichlorofluoromethane	1.10

Sample ID Sampling Date Sample Type	SSB-3 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
Acetone	26.00
Tetrachloroethene (PCE)	**500**
Toluene	120

Sample ID Sampling Date Sample Type	SV-3 12/11/2017 Soil Vapor
VOCs (µg/m³)	
Acetone	15.00
Carbon disulfide	12.00
Dichlorodifluoromethane	9.70
Isopropanol	55.00
Propylene	2.40
Tetrachloroethene (PCE)	47

Sample ID Sampling Date Sample Type	SSV01_100818 10/8/2018 Sub-Slab Vapor	
VOCs (µg/m³)		
Acetone	47.3	J
Chloroform	29.4	
M,P-Xylene	10.4	
Tetrachloroethene (PCE)	64.6	
Toluene	10.6	

Sample ID Sampling Date Sample Type	IA-2 12/11/2017 Indoor Air
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	3.60
1,3,5-Trimethylbenzene	1.50
2-Butanone	4.50
2-Hexanone	0.48
4-Methyl-2-pentanone	1.20
Acetone	17.00
Benzene	1.60
Carbon disulfide	0.43
Carbon tetrachloride	0.37
Chloromethane	0.85
cis-1,2-Dichloroethylene	0.09
Cyclohexane	1.40
Dichlorodifluoromethane	3.10
Ethyl acetate	2.20
Ethyl Benzene	2.40
Isopropanol	56.00
Methylene chloride	0.41
n-Heptane	3.30
n-Hexane	3.70
o-Xylene	2.90
p- & m- Xylenes	8.80
p-Ethyltoluene	3.70
Propylene	0.76
Styrene	1.20
Tetrachloroethene (PCE)	**66**
Tetrahydrofuran	10.00
Toluene	11.00
Trichloroethene (TCE)	0.46
Trichlorofluoromethane	2.50

Sample ID Sampling Date Sample Type	IA-1 12/11/2017 Indoor Air
VOCs (µg/m³)	
2-Butanone	0.60
Acetone	26.00
Benzene	0.43
Carbon tetrachloride	0.20
Chloromethane	0.65
Cyclohexane	0.28
Dichlorodifluoromethane	1.10
Ethyl Benzene	0.37
Isopropanol	2.50
n-Heptane	0.57
n-Hexane	0.26
o-Xylene	0.39
p- & m- Xylenes	1.90
Propylene	3.50
Tetrachloroethene (PCE)	**68**
Toluene	9.40
Trichloroethene (TCE)	0.26
Trichlorofluoromethane	0.72

Sample ID Sampling Date Sample Type	IA01_100818 10/8/2018 Indoor Air	
VOCs (µg/m³)		
2,2,4-Trimethylpentane	1.01	
Acetone	14.4	J
Benzene	0.674	
Carbon Tetrachloride	0.459	
Chloromethane	1.03	
Dichlorodifluoromethane	2.48	
Ethanol	10.5	
Isopropanol	2.01	
M,P-Xylene	2.6	
n-Heptane	0.992	
n-Hexane	1.14	
o-Xylene (1,2-Dimethylbenzene)	0.877	
Tetrachloroethene (PCE)	1.44	
Toluene	6.29	
Trichloroethene (TCE)	0.177	
Trichlorofluoromethane	1.36	

Sample ID Sampling Date Sample Type	SSB-5 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
Acetone	57.00
Tetrachloroethene (PCE)	**4,300**
Toluene	230

Sample ID Sampling Date Sample Type	SSB-2 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
2-Butanone	8.50
Acetone	330
Isopropanol	11.00
Propylene	4.60
Tetrachloroethene (PCE)	**1,000**
Toluene	14
Trichloroethene (TCE)	7.70

Sample ID Sampling Date Sample Type	SSV03_100818 10/8/2018 Sub-Slab Vapor	SSVDUP01_100818 10/8/2018 Sub-Slab Vapor
VOCs (µg/m³)		
Acetone	27.8	27.1
Carbon Tetrachloride	ND	**11.3**
Chloroform	ND	6.35
M,P-Xylene	ND	9.99
Tetrachloroethene (PCE)	3,420	2,860
Toluene	8.06	7.24
Trichloroethene (TCE)	21.8	22.3

Sample ID Sampling Date Sample Type	IA03_100818 10/8/2018 Indoor Air	
VOCs (µg/m³)		
2,2,4-Trimethylpentane	0.981	
Acetone	14.1	J
Carbon Tetrachloride	**0.472**	
Chloromethane	1.04	
Dichlorodifluoromethane	2.58	
Ethanol	12.2	
Isopropanol	2.03	J
M,P-Xylene	2.35	
n-Heptane	1	
n-Hexane	1.09	
Tetrachloroethene (PCE)	1.47	
Toluene	5.92	
Trichloroethene (TCE)	0.156	
Trichlorofluoromethane	2.24	

Sample ID Sampling Date Sample Type	SSB-4 12/11/2017 Sub-Slab Vapor
VOCs (µg/m³)	
Acetone	15.00
Tetrachloroethene (PCE)	**540**
Toluene	190
Trichloroethene (TCE)	13.00

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SSV01 — SUB-SLAB SOIL VAPOR SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- IA01 — INDOOR AIR SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- AA01 — AMBIENT AIR SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- SV01 — SOIL VAPOR SAMPLE LOCATION (OCTOBER 2018 REMEDIAL INVESTIGATION)
- APPROXIMATE BUILDING FOOTPRINT
- SSB-3 — SUB-SLAB SOIL VAPOR LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017
- IA-2 — INDOOR AIR LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017
- SV-3 — SOIL VAPOR LOCATION, INSTALLED BY HYDRO TECH IN DECEMBER 2017
- OA-2 — AMBIENT AIR SAMPLE, INSTALLED BY HYDRO TECH IN DECEMBER 2017

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SOIL VAPOR LOCATIONS AND PROPERTY BOUNDARIES ARE APPROXIMATE.
3. SAMPLE LOCATIONS ARE TAKEN FROM THE DECEMBER 2017 LIMITED SUBSURFACE SITE INVESTIGATION, PREPARED BY HYDRO TECH ENVIRONMENTAL CORP. (HYDRO TECH) AND THE JUNE 2014 LIMITED SUBSURFACE INVESTIGATION REPORT, PREPARED BY MERRITT ENVIRONMENTAL CORP. (MERRITT). ALL SAMPLE LOCATIONS ARE APPROXIMATE.
4. SOIL VAPOR SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE AMBIENT AIR (AA) SAMPLES.
5. SUB-SLAB SOIL VAPOR SAMPLE AND INDOOR AIR SAMPLE 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).
6. FOR SAMPLES COLLECTED BY OTHERS IN 2014 AND 2017, ONLY COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THE COMPARISON CRITERIA ARE SHOWN.
7. DETECTED SOIL VAPOR SAMPLE ANALYTICAL RESULTS COMPOUNDS ARE SHOWN.
8. INDOOR AIR AND SUB-SLAB SOIL VAPOR SAMPLE COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THE MINIMUM SOIL VAPOR CONCENTRATIONS RECOMMENDING MONITORING ARE BOLDED.
9. INDOOR AIR AND SUB-SLAB SOIL VAPOR SAMPLE COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE THE MINIMUM SOIL VAPOR CONCENTRATIONS RECOMMENDING MITIGATION ARE SHADED.
10. VOC = VOLATILE ORGANIC COMPOUND
11. µg/m³ = MICROGRAM PER METER CUBED
12. ND = NOT DETECTED
13. NE = NO EXCEEDANCE
14. J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT (MDL), BUT BELOW THE REPORTING LIMIT (RL); THEREFORE, THE RESULT IS AN ESTIMATED CONCENTRATION.
15. SAMPLE SSVDUP01_100818 IS A DUPLICATE OF PARENT SAMPLE SSV03_100818.

Analyte	NYSDOH Decision Matrix	NYSDOH AGVs
VOCs (µg/m³)		
Carbon Tetrachloride	A	~
Tetrachloroethene (PCE)	B	30
Trichloroethene (TCE)	A	2

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

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Project	37-11 30TH STREET BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21 QUEENS NEW YORK
Figure Title	SOIL VAPOR ANALYTICAL RESULTS MAP
Project No.	170512301
Date	04/02/2019
Drawn By	NEK
Checked By	ELS
Figure No.	9
	Sheet 9 of 11

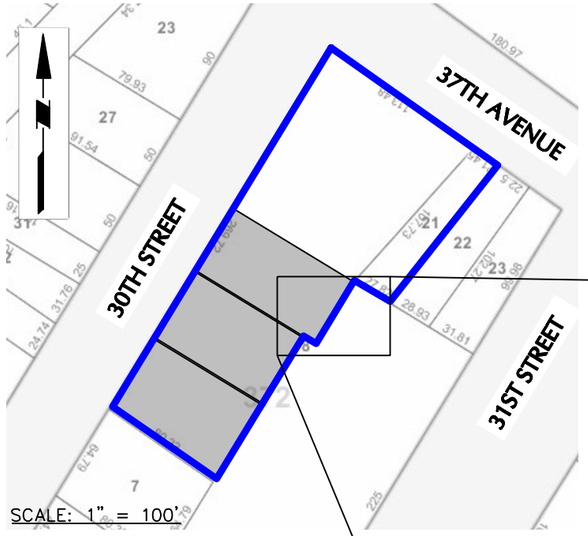
PROJECT NO. 170512301

NOTES:

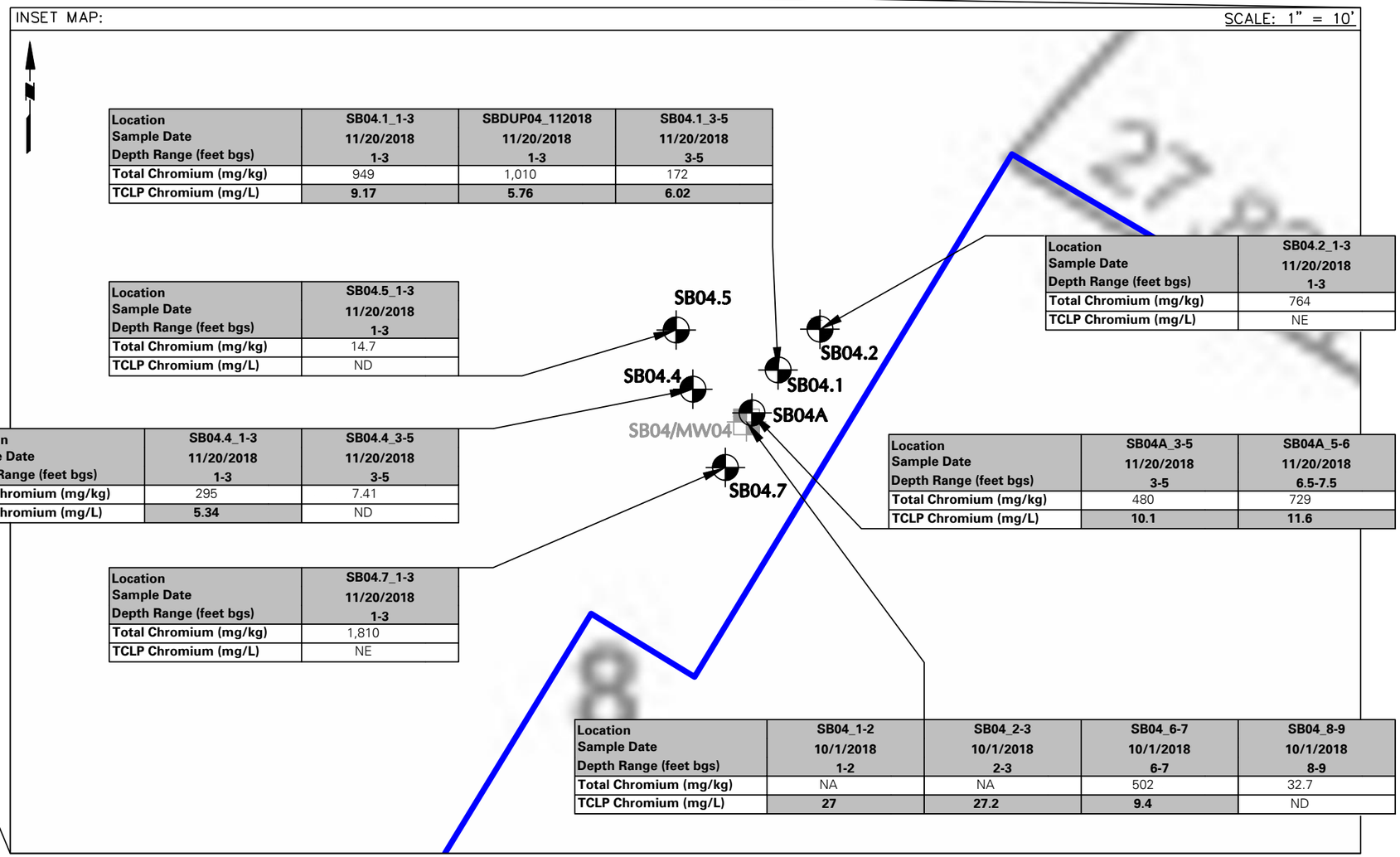
1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. SAMPLE LOCATIONS BASED ON FIELD MEASUREMENTS.
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE 6 NEW YORK CODES, RULES AND REGULATIONS (NYCRR) PART 371.3 AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24 - ENVIRONMENTAL PROTECTION AGENCY (EPA) RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CHARACTERISTIC OF HAZARDOUS WASTE.
4. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RCRA MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC ARE SHADED AND BOLDED.
5. mg/kg = MILLIGRAM PER KILOGRAM
6. mg/L = MILLIGRAM PER LITER
7. bgs = BELOW GRADE SURFACE
8. TCLP = TOXICITY CHARACTERISTIC LEACHING PROCEDURE
9. NE = ANALYTE CONCENTRATION DID NOT THE COMPARISON CRITERIA
10. ND = NOT DETECTED
11. NA = NOT ANALYZED

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB04/MW04 — LOCATION OF FORMER REMEDIAL INVESTIGATION / WASTE CHARACTERIZATION SOIL BORING WITH OVERBURDEN MONITORING WELL
- APPROXIMATE BUILDING BOUNDARY
- SB04A — LOCATION OF CHROMIUM DELINEATION SOIL BORING



INSET MAP: SCALE: 1" = 10'



Location	SB04.1_1-3	SBDUP04_112018	SB04.1_3-5
Sample Date	11/20/2018	11/20/2018	11/20/2018
Depth Range (feet bgs)	1-3	1-3	3-5
Total Chromium (mg/kg)	949	1,010	172
TCLP Chromium (mg/L)	**9.17**	**5.76**	**6.02**

Location	SB04.2_1-3
Sample Date	11/20/2018
Depth Range (feet bgs)	1-3
Total Chromium (mg/kg)	764
TCLP Chromium (mg/L)	NE

Location	SB04.5_1-3
Sample Date	11/20/2018
Depth Range (feet bgs)	1-3
Total Chromium (mg/kg)	14.7
TCLP Chromium (mg/L)	ND

Location	SB04.4_1-3	SB04.4_3-5
Sample Date	11/20/2018	11/20/2018
Depth Range (feet bgs)	1-3	3-5
Total Chromium (mg/kg)	295	7.41
TCLP Chromium (mg/L)	**5.34**	ND

Location	SB04A_3-5	SB04A_5-6
Sample Date	11/20/2018	11/20/2018
Depth Range (feet bgs)	3-5	6.5-7.5
Total Chromium (mg/kg)	480	729
TCLP Chromium (mg/L)	**10.1**	**11.6**

Location	SB04.7_1-3
Sample Date	11/20/2018
Depth Range (feet bgs)	1-3
Total Chromium (mg/kg)	1,810
TCLP Chromium (mg/L)	NE

Location	SB04_1-2	SB04_2-3	SB04_6-7	SB04_8-9
Sample Date	10/1/2018	10/1/2018	10/1/2018	10/1/2018
Depth Range (feet bgs)	1-2	2-3	6-7	8-9
Total Chromium (mg/kg)	NA	NA	502	32.7
TCLP Chromium (mg/L)	**27**	**27.2**	**9.4**	ND

Analyte	RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic
TCLP Chromium (mg/L)	5

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

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Project: 37-11 30TH STREET
BLOCK No. 372, P/O LOT No. 8 AND LOT No. 21
QUEENS NEW YORK

Figure Title: CHROMIUM DELINEATION ANALYTICAL RESULTS MAP

Project No. 170512301
Date 12/06/2018
Drawn By NEK
Checked By ELS

Figure No. 10
Sheet 10 of 11

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 10 - Chromium Delineation Soil Boring Location and Results Plan.dwg Date: 4/2/2019 Time: 16:38 User: nkung Style Table: Langan.stb Layout: RIR - Figure 10

LEGEND:

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- APPROXIMATE BUILDING FOOTPRINT
- APPROXIMATE EXTENT OF AOC 1 AND AOC 4

AREAS OF CONCERN (AOC):

1. AOC 1 = HISTORIC FILL
2. AOC 2 = HISTORICAL SITE USE
3. AOC 3 = HISTORICAL AND SUSPECT PETROLEUM STORAGE
4. AOC 4 = TETRACHLOROETHENE (PCE) AND TRICHLOROETHENE (TCE) IMPACTED SOIL VAPOR

NOTES:

1. BASEMAP ACCESSED FROM GIS.NYC.GOV/TAXMAP ON JANUARY 17, 2018.
2. UST = UNDERGROUND STORAGE TANK

LANGAN

02/14/2018

PROJECT NO. 170512301

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Project	37-11 30TH STREET BLOCK No. 372, P/O LOT No. 8 AND LOT NO. 21 QUEENS NEW YORK
Figure Title	AREAS OF CONCERN MAP
Project No.	170512301
Date	01/08/2019
Drawn By	NEK
Checked By	ELS
Figure No.	11
	Sheet 11 of 11

Filename: \\langan.com\data\NYC\data3\170512301\Project Data\CAD\01\SheetFiles\RIR\Figure 11 - Areas of Concern Map.dwg Date: 1/8/2019 Time: 19:22 User: nkung Style Table: Langan.stb Layout: Figure 5

TABLES

Table 1
Remedial Investigation Report
Sample Summary

37-11 30^{the} Street
Long Island City, New York
BCP Site No. C241211
Langan Project No. 170512301

SOIL									
No.	**Sample Name**	**Sample Type**	**Boring Location**	**Target Sample Depth**	**Date**	**Time**	**Sample Depth (feet bgs)**	**Rationale**	**Analysis**
1	SB01_0.5-1.5	Grab	SB01	Upper 2 feet of historic fill	10/4/2018	7:45:00 AM	0.5 to 1.5	Investigate AOC 1, AOC 2, and AOC 4	Part 375-list[2] of VOCs, SVOCs, PCBs, Pesticides/Herbicides*, and Metals
2	SB01_6.5-7.5			Historic fill layer	10/4/2018	7:53:00 AM	6.5 to 7.5		
3	SB01_26-27			Native material/ groundwater interface	10/4/2018	8:30:00 AM	26 to 27		
4	SB02_0.5-1.5		SB02	Upper 2 feet of historic fill	10/4/2018	1:00:00 PM	0.5 to 1.5	Investigate AOC 1, AOC 2, AOC 4, and AOC 5	
5	SB02_3-4			Historic fill layer	10/4/2018	1:04:00 PM	3 to 4		
6	SB02_26-27			Groundwater interface	10/4/2018	1:30:00 PM	26 to 27		
7	SB03_0.5-1.5		SB03	Upper 2 feet of historic fill	10/2/2018	9:20:00 AM	0.5 to 1.5	Investigate AOC 1, AOC 2, and AOC 3	
8	SB03_22.5-23.5			Greatest degree of impacts or historic fill layer	10/2/2018	9:55:00 AM	22.5-23.5		
9	SB03_25-26			Immediately below impacts	10/2/2018	10:00:00 AM	25 to 26		
10	SB03_32-33			Native material/ groundwater interface	10/2/2018	10:10:00 AM	32 to 33		
11	SB04_0-1		SB04	Upper 2 feet of historic fill	10/1/2018	12:10:00 PM	0 to 1	Investigate AOC 1, AOC 2, AOC 3, AOC 4, and AOC 5	
12	SB04_23.5-24.5			Groundwater interface	10/1/2018	2:00:00 PM	23.5 to 24.5		
13	SB04_34-35			Native material	10/1/2018	2:40:00 PM	34 to 35		
14	SB05_0-2		SB05	Upper 2 feet of historic fill	9/28/2018	8:45:00 AM	0 to 2	Investigate AOC 1, AOC 2, AOC 4, and AOC 5	
15	SB05_22-23			Groundwater interface	9/28/2018	9:15:00 AM	22 to 23		
16	SB05_45-46			Native material	9/28/2018	9:45:00 AM	45 to 46		
17	SB05_64-65			Native material	9/28/2018	12:00:00 PM	64 to 65		
18	SB06_1-2		SB06	Upper 2 feet of historic fill	9/27/2018	2:00:00 PM	1 to 2	Investigate AOC 1, AOC 2, AOC 4, and AOC 5	
19	SB06_21.5-22.5			Groundwater interface	9/27/2018	2:45:00 PM	21.5 to 22.5		
20	SB06_29-30			Native material	9/27/2018	2:30:00 PM	29 to 30		
21	SB07_0-2		SB07	Upper 2 feet of historic fill	9/26/2018	12:55:00 PM	0 to 2	Investigate AOC 1, AOC 2, AOC 4, and AOC 5	
22	SB07_3-5			Historic fill layer	9/26/2018	1:00:00 PM	3 to 5		
23	SB07_21-23			Native material/ groundwater interface	9/26/2018	1:30:00 PM	21 to 23		
24	SB08_0-1		SB08	Upper 2 feet of historic fill	10/5/2018	7:45:00 AM	0 to 1	Investigate AOC 1	
25	SB08_1.5-2.5			Historic fill layer	10/5/2018	7:47:00 AM	1.5 to 2.5		
26	SB08_21-22			Groundwater interface	10/5/2018	8:15:00 AM	21 to 22		
27	SB09_0.5-1.5		SB09	Upper 2 feet of historic fill	10/5/2018	9:15:00 AM	0.5 to 1.5	Investigate AOC 1, AOC 2 and AOC 5	
28	SB09_3-4			Historic fill layer	10/5/2018	9:20:00 AM	3 to 4		
29	SB09_22-23			Groundwater interface	10/5/2018	9:40:00 AM	22 to 23		
30	SB10_1-2		SB10	Upper 2 feet of historic fill	10/4/2018	11:04:00 AM	1 to 2	Investigate AOC 1, and AOC 5	
31	SB10_6-7			Historic fill layer	10/4/2018	11:08:00 AM	6 to 7		
32	SB10_24-25			Groundwater interface	10/4/2018	11:30:00 AM	24 to 25		
33	SB11_0-1		SB11	Upper 2 feet of historic fill	9/27/2018	9:00:00 AM	0 to 1	Investigate AOC 1, AOC 2 and AOC 5	
34	SB11_6.5-7.5			Historic fill layer	9/27/2018	9:15:00 AM	6.5 to 7.5		
35	SB11_22-23			Groundwater interface	9/27/2018	9:30:00 AM	22 to 23		
36	SB12_0-2		SB12	Upper 2 feet of historic fill	9/26/2018	10:00:00 AM	0 to 2	Investigate AOC 1, AOC 2 and AOC 5	
37	SB12_2-4			Historic fill layer	9/26/2018	10:15:00 AM	2 to 4		
38	SB12_22-23			Groundwater interface	9/26/2018	11:00:00 AM	22 to 23		
39	SB13_0-1		SB13	Upper 2 feet of historic fill	10/2/2018	11:58:00 AM	0 to 1	Investigate AOC 1, AOC 2, and AOC 4	
40	SB13_6.5-7.5			Greatest degree of impacts or historic fill layer	10/2/2018	12:10:00 PM	6.5 to 7.5		
41	SB13_28-29			Immediately below impacts	10/2/2018	1:00:00 PM	28 to 29		
42	SB13_68-69			Native material/ groundwater interface	10/3/2018	1:40:00 PM	68 to 69		
43	SBDUP01_092718	Duplicate	SB11	TBD	9/27/2018	9:15:00 AM	NA	QA/QC	
44	SBDUP02_100118		SB04		10/1/2018	2:00:00 PM	NA		
45	SBDUP03_100518		SB09		10/5/2018	9:40:00 AM	NA		
NA	MS/MSD-SS01_092718	MS/MSD	SB11		9/27/2018	9:15:00 AM	NA		
	MS/MSD-SS02_100118		SB04		10/1/2018	2:40:00 PM	NA		
	MS/MSD-SS03_100518		SB08		10/5/2018	8:15:00 AM	NA		
NA	SBFB01_092718	Field Blank	NA	NA	9/27/2018	2:00:00 PM	NA	QA/QC	Part 375-list[2] of VOCs, SVOCs, PCBs, Pesticides/Herbicides, and Metals
	SBFB02_100118				10/1/2018	3:50:00 PM	NA		
	SBFB03_100518				10/5/2018	2:40:00 PM	NA		
	SBTB01_092718	Trip Blank			9/27/2018	NA	NA		Part 375 VOCs
	SBTB02_092818				9/28/2018	NA	NA		Part 375 VOCs
	SBTB03_100118				10/1/2018	NA	NA		Part 375 VOCs
	SBTB04_100218				10/2/2018	NA	NA		Part 375 VOCs
	SBTB05_100318				10/3/2018	NA	NA		Part 375 VOCs
	SBTB06_100418				10/4/2018	NA	NA		Part 375 VOCs
	SBTB07_100518				10/5/2018	NA	NA		Part 375 VOCs

Table 1
Remedial Investigation Report
Sample Summary

37-11 30^{the} Street
Long Island City, New York
BCP Site No. C241211
Langan Project No. 170512301

CHROMIUM DELINEATION									
1	SB04_1-2	Grab	SB04	Historic fill layer	10/1/2018	12:10:00 PM	1 to 2	Investigate AOC 1	TCLP Chromium
2	SB04_2-3	Grab	SB04		10/1/2018	12:10:00 PM	2 to 3		TCLP Chromium
3	SB04_6-7	Grab	SB04		10/1/2018	12:20:00 PM	6 to 7		TCLP Chromium
4	SB04_8-9	Grab	SB04		10/1/2018	12:20:00 PM	8 to 9		TCLP Chromium
5	SB04A_3-5	Grab	SB04A		11/20/2018	9:28:00 AM	3 to 5		Total and TCLP Chromium
6	SB04A_5-6	Grab	SB04A		11/20/2018	9:30:00 AM	6.5 to 7.5		Total and TCLP Chromium
7	SB04.1_1-3	Grab	SB04.1		11/20/2018	12:20:00 PM	1 to 3		Total and TCLP Chromium
8	SB04.1_3-5	Grab	SB04.1		11/20/2018	12:24:00 PM	3 to 5		Total and TCLP Chromium
9	SB04.2_1-3	Grab	SB04.2		11/20/2018	1:31:00 PM	1 to 3		Total and TCLP Chromium
10	SB04.4_1-3	Grab	SB04.4		11/20/2018	1:15:00 PM	1 to 3		Total and TCLP Chromium
11	SB04.4_3-5	Grab	SB04.4		11/20/2018	1:21:00 PM	3 to 5		Total and TCLP Chromium
12	SB04.5_1-3	Grab	SB04.5		11/20/2018	2:11:00 PM	1 to 3		Total and TCLP Chromium
13	SB04.7_1-3	Grab	SB04.7		11/20/2018	10:31:00 AM	1 to 3		Total and TCLP Chromium
14	SBDUB04_112018	Duplicate	SB04.1_1-3		11/20/2018	NA	1 to 3		Total and TCLP Chromium

GROUNDWATER									
No.	**Sample Name**	**Sample Type**	**Boring Location**	**Target Sample Depth**	**Date**	**Time**	**Well Screen Interval (feet bgs)**	**Rationale**	**Analysis**
1	MW01_101718	Grab	MW01	Center of water column	10/17/2018	5:00:00 PM	23 to 35	Investigate AOC 2 and AOC 4	TCL VOCs and SVOCs, PCBs, TAL Metals (total and dissolved [field filtered]), Pesticides/Herbicides, hex/tri Chromium, and Cyanide
2	MW02_101518		MW02	Center of water column	10/15/2018	1:05:00 PM	23 to 35	Investigate AOC 2, AOC 4 and AOC 5	
3	MW03_101618		MW03	Center of water column	10/16/2018	2:45:00 PM	20 to 32	Investigate AOC 2, AOC 3, and AOC 4	
4	MW04_101718		MW04	Center of water column	10/17/2018	10:00:00 AM	20 to 32	Investigate AOC 2, AOC 3, AOC 4, and AOC 5	
5	MW05A_101718		MW05	Bottom of water column	10/17/2018	3:00:00 PM	60 to 65	Investigate AOC 2, AOC 4 and AOC 5	
6	MW05B_101718			Center of water column	10/17/2018	1:10:00 PM	20 to 32		
7	MW06_101618		MW06	Center of water column	10/16/2018	12:30:00 PM	18 to 30	Investigate AOC 2, AOC 4 and AOC 5	
8	MW07_101718		MW07	Center of water column	10/17/2018	9:45:00 AM	20 to 32	Investigate AOC 2, AOC 4 and AOC 5	
9	MW10_101518		MW10	Center of water column	10/15/2018	11:28:00 AM	21 to 33	Investigate AOC 2, AOC 4 and AOC 5	
10	MW13A_101718		MW13	Bottom of water column	10/17/2018	3:30:00 PM	65 to 70	Investigate AOC 2 and AOC 4	
11	MW13B_101518			Center of water column	10/15/2018	3:03:00 PM	25 to 35		
12	GWDUP01_101718	Duplicate	MW07	Center of water column	10/17/2018	9:45:00 AM	NA	QA/QC	
NA	MS/MSD-GW01_101718	MS/MSD	MW07		10/17/2018	9:45:00 AM	NA		
	GWFB01_101618	Field Blank	NA	NA	10/16/2018	3:30:00 PM	NA		
	TB01_101518	Trip Blank			10/15/2018	NA	NA		TCL VOCs
	GWTB02_101618				10/16/2018	NA	NA		
	GWTB03_101718				10/17/2018	NA	NA		

GROUNDWATER - EMERGING CONTAMINANTS									
No.	**Sample Name**	**Sample Type**	**Boring Location**	**Target Sample Depth**	**Date**	**Time**	**Well Screen Interval (feet bgs)**	**Rationale**	**Analysis**
1	MW01_101718	Grab	MW01	Center of water column	10/17/2018	5:00:00 PM	23 to 35	Investigate AOC 2 and AOC 4	1,4-dioxane and PFAS
2	MW05A_101718		MW05A		10/17/2018	3:00:00 PM	60 to 65	Investigate AOC 2, AOC 4 and AOC 5	1,4-dioxane and PFAS
3	MW07_101618		MW07		10/16/2018	2:50:00 PM	20 to 32	Investigate AOC 2, AOC 3, and AOC 4	PFAS
4	MW07_101718		MW07		10/17/2018	9:45:00 AM	20 to 32	Investigate AOC 2, AOC 3, and AOC 4	1,4-dioxane
5	GWDUP01_101618	Duplicate	MW07		10/16/2018	2:50:00 PM	NA	QA/QC	PFAS
6	GWDUP01_101718		MW07		10/17/2018	9:45:00 AM	NA		1,4-dioxane
NA	MS/MSD-GW01_101618	MS/MSD	MW07		10/16/2018	2:50:00 PM	NA		PFAS
	MS/MSD-GW01_101718		MW07		10/17/2018	9:45:00 AM	NA		1,4-dioxane
	GWFB01_101618	Field Blank	NA	NA	10/16/2018	3:30:00 PM	NA		PFAS
	GWFB02_101718		NA		10/17/2018	5:30:00 PM	NA		1,4-dioxane

SOIL VAPOR									
No.	**Sample Name**	**Sample Type**	**Boring Location**	**Target Sample Depth**	**Date**	**Time**	**Sample Depth (feet bgs)**	**Rationale**	**Analysis**
1	SV01_100818	Grab	SV01	5 feet below grade surface	10/8/2018	10:48:00 AM	5	Investigate AOC 4	TO-15 VOCs
2	SV02_100818		SV02		10/8/2018	10:45:00 AM	5		
3	SV03_100818		SV03		10/8/2018	10:54:00 AM	5		
4	SSV01_100818		SSV01	2 inches below concrete slab	10/8/2018	9:59:00 AM	0.2	Vapor Intrusion Assessment - Sub-Slab Vapor	
5	SSV02_100818		SSV02		10/8/2018	10:21:00 AM	0.2		
6	SSV03_100818		SSV03		10/8/2018	9:34:00 AM	0.2		
7	IA01_100818		SSV01	Indoor Air	10/8/2018	9:59:00 AM	NA	Indoor Air Assessment	
8	IA02_100818		SSV02		10/8/2018	10:21:00 AM	NA		
9	IA03_100818		SSV03		10/8/2018	9:34:00 AM	NA		
11	SSVDUP01_100818	Duplicate	SSV03	2 inches below concrete slab	10/8/2018	9:34:00 AM	NA	QA/QC	
12	AA01_100818	Blank	NA	Ambient Air	10/8/2018	10:43:00 AM	NA		

Areas of Concern (AOCs):
AOC 1 - Historic fill with elevated metals concentrations
AOC 2 - Historical site use
AOC 3 - Historical and suspect petroleum storage
AOC 4 - Tetrachloroethene (PCE) and trichloroethene (TCE) impacts to soil vapor
AOC 5 - Historical use of adjoining properties

Notes:
1. Sample depth intervals were determined in the field.
2. Soil samples were analyzed for New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules and Regulations (6 NYCRR) Part 375-list compounds.
3. If field evidence of contamination was noted (e.g., PID readings above background, staining, odor), a fourth sample was collected to document the vertical extent of impacted soil.
4. VOC = Volatile organic compound
5. SVOC = Semivolatile organic compound
6. PCB = Polychlorinated biphenyl
7. TCL = Target Compound List
8. TCLP = Toxicity Characteristic Leachate Procedure
8. TAL = Target Analyte List
9. QA/QC = Quality assurance/quality control
10. NA = Not applicable
11. PFAS = Perfluorinated chemicals
12. * = Only samples collected from historic fill were analyzed for pesticides and herbicides.

Table 2
Remedial Investigation Report
Monitoring Well Construction Summary

37-11 30th Street
Long Island City, New York
BCP Site No. C241211
Langan Project No. 170512301

Well ID	Date Installed	Equipment Used	Associated Soil Boring	Inner Well Diameter (inches)	Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Screen Length (feet)	Screen Material	Riser Interval (feet bgs)	Riser Material	Sand Pack Interval (feet bgs)	Bentonite Seal Interval (feet bgs)	Top of Riser Elevation (NAVD88)
MW01	10/4/2018	Geoprobe 8140LC Sonic	SB01	2	40	23 to 35	12	0.01-inch slotted PVC	0 to 23	PVC	21 to 40	19 to 21	44.22
MW02	10/4/2018	Geoprobe 8140LC Sonic	SB02	2	35	23 to 35	12	0.01-inch slotted PVC	0 to 23	PVC	21 to 35	19 to 21	43.65
MW03	10/4/2018	Geoprobe 8140LC Sonic	SB03	2	40	20 to 32	12	0.01-inch slotted PVC	0 to 20	PVC	18 to 40	16 to 18	42.47
MW04	10/4/2018	Geoprobe 8140LC Sonic	SB04	2	35	20 to 32	12	0.01-inch slotted PVC	0 to 20	PVC	18 to 35	16 to 18	42.25
MW05A	9/28/2018	Geoprobe 8140LC Sonic	SB05	2	65	60 to 65	5	0.01-inch slotted PVC	0 to 60	PVC	58 to 65	56 to 58	42.49
MW05B	10/1/2018	Geoprobe 8140LC Sonic	NA	2	32	20 to 32	12	0.01-inch slotted PVC	0 to 20	PVC	18 to 35	16 to 18	42.48
MW06	9/27/2018	Geoprobe 8140LC Sonic	SB06	2	30	18 to 30	12	0.01-inch slotted PVC	0 to 18	PVC	16 to 30	14 to 16	40.45
MW07	9/27/2018	Geoprobe 8140LC Sonic	SB07	2	32	20 to 32	12	0.01-inch slotted PVC	0 to 20	PVC	18 to 32	16 to 18	40.01
MW10	10/4/2018	Geoprobe 8140LC Sonic	SB10	2	35	21 to 33	12	0.01-inch slotted PVC	0 to 21	PVC	19 to 35	17 to 19	43.22
MW13A	10/3/2018	Geoprobe 8140LC Sonic	SB13	2	72	65 to 70	5	0.01-inch slotted PVC	0 to 65	PVC	63 to 72	20 to 63	44.02
MW13B	10/3/2018	Geoprobe 8140LC Sonic	NA	2	35	25 to 35	10	0.01-inch slotted PVC	0 to 25	PVC	23 to 35	21 to 23	43.59

Notes:
1. PVC = Polyvinyl Chloride
2. bgs = below ground surface
3. NAVD88 = North American Vertical Datum of 1988
4. Well elevations are based on a survey performed by Langan on October 15, 16 and 17, 2018.
5. All elevations are in reference to the North American Vertical Datum of 1988 (NAVD88).
6. Well elevations and depth to water readings were measured to a marked location at the top of each well casing.
7. Depth to water readings are measured in feet below top of the well casing.
8. NA = Not Applicable

Table 3
Remedial Investigation Report
Groundwater Elevation Data

37-11 30th Street
Long Island City, New York
BCP Site No. C241211
Langan Project No. 170512301

Well ID	Well Elevation	10/15/2018			10/16/2018			10/17/2018		
		Depth to Water	GW Elevation	PID reading (ppm)	Depth to Water	GW Elevation	PID reading (ppm)	Depth to Water	GW Elevation	PID reading (ppm)
MW01	44.22	~	~	~	~	~	~	26.60	17.62	0.0
MW02	43.65	26.00	17.65	0.0	~	~	~	~	~	~
MW03	42.27	24.67	17.60	~	24.68	17.59	1.8	~	~	~
MW04	42.25	24.70	17.55	~	~	~	~	24.70	17.55	0.0
MW05A	42.49	25.05	17.44	~	~	~	~	26.40	16.09	0.0
MW05B	42.48	~	~	~	~	~	~	25.06	17.42	4.9
MW06	40.45	22.98	17.47	~	23.01	17.44	2.8	~	~	~
MW07	40.01	22.76	17.25	~	~	~	0.4	22.80	17.21	~
MW10	43.22	25.60	17.62	0.0	~	~	~	~	~	~
MW13A	44.02	27.77	16.25	~	~	~	~	27.73	16.29	2.7
MW13B	43.59	25.57	18.02	0.0	~	~	~	~	~	~

Notes:
1. Well elevations are based on a survey performed by Langan on October 17, 2018.
2. All elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).
3. Well elevations and depth to water readings were measured to a marked location at the top of each well casing.
4. Depth to water readings are measured in feet below top of the well casing.
5. ~ = Well was not gauged.
6. PID = Photoionization Detection
7. GW = Groundwater

Table 4A
Remedial Investigation Report
Soil Sample Analytical Results - VOCs and SVOCs

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB01	SB01	SB01	SB02	SB02	SB02	SB03	SB03	SB03	SB03	SB04	SB04	SB04	SB04	SB05
Sample ID				SB01_0.5-1.5	SB01_6.5-7.5	SB01_26-27	SB02_0.5-1.5	SB02_3-4	SB02_26-27	SB03_0.5-1.5	SB03_22.5-23.5	SB03_25-26	SB03_32-33	SB04_0-1	SB04_23.5-24.5	SBDUP02_100118	SB04_34-35	SB05_0-2
Laboratory ID				L1840256-01	L1840256-02	L1840256-03	L1840256-04	L1840256-05	L1840256-06	L1839661-01	L1839661-02	L1839661-03	L1839661-04	L1839481-01	L1839481-02	L1839481-04	L1839481-03	L1839310-01
Sample Date				10/4/2018	10/4/2018	10/4/2018	10/4/2018	10/4/2018	10/4/2018	10/2/2018	10/2/2018	10/2/2018	10/2/2018	10/1/2018	10/1/2018	10/1/2018	10/1/2018	9/28/2018
Sample Depth (feet bgs)				0.5-1.5	6.5-7.5	26-27	0.5-1.5	3-4	26-27	0.5-1.5	22.5-23.5	25-26	32-33	0-1	23.5-24.5	23.5-24.5	34-35	0-2
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	0.00048 U	0.00045 U	0.00049 U	0.0004 U	0.00054 U	0.00052 U	0.0007 U	0.00059 U	0.00049 U	0.00061 U	0.00054 U	0.00056 U	0.00048 U	0.00056 U	0.033 U
1,2,4,5-Tetramethylbenzene	~	~	~	0.0019 U	0.0018 U	0.0019 U	0.0016 U	0.0022 U	0.0021 U	0.0028 U	0.0024 U	0.002 U	0.0024 U	0.0022 U	0.0022 U	0.0019 U	0.0022 U	0.014 J
Acetone	0.05	0.05	100	0.005 J	0.023 J	0.011 J	0.0087 J	0.036 J	0.018 J	0.032	0.012 U	0.0076 J	0.0087 J	0.016 J	0.015 J	0.005 J	0.011 UJ	*0.66* UJ
Benzene	0.06	0.06	4.8	0.00048 U	0.00045 U	0.00049 U	0.0004 U	0.00054 U	0.00052 U	0.0007 U	0.00059 U	0.00049 U	0.00061 U	0.00054 U	0.00056 U	0.00048 U	0.00056 U	0.02 J
Chloroform	0.37	0.37	49	0.00013 J	0.0013 U	0.0014 U	0.0012 U	0.0016 U	0.0016 U	0.00044 J	0.0018 U	0.0015 U	0.0018 U	0.0016 U	0.0017 U	0.00013 J	0.0036	0.099 U
Ethylbenzene	1	1	41	0.00096 U	0.00089 U	0.00097 U	0.00081 U	0.0011 U	0.001 U	0.0014 U	0.0012 U	0.00098 U	0.0012 U	0.0011 U	0.0011 U	0.00095 U	0.0011 U	0.066 U
M,P-Xylene	~	~	~	0.0019 U	0.0018 U	0.0019 U	0.0016 U	0.0022 U	0.0021 U	0.0028 U	0.0024 U	0.002 U	0.0024 U	0.0022 U	0.0022 U	0.0019 U	0.0022 U	0.13 U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	100	0.0096 U	0.0089 U	0.0097 U	0.0081 U	0.011 U	0.01 U	0.014 UJ	0.012 UJ	0.0098 UJ	0.012 UJ	0.011 U	0.011 U	0.0095 U	0.011 U	*0.66* UJ
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone	~	~	~	0.0096 U	0.0089 U	0.0097 U	0.0081 U	0.011 U	0.01 U	0.014 UJ	0.012 UJ	0.0098 UJ	0.012 UJ	0.011 U	0.011 U	0.0095 U	0.011 U	0.66 U
Naphthalene	12	12	100	0.0038 U	0.0036 U	0.0039 U	0.0032 U	0.0044 U	0.0042 U	0.0056 U	0.0048 U	0.0039 U	0.0049 U	0.0043 U	0.0044 U	0.0038 U	0.0045 U	1.1
o-Xylene (1,2-Dimethylbenzene)	~	~	~	0.00096 U	0.00089 U	0.00097 U	0.00081 U	0.0011 U	0.001 U	0.0014 U	0.0012 U	0.00098 U	0.0012 U	0.0011 U	0.0011 U	0.00095 U	0.0011 U	0.066 U
Tetrachloroethene (PCE)	1.3	1.3	19	0.00048 U	0.00045 U	0.00049 U	0.0004 U	0.00054 U	0.00052 U	0.00086	0.00059 U	0.00049 U	0.00061 U	0.00054 U	0.00056 U	0.00048 U	0.00056 U	0.8
Toluene	0.7	0.7	100	0.00096 U	0.00089 U	0.00097 U	0.00081 U	0.0011 U	0.001 U	0.0014 U	0.0012 U	0.00098 U	0.0012 U	0.0011 U	0.0011 U	0.00095 U	0.0011 U	0.066 U
Total Xylenes	0.26	1.6	100	0.00096 U	0.00089 U	0.00097 U	0.00081 U	0.0011 U	0.001 U	0.0014 U	0.0012 U	0.00098 U	0.0012 U	0.0011 U	0.0011 U	0.00095 U	0.0011 U	0.066 U
Semivolatile Organic Compounds (mg/kg)																		
2-Methylnaphthalene	~	~	~	0.23 U	0.22 U	0.21 U	0.05 J	0.21 U	0.22 U	0.038 J	0.24 U	0.23 U	0.24 U	0.22 U	0.22 U	0.21 U	0.25 U	0.52
2-Methylphenol (o-Cresol)	0.33	0.33	100	0.19 U	0.18 U	0.18 U	0.19 U	0.17 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.2 U
3 & 4 Methylphenol (m&p Cresol)	0.33	~	100	0.27 U	0.26 U	0.25 U	0.27 U	0.25 U	0.27 U	0.27 U	0.29 U	0.28 U	0.29 U	0.27 U	0.27 U	0.25 U	0.3 U	0.28 U
Acenaphthene	20	98	100	0.15 U	0.14 U	0.14 U	0.15	0.14 U	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	0.18
Acenaphthylene	100	107	100	0.15 U	0.14 U	0.14 U	0.15 U	0.14 U	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	0.16
Acetophenone	~	~	~	0.19 U	0.18 U	0.18 U	0.19 U	0.17 U	0.19 U	0.053 J	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.2 U
Anthracene	100	1,000	100	0.11 U	0.11 U	0.11 U	0.33	0.1 U	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U	0.11 U	0.11 U	0.1 U	0.13 U	1.1
Benzo(a)Anthracene	1	1	1	0.12	0.09 J	0.065 J	0.9	0.064 J	0.059 J	0.025 J	0.12 U	0.12 U	0.12 U	0.037 J	0.11 U	0.1 U	0.13 U	**1.9**
Benzo(a)Pyrene	1	22	1	0.12 J	0.099 J	0.078 J	0.83	0.082 J	0.076 J	0.15 U	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	**2.1**
Benzo(b)Fluoranthene	1	1.7	1	0.14	0.11	0.082 J	**1.1**	0.079 J	0.082 J	0.033 J	0.12 U	0.12 U	0.12 U	0.033 J	0.11 U	0.1 U	0.13 U	**2.4**
Benzo(g,h,i)Perylene	100	1,000	100	0.15 U	0.14 U	0.14 U	0.48	0.14 U	0.15 U	0.063 J	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	1.3
Benzo(k)Fluoranthene	0.8	1.7	3.9	0.05 J	0.052 J	0.032 J	0.36	0.038 J	0.035 J	0.11 U	0.12 U	0.12 U	0.12 U	0.11 U	0.11 U	0.1 U	0.13 U	**0.97**
Biphenyl (Diphenyl)	~	~	~	0.43 U	0.41 U	0.4 U	0.44 U	0.39 U	0.42 U	0.43 U	0.45 U	0.44 U	0.46 U	0.43 U	0.42 U	0.4 U	0.48 U	0.15 J
Bis(2-Ethylhexyl) Phthalate	~	~	~	0.19 U	0.18 U	0.18 U	0.19 U	0.17 U	0.19 U	0.27	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.2 U
Carbazole	~	~	~	0.19 U	0.18 U	0.18 U	0.23	0.17 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.22
Chrysene	1	1	3.9	0.11	0.092 J	0.065 J	0.93	0.061 J	0.062 J	0.065 J	0.12 U	0.12 U	0.12 U	0.034 J	0.11 U	0.1 U	0.13 U	**2.2**
Dibenz(a,h)Anthracene	0.33	1,000	0.33	0.11 U	0.11 U	0.11 U	0.11	0.1 U	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U	0.11 U	0.11 U	0.1 U	0.13 U	0.28
Dibenzofuran	7	210	59	0.19 U	0.18 U	0.18 U	0.12 J	0.17 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.12 J
Fluoranthene	100	1,000	100	0.054 J	0.038 J	0.11 U	2.3	0.1 U	0.11 U	0.039 J	0.12 U	0.12 U	0.12 U	0.08 J	0.11 U	0.1 U	0.13 U	4
Fluorene	30	386	100	0.19 U	0.18 U	0.18 U	0.12 J	0.17 U	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.73
Indeno(1,2,3-c,d)Pyrene	0.5	8.2	0.5	0.15 U	0.14 U	0.14 U	0.5	0.14 U	0.15 U	0.026 J	0.16 U	0.16 U	0.16 U	0.15 U	0.15 U	0.14 U	0.17 U	**1.3**
Naphthalene	12	12	100	0.19 U	0.18 U	0.18 U	0.11 J	0.17 U	0.19 U	0.083 J	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.36
Phenanthrene	100	1000	100	0.03 J	0.11 U	0.11 U	2.1	0.1 U	0.11 U	0.049 J	0.12 U	0.12 U	0.12 U	0.074 J	0.11 U	0.1 U	0.13 U	5.1
Phenol	0.33	0.33	100	0.19 U	0.18 U	0.18 U	0.19 U	0.17 U	0.19 U	0.05 J	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.21 U	0.2 U
Pyrene	100	1,000	100	0.065 J	0.048 J	0.11 U	1.8	0.1 U	0.11 U	0.051 J	0.12 U	0.12 U	0.12 U	0.07 J	0.11 U	0.1 U	0.13 U	4.2

Notes provided on Page 4.

Table 4A
Remedial Investigation Report
Soil Sample Analytical Results - VOCs and SVOCs

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB05		SB05		SB05		SB06		SB06		SB06		SB07		SB07		SB07		SB08		SB08		SB08		SB09		SB09		SB09	
Sample ID				SB05_22-23		SB05_45-46		SB05_64-65		SB06_1-2		SB06_21.5-22.5		SB06_29-30		SB07_0-2		SB07_3-5		SB07_21-23		SB08_0-1		SB08_1.5-2.5		SB08_21-22		SB09_0.5-1.5		SB09_3-4		SB09_22-23	
Laboratory ID				L1839310-02		L1839310-03		L1839310-04		L1839010-01		L1839010-02		L1839010-03		L1839010-04		L1839010-05		L1839010-06		L1840500-01		L1840500-02		L1840500-03		L1840500-04		L1840500-05		L1840500-06	
Sample Date				9/28/2018		9/28/2018		9/28/2018		9/27/2018		9/27/2018		9/27/2018		9/26/2018		9/26/2018		9/26/2018		10/5/2018		10/5/2018		10/5/2018		10/5/2018		10/5/2018		10/5/2018	
Sample Depth (feet bgs)				22-23		45-46		64-65		1-2		21.5-22.5		29-30		0-2		3-5		21-23		0-1		1.5-2.5		21-22		0.5-1.5		3-4		22-23	
Volatile Organic Compounds (mg/kg)																																	
1,1,1,2-Tetrachloroethane	~	~	~	0.00052	U	0.00049	U	0.0007	U	0.00042	U	0.00035	U	0.00049	U	0.00044	U	0.00051	U	0.00048	U	0.00045	U	0.00052	U	0.00054	U	0.00045	U	0.00056	U	0.00055	U
1,2,4,5-Tetramethylbenzene	~	~	~	0.0021	U	0.002	U	0.0028	U	0.0017	U	0.0014	U	0.002	U	0.0018	U	0.002	U	0.0019	U	0.0018	U	0.0021	U	0.0022	U	0.0018	U	0.0022	U	0.0022	U
Acetone	0.05	0.05	100	0.01	UJ	0.008	J	0.015	J	0.0057	J	0.008	J	0.023	J	0.023		0.018		0.0095	J	0.009	UJ	0.011	J	0.016	J	0.031	J	0.02	J	0.038	J
Benzene	0.06	0.06	4.8	0.00052	U	0.00049	U	0.0007	U	0.00042	U	0.00035	U	0.00049	U	0.00044	U	0.00051	U	0.00048	U	0.00045	U	0.00052	U	0.00054	U	0.00045	U	0.00056	U	0.00055	U
Chloroform	0.37	0.37	49	0.0015	U	0.0013	J	0.0021	U	0.0012	U	0.001	U	0.0019		0.0013	U	0.0015	U	0.0014	U	0.0013	U	0.0016	U	0.0016	U	0.0013	U	0.0017	U	0.0016	U
Ethylbenzene	1	1	41	0.001	U	0.00098	U	0.0014	U	0.00084	U	0.0007	U	0.00098	U	0.00089	U	0.001	U	0.00096	U	0.0009	U	0.001	U	0.0011	U	0.00089	U	0.0011	U	0.0011	U
M,P-Xylene	~	~	~	0.0021	U	0.002	U	0.0028	U	0.0017	U	0.0014	U	0.002	U	0.0018	U	0.002	U	0.0019	U	0.0018	U	0.0021	U	0.0022	U	0.0018	U	0.0022	U	0.0022	U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	100	0.01	UJ	0.0098	UJ	0.014	UJ	0.0084	U	0.007	U	0.0098	U	0.0089	U	0.01	U	0.0096	U	0.009	U	0.01	U	0.011	U	0.0089	U	0.011	U	0.011	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone	~	~	~	0.01	U	0.0098	U	0.014	U	0.0084	U	0.007	U	0.0098	U	0.0089	U	0.01	U	0.0096	U	0.009	U	0.01	U	0.011	U	0.0089	U	0.011	U	0.011	U
Naphthalene	12	12	100	0.0041	U	0.0039	U	0.0056	U	0.0033	U	0.0028	U	0.0039	U	0.0035	U	0.0041	U	0.0038	U	0.00097	J	0.0042	U	0.0043	U	0.0036	U	0.0045	U	0.0044	U
o-Xylene (1,2-Dimethylbenzene)	~	~	~	0.001	U	0.00098	U	0.0014	U	0.00084	U	0.0007	U	0.00098	U	0.00089	U	0.001	U	0.00096	U	0.0009	U	0.001	U	0.0011	U	0.00089	U	0.0011	U	0.0011	U
Tetrachloroethene (PCE)	1.3	1.3	19	0.00021	J	0.00049	U	0.0007	U	0.0051		0.00043		0.00049	U	0.00044	U	0.00051	U	0.0027		0.00045	U	0.00052	U	0.00054	U	0.00045	U	0.00056	U	0.00055	U
Toluene	0.7	0.7	100	0.001	U	0.00098	U	0.0014	U	0.00084	U	0.0007	U	0.00098	U	0.00048	J	0.001	U	0.00096	U	0.0009	U	0.001	U	0.0011	U	0.00089	U	0.0011	U	0.0011	U
Total Xylenes	0.26	1.6	100	0.001	U	0.00098	U	0.0014	U	0.00084	U	0.0007	U	0.00098	U	0.00089	U	0.001	U	0.00096	U	0.0009	U	0.001	U	0.0011	U	0.00089	U	0.0011	U	0.0011	UJ
Semivolatile Organic Compounds (mg/kg)																																	
2-Methylnaphthalene	~	~	~	0.21	U	0.23	U	0.23	U	0.047	J	0.23	U	0.24	U	0.22	U	0.21	U	0.24	U	0.22	U	0.2	U	0.22	U	1.1		0.21	U	0.21	U
2-Methylphenol (o-Cresol)	0.33	0.33	100	0.18	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	0.031	J	0.17	U	0.18	U
3 & 4 Methylphenol (m&p Cresol)	0.33	~	100	0.26	U	0.28	U	0.28	U	0.26	U	0.27	U	0.28	U	0.26	U	0.25	U	0.29	U	0.26	U	0.25	U	0.27	U	0.089	J	0.25	U	0.26	U
Acenaphthene	20	98	100	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.16	U	0.14	U	0.14	U	0.16	U	0.15	U	0.14	U	0.15	U	0.98		0.14	U	0.14	U
Acenaphthylene	100	107	100	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.16	U	0.14	U	0.14	U	0.16	U	0.15	U	0.14	U	0.15	U	2.4		0.14	U	0.14	U
Acetophenone	~	~	~	0.18	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	0.18	U	0.17	U	0.18	U
Anthracene	100	1,000	100	0.11	U	0.12	U	0.12	U	0.11		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	4.2		0.1	U	0.11	U
Benzo(a)Anthracene	1	1	1	0.11	U	0.12	U	0.12	U	0.56		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	**6.1**		0.036	J	0.11	U
Benzo(a)Pyrene	1	22	1	0.14	U	0.15	U	0.15	U	0.5		0.15	U	0.16	U	0.14	U	0.14	U	0.16	U	0.15	U	0.14	U	0.15	U	**4.5**		0.14	U	0.14	U
Benzo(b)Fluoranthene	1	1.7	1	0.11	U	0.12	U	0.12	U	0.97		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	**6.2**		0.032	J	0.11	U
Benzo(g,h,i)Perylene	100	1,000	100	0.14	U	0.15	U	0.15	U	0.51		0.15	U	0.16	U	0.14	U	0.14	U	0.16	U	0.15	U	0.14	U	0.15	U	2.9		0.14	U	0.14	U
Benzo(k)Fluoranthene	0.8	1.7	3.9	0.11	U	0.12	U	0.12	U	0.4		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	**1.7**		0.1	U	0.11	U
Biphenyl (Diphenyl)	~	~	~	0.41	U	0.44	U	0.44	U	0.41	U	0.43	U	0.45	U	0.41	U	0.4	U	0.46	U	0.42	U	0.39	U	0.43	U	0.59		0.4	U	0.41	U
Bis(2-Ethylhexyl) Phthalate	~	~	~	0.18	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	0.18	U	0.17	U	0.18	U
Carbazole	~	~	~	0.18	U	0.19	U	0.19	U	0.1	J	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	1.7		0.17	U	0.18	U
Chrysene	1	1	3.9	0.11	U	0.12	U	0.12	U	0.75		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	**5.2**		0.025	J	0.11	U
Dibenz(a,h)Anthracene	0.33	1,000	0.33	0.11	U	0.12	U	0.12	U	0.12		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	**0.65**		0.1	U	0.11	U
Dibenzofuran	7	210	59	0.18	U	0.19	U	0.19	U	0.15	J	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	2.6		0.17	U	0.18	U
Fluoranthene	100	1,000	100	0.11	U	0.12	U	0.12	U	1.2		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	16		0.058	J	0.11	U
Fluorene	30	386	100	0.18	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	3.1		0.17	U	0.18	U
Indeno(1,2,3-c,d)Pyrene	0.5	8.2	0.5	0.14	U	0.15	U	0.15	U	0.49		0.15	U	0.16	U	0.14	U	0.14	U	0.16	U	0.15	U	0.14	U	0.15	U	**3.2**		0.14	U	0.14	U
Naphthalene	12	12	100	0.18	U	0.19	U	0.19	U	0.053	J	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	1.3		0.17	U	0.18	U
Phenanthrene	100	1000	100	0.11	U	0.12	U	0.12	U	1		0.11	U	0.12	U	0.11	U	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	20		0.058	J	0.11	U
Phenol	0.33	0.33	100	0.18	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.18	U	0.17	U	0.2	U	0.18	U	0.17	U	0.19	U	0.048	J	0.17	U	0.18	U
Pyrene	100	1,000	100	0.11	U	0.12	U	0.12	U	0.86		0.11	U	0.12	U	0.02	J	0.1	U	0.12	U	0.11	U	0.1	U	0.11	U	13		0.048	J	0.11	U

Notes provided on Page 4.

Table 4A
Remedial Investigation Report
Soil Sample Analytical Results - VOCs and SVOCs

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB09	SB10	SB10	SB10	SB11	SB11	SB11	SB11	SB12	SB12	SB12	SB13	SB13	SB13	SB13
Sample ID				SBDUP03_100518	SB10_1-2	SB10_6-7	SB10_24-25	SB11_0-1	SB11_6.5-7.5	SBDUP01_092718	SB11_22-23	SB12_0-2	SB12_2-4	SB12_22-23	SB13_0-1	SB13_6.5-7.5	SB13_28-29	SB13_68-69
Laboratory ID				L1840500-08	L1840256-07	L1840256-08	L1840256-09	L1839010-07	L1839010-08	L1839010-13	L1839010-09	L1839010-10	L1839010-11	L1839010-12	L1839661-05	L1839661-06	L1839661-07	L1839825-01
Sample Date				10/5/2018	10/4/2018	10/4/2018	10/4/2018	9/27/2018	9/27/2018	9/27/2018	9/27/2018	9/26/2018	9/26/2018	9/26/2018	10/2/2018	10/2/2018	10/2/2018	10/3/2018
Sample Depth (feet bgs)				22-23	1-2	6-7	24-25	0-1	6.5-7.5	6.5-7.5	22-23	0-2	2-4	22-23	0-1	6.5-7.5	28-29	68-69
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	0.00054 U	0.00055 U	0.00051 U	0.00055 U	0.029 U	0.00056 UJ	0.00059 U	0.00055 U	0.0005 U	0.00051 U	0.00049 U	0.00059 U	0.00056 U	0.0005 U	0.00057 U
1,2,4,5-Tetramethylbenzene	~	~	~	0.0022 U	0.0022 U	0.002 U	0.0022 U	0.11 U	0.0022 U	0.0024 U	0.0022 U	0.002 U	0.002 U	0.0019 U	0.0024 U	0.0022 U	0.002 U	0.0023 U
Acetone	0.05	0.05	100	0.031 J	0.0094 J	0.024 J	0.04 J	*0.57* U	0.024 J	0.012 UJ	0.011 U	**0.17**	0.011	0.014 J	0.012 U	0.032	0.017	0.018
Benzene	0.06	0.06	4.8	0.00054 U	0.00055 U	0.00051 U	0.00055 U	0.029 U	0.00056 UJ	0.00059 U	0.00055 U	0.0005 U	0.00051 U	0.00049 U	0.00059 U	0.00056 U	0.0005 U	0.00057 U
Chloroform	0.37	0.37	49	0.0016 U	0.0017 U	0.0015 U	0.0016 U	0.02 J	0.0017 UJ	0.0018 U	0.0016 U	0.0015 U	0.0015 U	0.0015 U	0.0018 U	0.0017 U	0.0015 U	0.0017 U
Ethylbenzene	1	1	41	0.00054 J	0.0011 U	0.001 U	0.0011 U	0.057 U	0.0011 UJ	0.0012 U	0.0011 U	0.00099 U	0.001 U	0.00097 U	0.0012 U	0.0011 U	0.001 U	0.0011 U
M,P-Xylene	~	~	~	0.0019 J	0.0022 U	0.002 U	0.0022 U	0.11 U	0.0022 UJ	0.0024 U	0.0022 U	0.002 U	0.002 U	0.0019 U	0.0024 U	0.0022 U	0.002 U	0.0023 U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	100	0.011 U	0.011 U	0.01 U	0.011 U	*0.57* U	0.011 U	0.012 UJ	0.011 U	0.0099 U	0.01 U	0.0097 U	0.012 UJ	0.0039 J	0.01 UJ	0.011 UJ
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone	~	~	~	0.0032 J	0.011 U	0.01 U	0.011 U	0.57 U	0.011 UJ	0.012 U	0.011 U	0.0099 U	0.01 U	0.0097 U	0.012 UJ	0.011 UJ	0.01 UJ	0.011 U
Naphthalene	12	12	100	0.0043 U	0.0044 U	0.0041 U	0.0044 U	0.23 U	0.00088 J	0.002 J	0.0044 U	0.004 U	0.0041 U	0.0039 U	0.0047 U	0.0045 U	0.004 U	0.0046 U
o-Xylene (1,2-Dimethylbenzene)	~	~	~	0.00067 J	0.0011 U	0.001 U	0.0011 U	0.057 U	0.0011 UJ	0.0012 U	0.0011 U	0.00099 U	0.001 U	0.00097 U	0.0012 U	0.0011 U	0.001 U	0.0011 U
Tetrachloroethene (PCE)	1.3	1.3	19	0.00054 U	0.00055 U	0.00051 U	0.00055 U	0.88	0.0077 J	0.0016 J	0.0021	0.0005 U	0.00051 U	0.00046 J	0.00059 U	0.00036 J	0.0005 U	0.00057 U
Toluene	0.7	0.7	100	0.0011 U	0.0011 U	0.001 U	0.0011 U	0.056 J	0.0011 UJ	0.0012 U	0.0011 U	0.00099 U	0.001 U	0.00097 U	0.0012 U	0.0011 U	0.001 U	0.0011 U
Total Xylenes	0.26	1.6	100	0.0026 J	0.0011 U	0.001 U	0.0011 U	0.057 U	0.0011 U	0.0012 U	0.0011 U	0.00099 U	0.001 U	0.00097 U	0.0012 U	0.0011 U	0.001 U	0.0011 U
Semivolatile Organic Compounds (mg/kg)																		
2-Methylnaphthalene	~	~	~	0.22 U	0.21 U	0.2 U	0.22 U	0.1 J	0.23 U	0.23 U	0.22 U	0.2 U	0.2 U	0.24 U	0.23 U	0.23 U	0.21 U	0.24 U
2-Methylphenol (o-Cresol)	0.33	0.33	100	0.18 U	0.17 U	0.17 U	0.18 U	0.19 U	0.19 U	0.19 U	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
3 & 4 Methylphenol (m&p Cresol)	0.33	~	100	0.26 U	0.25 U	0.24 U	0.26 U	0.28 U	0.27 U	0.28 U	0.26 U	0.24 U	0.24 U	0.29 U	0.28 U	0.28 U	0.26 U	0.29 U
Acenaphthene	20	98	100	0.14 U	0.14 U	0.14 U	0.14 U	0.32	0.15 U	0.15 U	0.15 U	0.13 U	0.13 U	0.16 U	0.16 U	0.15 U	0.14 U	0.16 U
Acenaphthylene	100	107	100	0.14 U	0.14 U	0.14 U	0.14 U	0.042 J	0.15 U	0.15 U	0.15 U	0.13 U	0.13 U	0.16 U	0.16 U	0.15 U	0.14 U	0.16 U
Acetophenone	~	~	~	0.18 U	0.17 U	0.17 U	0.18 U	0.19 U	0.19 U	0.19 U	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Anthracene	100	1,000	100	0.11 U	0.1 U	0.1 U	0.11 U	0.69	0.11 U	0.066 J	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Benzo(a)Anthracene	1	1	1	0.11 U	0.051 J	0.042 J	0.042 J	**1.4**	0.08 J	0.11	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Benzo(a)Pyrene	1	22	1	0.14 U	0.073 J	0.059 J	0.06 J	**1.3**	0.074 J	0.1 J	0.15 U	0.13 U	0.13 U	0.16 U	0.16 U	0.15 U	0.14 U	0.16 U
Benzo(b)Fluoranthene	1	1.7	1	0.11 U	0.079 J	0.061 J	0.065 J	**1.7**	0.1 J	0.13	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Benzo(g,h,i)Perylene	100	1,000	100	0.14 U	0.14 U	0.14 U	0.14 U	0.83	0.042 J	0.056 J	0.15 U	0.13 U	0.13 U	0.16 U	0.16 U	0.15 U	0.14 U	0.16 U
Benzo(k)Fluoranthene	0.8	1.7	3.9	0.11 U	0.028 J	0.1 U	0.11 U	0.67	0.035 J	0.059 J	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Biphenyl (Diphenyl)	~	~	~	0.42 U	0.4 U	0.39 U	0.41 U	0.44 U	0.43 U	0.44 U	0.42 U	0.38 U	0.38 U	0.46 U	0.44 U	0.44 U	0.41 U	0.45 U
Bis(2-Ethylhexyl) Phthalate	~	~	~	0.18 U	0.17 U	0.17 U	0.18 U	0.19 U	0.19 U	0.19 U	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Carbazole	~	~	~	0.18 U	0.17 U	0.17 U	0.18 U	0.33	0.19 U	0.03 J	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Chrysene	1	1	3.9	0.11 U	0.057 J	0.046 J	0.043 J	**1.6**	0.082 J	0.12	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Dibenz(a,h)Anthracene	0.33	1,000	0.33	0.11 U	0.1 U	0.1 U	0.11 U	0.18	0.11 U	0.11 U	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Dibenzofuran	7	210	59	0.18 U	0.17 U	0.17 U	0.18 U	0.26	0.19 U	0.19 U	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Fluoranthene	100	1,000	100	0.11 U	0.1 U	0.1 U	0.11 U	3.5	0.16	0.25	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Fluorene	30	386	100	0.18 U	0.17 U	0.17 U	0.18 U	0.25	0.19 U	0.027 J	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Indeno(1,2,3-c,d)Pyrene	0.5	8.2	0.5	0.14 U	0.14 U	0.14 U	0.14 U	**0.91**	0.043 J	0.064 J	0.15 U	0.13 U	0.13 U	0.16 U	0.16 U	0.15 U	0.14 U	0.16 U
Naphthalene	12	12	100	0.18 U	0.17 U	0.17 U	0.18 U	0.29	0.19 U	0.026 J	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Phenanthrene	100	1000	100	0.11 U	0.1 U	0.1 U	0.11 U	3.4	0.13 J	0.25 J	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
Phenol	0.33	0.33	100	0.18 U	0.17 U	0.17 U	0.18 U	0.19 U	0.19 U	0.19 U	0.18 U	0.17 U	0.17 U	0.2 U	0.2 U	0.19 U	0.18 U	0.2 U
Pyrene	100	1,000	100	0.11 U	0.1 U	0.1 U	0.11 U	2.8	0.14	0.21	0.11 U	0.1 U	0.1 U	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U

Notes provided on Page 4.

Table 4A
Remedial Investigation Report
Soil Sample Analytical Results - VOCs and SVOCs

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:
1. 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, Restricted Use - Protection of Groundwater and Restricted Use Restricted - Residential Soil Cleanup Objectives (SCO).
2. Only detected analytes are shown in the table.
3. Analytes detected with concentrations above Unrestricted Use SCOs are bolded.
4. Analytes detected with concentrations above Restricted Use - Protection of Groundwater SCOs are shaded.
5. Analytes detected with concentrations above Restricted Use Restricted - Residential SCOs are double underlined.
6. Analytical results with reporting limits (RL) above Unrestricted Use SCOs are italicized.
7. Sample SBDUP02_100118 is a duplicate sample of SB04_23.5-24.5; sample SBDUP03_100518 is a duplicate sample of SB09_22-23; and sample SBDUP01_092718 is a duplicate sample of SB11_6.5-7.5.
8. ~ = Regulatory limit for this analyte does not exist
9. bgs = below grade surface
10. mg/kg = milligrams per kilogram
11. NA = Not analyzed

Qualifiers:
J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 4B
Remedial Investigation Report
Soil Sample Analytical Results - Pesticides, Herbicides, PCBs, and Inorganics

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location		NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB01		SB01		SB01		SB02		SB02		SB02		SB03		SB03		SB03		SB03		SB04		SB04		SB04		SB04		SB05	
Sample ID				SB01_0.5-1.5		SB01_6.5-7.5		SB01_26-27		SB02_0.5-1.5		SB02_3-4		SB02_26-27		SB03_0.5-1.5		SB03_22.5-23.5		SB03_25-26		SB03_32-33		SB04_0-1		SB04_23.5-24.5		SBDUP02_100118		SB04_34-35		SB05_0-2	
Laboratory ID				L1840256-01		L1840256-02		L1840256-03		L1840256-04		L1840256-05		L1840256-06		L1839661-01		L1839661-02		L1839661-03		L1839661-04		L1839481-01		L1839481-02		L1839481-04		L1839481-03		L1839310-01	
Sample Date				10/4/2018		10/4/2018		10/4/2018		10/4/2018		10/4/2018		10/4/2018		10/2/2018		10/2/2018		10/2/2018		10/2/2018		10/1/2018		10/1/2018		10/1/2018		10/1/2018		9/28/2018	
Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs			0.5-1.5		6.5-7.5		26-27		0.5-1.5		3-4		26-27		0.5-1.5		22.5-23.5		25-26		32-33		0-1		23.5-24.5		23.5-24.5		34-35		0-2	
Pesticides (mg/kg)																																	
4,4'-DDD	0.0033	14	13	0.00179	U	0.0017	U	NA		0.00177	U	0.00165	U	NA		0.00183	U	NA		NA		NA		0.00176	U	NA		NA		NA		0.00188	U
4,4'-DDE	0.0033	17	8.9	0.00179	U	0.0017	U	NA		0.00283		0.00165	U	NA		0.000493	J	NA		NA		NA		0.00176	U	NA		NA		NA		0.00188	U
4,4'-DDT	0.0033	136	7.9	*0.00336*	U	0.00318	U	NA		**0.00553**		0.00309	U	NA		*0.00343*	U	NA		NA		NA		0.0033	U	NA		NA		NA		*0.00353*	U
Dieldrin	0.005	0.1	0.2	0.00112	U	0.00106	U	NA		0.00111	U	0.00103	U	NA		0.00114	U	NA		NA		NA		0.0011	U	NA		NA		NA		0.00118	U
Endosulfan Sulfate	2.4	1,000	24	0.000747	U	0.000707	U	NA		0.000738	U	0.000688	U	NA		0.000763	U	NA		NA		NA		0.000734	U	NA		NA		NA		0.000784	U
Herbicides (mg/kg)	~	~	~	ND		ND		NA		ND		ND		NA		ND		NA		NA		NA		ND		NA		NA		NA		ND	
Polychlorinated Biphenyls (mg/kg)																																	
PCB-1254 (Aroclor 1254)	~	~	~	0.0379	U	0.0358	U	0.0349	U	0.0368	U	0.0335	U	0.036	U	0.0374	U	0.0384	U	0.0381	U	0.0394	U	0.0359	U	0.0369	U	0.0339	U	0.0398	U	0.0233	J
PCB-1260 (Aroclor 1260)	~	~	~	0.0379	U	0.0358	U	0.0349	U	0.0108	J	0.0335	U	0.036	U	0.0374	U	0.0384	U	0.0381	U	0.0394	U	0.0359	U	0.0369	U	0.0339	U	0.0398	U	0.0225	J
PCB-1262 (Aroclor 1262)	~	~	~	0.0379	U	0.0358	U	0.0349	U	0.0368	U	0.0335	U	0.036	U	0.0135	J	0.0384	U	0.0381	U	0.0394	U	0.0359	U	0.0369	U	0.0339	U	0.0398	U	0.0382	U
Total PCBs	0.1	3.2	1	0.0379	U	0.0358	U	0.0349	U	0.0108	J	0.0335	U	0.036	U	0.0135	J	0.0384	U	0.0381	U	0.0394	U	0.0359	U	0.0369	U	0.0339	U	0.0398	U	0.0458	J
Inorganics (mg/kg)																																	
Aluminum	~	~	~	12,600		3,970		2,920		9,260	J	3,030		1,800		5,360		7,680		3,760		2,230		6,850		6,450	J	2,730	J	3,180		10,000	
Antimony	~	~	~	0.482	J	4.29	U	4.13	U	0.841	J	4.06	U	4.56	U	4.44	U	4.66	U	4.52	U	4.67	U	2.26	J	2.3	J	0.426	J	0.552	J	2.1	J
Arsenic	13	16	16	6.32		1.81		0.718	J	5.74	J	0.876		0.52	J	2.46		1.46		0.696	J	0.28	J	2.49		1.17		0.595	J	0.64	J	5.41	
Barium	350	820	400	59		29.3		23.7		99.4	J	34.6		19.2		38.6		52.3		23.7		22.6		53.1		66.6	J	16.8	J	24.5		104	
Beryllium	7.2	47	72	0.482		0.223	J	0.116	J	0.42	J	0.154	J	0.1	J	0.204	J	0.317	J	0.117	J	0.084	J	0.379	J	0.208	J	0.089	J	0.126	J	0.576	
Cadmium	2.5	7.5	4.3	0.375	J	0.197	J	0.173	J	0.539	J	0.227	J	0.192	J	0.346	J	0.298	J	0.172	J	0.149	J	0.45	J	0.253	J	0.161	J	0.194	J	0.623	J
Calcium	~	~	~	782		1,270		22,300		2,110	J	569	J	8,710	J	72,300		1,900		21,300		24,900		4,300		19,600		15,200		14,000		15,300	J
Chromium, Hexavalent	1	19	110	0.917	U	0.298	J	0.856	U	0.933	U	0.837	U	0.92	U	0.924	U	0.971	U	0.955	U	0.995	U	**1.080**	J	0.922	U	0.853	U	*1.02*	U	0.957	U
Chromium, Total	~	~	~	18.3		12.1		7.52		16.5	J	8.24		4.92		25		17		9.77		5.34		2920	J	15	J	6.97	J	7.34	J	14.5	
Chromium, Trivalent	30	~	180	18		12	J	7.5		16		8.2		4.9		25		17		9.8		5.3		**1,800**		15	J	7	J	7.3		14	
Cobalt	~	~	~	6.54		3.96		4.87		6.37	J	3.08		3.41		3.27		7.94		4.58		4.17		4.59		6.76	J	4.08	J	4.65		5.22	
Copper	50	1,720	270	19.5		12.7		12.6		42.1	J	9.4	J	10.1	J	15.5		17.6		11.3		11.1		**71.5**		16.3	J	9.53	J	13.3		40.6	
Cyanide	27	40	27	1.1	U	1	U	1	U	1.2	U	0.99	U	1.1	U	1.1	UJ	1.2	UJ	1.1	UJ	1.1	UJ	0.54	J	1.1	UJ	1	UJ	1.2	UJ	1.2	UJ
Iron	~	~	~	20,200		9,410		7,830		15,800	J	6,640		6,470		6,390		15,800		7,950		6,530		10,000		12,400	J	6,740	J	8,040		14,400	
Lead	63	450	400	49.4		16.5		2.43	J	**171**	J	2.41	J	2.26	J	15.8		4.16	J	2.2	J	2.22	J	46.3		2.9	J	2.12	J	2.6	J	**337**	
Magnesium	~	~	~	2,040		1,860		15,100		2,120	J	1,560		6,280		16,400		4,460		12,300		11,300		2,230		11,900		10,400		10,100		2,290	
Manganese	1,600	2,000	2,000	250		260		286		287		360		342		134		366		155		148		344	J	206	J	159	J	167	J	496	
Mercury	0.18	0.73	0.81	**0.182**		0.034	J	0.067	U	**29.9**		0.066	U	0.074	U	0.043	J	0.076	U	0.075	U	0.078	U	0.071	U	0.072	U	0.067	U	0.08	U	**0.583**	
Nickel	30	130	310	10.7		6.97		8.78		12.2		6.15		6.76		8.17		16.2		9.18		7.83		**38.5**		14	J	7.58	J	8.6		10.5	
Potassium	~	~	~	496		423		889		503	J	464		403		1,100		1,840		1,040		645		589	J	2,510	J	605	J	640	J	696	
Selenium	3.9	4	180	0.857	J	0.257	J	1.65	U	0.804	J	0.39	J	0.63	J	1.78	U	0.252	J	1.81	U	1.87	U	0.75	J	1.81	U	0.386	J	0.465	J	1.17	J
Silver	2	8.3	180	0.892	U	0.858	U	0.826	U	0.914	U	0.812	U	0.913	U	0.888	U	0.933	U	0.903	U	0.934	U	0.882	U	0.904	U	0.805	U	0.969	U	0.929	U
Sodium	~	~	~	36.7	J	69.6	J	64.1	J	35.7	J	33.4	J	96.1	J	402		103	J	131	J	187	U	144	J	132	J	97.5	J	95.9	J	172	J
Thallium	~	~	~	1.78	U	1.72	U	1.65	U	1.83	U	1.62	U	1.82	U	1.78	U	1.86	U	1.81	U	1.87	U	0.326	J	1.81	U	1.61	U	1.94	U	1.86	U
Vanadium	~	~	~	28		16.5		10.9		28.7		9.53		8.83		10.2		24.7		14		10.1		9.71		21.1	J	10.1	J	11.2		18.8	
Zinc	109	2,480	10,000	58.2		23.6		23.7		**133**	J	40.6	J	21	J	18.4		40.4		24.2		22.3		87.6		37.8		23.2		27		**178**	

Notes provided on Page 4.

Table 4B
Remedial Investigation Report
Soil Sample Analytical Results - Pesticides, Herbicides, PCBs, and Inorganics

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB05	SB05	SB05	SB06	SB06	SB06	SB07	SB07	SB07	SB08	SB08	SB08	SB09	SB09	SB09
Sample ID				SB05_22-23	SB05_45-46	SB05_64-65	SB06_1-2	SB06_21.5-22.5	SB06_29-30	SB07_0-2	SB07_3-5	SB07_21-23	SB08_0-1	SB08_1.5-2.5	SB08_21-22	SB09_0.5-1.5	SB09_3-4	SB09_22-23
Laboratory ID				L1839310-02	L1839310-03	L1839310-04	L1839010-01	L1839010-02	L1839010-03	L1839010-04	L1839010-05	L1839010-06	L1840500-01	L1840500-02	L1840500-03	L1840500-04	L1840500-05	L1840500-06
Sample Date				9/28/2018	9/28/2018	9/28/2018	9/27/2018	9/27/2018	9/27/2018	9/26/2018	9/26/2018	9/26/2018	10/5/2018	10/5/2018	10/5/2018	10/5/2018	10/5/2018	10/5/2018
Sample Depth (feet bgs)				22-23	45-46	64-65	1-2	21.5-22.5	29-30	0-2	3-5	21-23	0-1	1.5-2.5	21-22	0.5-1.5	3-4	22-23
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	13	NA	NA	NA	0.00173 U	NA	NA	0.00172 U	0.00167 U	NA	0.00178 U	0.00158 U	NA	0.00087 JPI	0.00162 U	NA
4,4'-DDE	0.0033	17	8.9	NA	NA	NA	0.00173 U	NA	NA	0.00172 U	0.00167 U	NA	0.00178 U	0.00158 U	NA	0.00176 U	0.00162 U	NA
4,4'-DDT	0.0033	136	7.9	NA	NA	NA	0.00324 U	NA	NA	0.00322 U	0.00314 U	NA	*0.00335* U	0.00297 U	NA	0.0033 U	0.00304 U	NA
Dieldrin	0.005	0.1	0.2	NA	NA	NA	0.00108 U	NA	NA	0.00108 U	0.00104 U	NA	0.00112 U	0.000991 U	NA	0.0011 U	0.00101 U	NA
Endosulfan Sulfate	2.4	1,000	24	NA	NA	NA	0.00072 U	NA	NA	0.000717 U	0.000697 U	NA	0.000744 U	0.00066 U	NA	0.00174	0.000675 U	NA
Herbicides (mg/kg)	~	~	~	NA	NA	NA	ND	NA	NA	ND	ND	NA	ND	ND	NA	ND	ND	NA
Polychlorinated Biphenyls (mg/kg)																		
PCB-1254 (Aroclor 1254)	~	~	~	0.0352 U	0.0395 U	0.0371 U	0.0348 U	0.0371 U	0.0384 U	0.0346 U	0.035 U	0.0402 U	0.0358 U	0.0329 U	0.0369 U	0.0361 U	0.0347 U	0.0341 U
PCB-1260 (Aroclor 1260)	~	~	~	0.0352 U	0.0395 U	0.0371 U	0.0348 U	0.0371 U	0.0384 U	0.0346 U	0.035 U	0.0402 U	0.0358 U	0.0329 U	0.0369 U	0.0361 U	0.0347 U	0.0341 U
PCB-1262 (Aroclor 1262)	~	~	~	0.0352 U	0.0395 U	0.0371 U	0.0348 U	0.0371 U	0.0384 U	0.0346 U	0.035 U	0.0402 U	0.0358 U	0.0329 U	0.0369 U	0.0361 U	0.0347 U	0.0341 U
Total PCBs	0.1	3.2	1	0.0352 U	0.0395 U	0.0371 U	0.0348 U	0.0371 U	0.0384 U	0.0346 U	0.035 U	0.0402 U	0.0358 U	0.0329 U	0.0369 U	0.0361 U	0.0347 U	0.0341 U
Inorganics (mg/kg)																		
Aluminum	~	~	~	5,380	10,200	4,080	5,460	6,460	3,950	6,720	4,530	5,120	14,600	5,780	3,530	9,010	7,760	2,610
Antimony	~	~	~	0.482 J	1.34 J	4.69 U	44.8	0.648 J	4.56 U	0.748 J	0.319 J	4.7 U	4.45 U	4.08 U	4.52 U	2.58 J	4.19 U	4.11 U
Arsenic	13	16	16	0.727 J	1.01	1.19	7.06	0.891 J	0.703 J	1.28	0.812	1.06	6.51	2.19	0.796 J	8	3.24	0.625 J
Barium	350	820	400	35.2	104	35.3	235	44.9	26.5	30.4	18.5	36.6	51.8	20.4	22.1	212	25.9	18.4
Beryllium	7.2	47	72	0.194 J	0.507	0.262 J	0.322 J	0.261 J	0.155 J	0.272 J	0.199 J	0.235 J	0.382 J	0.302 J	0.145 J	0.408 J	0.344 J	0.082 J
Cadmium	2.5	7.5	4.3	0.169 J	0.353 J	0.159 J	2.25	0.198 J	0.128 J	0.204 J	0.135 J	0.198 J	0.427 J	0.212 J	0.226 J	1.49	0.226 J	0.156 J
Calcium	~	~	~	5,330 J	19,700 J	11,300 J	9,600 J	11,800 J	19,600 J	1,080 J	961 J	16,700 J	1,930	511	1,560	2,710	597	977
Chromium, Hexavalent	1	19	110	0.217 J	0.955 U	0.948 U	0.883 U	0.925 U	0.959 U	0.338 J	0.846 U	0.965 U	0.91 U	0.838 U	0.913 U	0.891 U	0.852 U	0.869 U
Chromium, Total	~	~	~	14	25.4	8.07	16.1 J	13.7 J	8.17 J	13.4 J	11.3 J	11.6 J	20.7	11.1	8.82	19.9	11.3	7.04
Chromium, Trivalent	30	~	180	14 J	25	8.1	16	14	8.2	13 J	11	12	21	11	8.8	20	11	7
Cobalt	~	~	~	5.76	11.5	4.31	5.97	6.96	4.49	6.23	4.59	6.06	8.13	5.57	5.63	5.97	5.73	3.77 J
Copper	50	1,720	270	13.4	23	9.01	**265** J	15.6 J	10.3 J	14.2 J	10.1 J	15 J	16.1	11.2	11	**92.4**	9.4	7
Cyanide	27	40	27	1 UJ	1.1 UJ	1.2 UJ	1 U	1.1 U	1.2 U	1 U	1 U	1.2 U	1.1 U	0.27 J	1.1 UJ	1.1 UJ	1 UJ	1 UJ
Iron	~	~	~	10,600	21,900	9,200	37,700	11,600	8,060	13,200	8,580	12,000	21,100	11,000	8,710	16,100	12,400	5,930
Lead	63	450	400	2.87 J	5.54	3.64 J	**8,750** J	5.67 J	2.91 J	7.31 J	3.77 J	3.59 J	22.1	4.3	2.54 J	**648**	5.22	1.92 J
Magnesium	~	~	~	4,730	11,400	5,480	1,730 J	8,980 J	10,400 J	2,880 J	2,000 J	9,270 J	2,210 J	2,230 J	2,800 J	2,120 J	2,000 J	1,810 J
Manganese	1,600	2,000	2,000	200	330	197	300	190	166	391	188	214	278	288	239	230	244	150
Mercury	0.18	0.73	0.81	0.069 U	0.075 U	0.074 U	**0.422** J	0.073 UJ	0.075 UJ	0.068 UJ	0.067 UJ	0.076 UJ	0.139	0.021 J	0.019 J	**0.984**	0.025 J	0.016 J
Nickel	30	130	310	11.2	19.1	7.72	17.3	15.1	8.69	13.8	9.17	11.7	12.4	11	10.5	15.7	11.4	7.88 J
Potassium	~	~	~	1,280	4,610	971	710 J	1,780 J	1,060 J	585 J	495 J	1,340 J	653	456	731	688	597	520 J
Selenium	3.9	4	180	0.304 J	0.852 J	0.469 J	0.813 J	0.45 J	0.675 J	0.68 J	1.59 U	0.612 J	1.1 J	0.326 J	0.543 J	1.28 J	0.461 J	0.444 J
Silver	2	8.3	180	0.845 U	0.906 U	0.937 U	1.61	0.9 U	0.912 U	0.85 U	0.796 U	0.941 U	0.889 U	0.816 U	0.904 U	0.868 U	0.838 U	0.822 U
Sodium	~	~	~	292 J	202 J	108 J	294 J	303 J	197 J	176 J	125 J	185 J	70.4 J	27.5 J	121 J	84.9 J	81.7 J	89.8 J
Thallium	~	~	~	1.69 U	1.81 U	1.87 U	1.69 U	1.8 U	1.82 U	1.7 U	1.59 U	1.88 U	1.78 U	1.63 U	1.81 U	1.74 U	1.68 U	1.64 U
Vanadium	~	~	~	20.2	36.6	13.5	16.2 J	20.7 J	14.1 J	19.3 J	14.4 J	20.4 J	32.8	19.6	14.2	25	18	9.8
Zinc	109	2,480	10,000	26.1	61.7	20.6	**950** J	37.6 J	21.2 J	27.7 J	18.9 J	31.9 J	41.8	28.5	30.4	**443**	22.8	29

Notes provided on Page 4.

Table 4B
Remedial Investigation Report
Soil Sample Analytical Results - Pesticides, Herbicides, PCBs, and Inorganics

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use - Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use - Restricted Residential	SB09 SBDUP03_100518 L1840500-08 10/5/2018 22-23	SB10 SB10_1-2 L1840256-07 10/4/2018 1-2	SB10 SB10_6-7 L1840256-08 10/4/2018 6-7	SB10 SB10_24-25 L1840256-09 10/4/2018 24-25	SB11 SB11_0-1 L1839010-07 9/27/2018 0-1	SB11 SB11_6.5-7.5 L1839010-08 9/27/2018 6.5-7.5	SB11 SBDUP01_092718 L1839010-13 9/27/2018 6.5-7.5	SB11 SB11_22-23 L1839010-09 9/27/2018 22-23	SB12 SB12_0-2 L1839010-10 9/26/2018 0-2	SB12 SB12_2-4 L1839010-11 9/26/2018 2-4	SB12 SB12_22-23 L1839010-12 9/26/2018 22-23	SB13 SB13_0-1 L1839661-05 10/2/2018 0-1	SB13 SB13_6.5-7.5 L1839661-06 10/2/2018 6.5-7.5	SB13 SB13_28-29 L1839661-07 10/2/2018 28-29	SB13 SB13_68-69 L1839825-01 10/3/2018 68-69
Pesticides (mg/kg)																			
4,4'-DDD	0.0033	14	13	0.00173 U	0.00159 U	0.00165 U	NA	0.00186 U	0.00179 U	0.00177 U	NA	0.00159 U	0.00157 U	NA	0.00181 U	0.00178 U	NA	NA
4,4'-DDE	0.0033	17	8.9	0.00173 U	0.00159 U	0.00165 U	NA	0.00186 U	0.00179 U	0.00177 U	NA	0.00159 U	0.00157 U	NA	0.00181 U	0.00178 U	NA	NA
4,4'-DDT	0.0033	136	7.9	0.00324 U	0.00298 U	0.00309 U	NA	*0.00348* U	*0.00336* U	*0.00331* U	NA	0.00299 U	0.00295 U	NA	*0.00339* U	*0.00334* U	NA	NA
Dieldrin	0.005	0.1	0.2	0.00108 U	0.000526 J	0.00103 U	NA	0.00116 U	0.00112 U	0.0011 U	NA	0.000995 U	0.000984 U	NA	0.00113 U	0.00111 U	NA	NA
Endosulfan Sulfate	2.4	1,000	24	0.000721 U	0.000663 U	0.000687 U	NA	0.000774 U	0.000747 U	0.000736 U	NA	0.000664 U	0.000656 U	NA	0.000753 U	0.000742 U	NA	NA
Herbicides (mg/kg)	~	~	~	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	NA
Polychlorinated Biphenyls (mg/kg)																			
PCB-1254 (Aroclor 1254)	~	~	~	0.0363 U	0.0348 U	0.0335 U	0.0361 U	0.0386 U	0.0377 U	0.0377 U	0.0363 U	0.0333 U	0.0324 U	0.0403 U	0.0378 U	0.0384 U	0.035 U	0.039 U
PCB-1260 (Aroclor 1260)	~	~	~	0.0363 U	0.0348 U	0.0335 U	0.0361 U	0.0386 U	0.0377 U	0.0377 U	0.0363 U	0.0333 U	0.0324 U	0.0403 U	0.0378 U	0.0384 U	0.035 U	0.039 U
PCB-1262 (Aroclor 1262)	~	~	~	0.0363 U	0.0348 U	0.0335 U	0.0361 U	0.0386 U	0.0377 U	0.0377 U	0.0363 U	0.0333 U	0.0324 U	0.0403 U	0.0378 U	0.0384 U	0.035 U	0.039 U
Total PCBs	0.1	3.2	1	0.0363 U	0.0348 U	0.0335 U	0.0361 U	0.0386 U	0.0377 U	0.0377 U	0.0363 U	0.0333 U	0.0324 U	0.0403 U	0.0378 U	0.0384 U	0.035 U	0.039 U
Inorganics (mg/kg)																			
Aluminum	~	~	~	3,770	4,770	4,080	5,570	11,300	13,000	11,500	5,730	7,960	3,820	7,210	14,300	8,750	3,460	3,280
Antimony	~	~	~	4.29 U	4.2 U	4.01 U	0.351 J	0.728 J	0.562 J	0.571 J	4.48 U	0.935 J	0.563 J	0.815 J	1.04 J	0.69 J	4.21 U	0.379 J
Arsenic	13	16	16	1.15	1.03	1.23	0.913	6.5	4.3	4.12	0.986	2.49	0.523 J	0.698 J	6.54	3.64	0.556 J	1.33
Barium	350	820	400	25.6	12.8	21.6	24.9	83.4	42.2	32.3	49	52.8	15.3	61.4	53.3	48.3	32.3	32.6
Beryllium	7.2	47	72	0.129 J	0.218 J	0.232 J	0.211 J	0.681	0.509	0.482	0.269 J	0.388 J	0.182 J	0.262 J	0.433 J	0.354 J	0.084 J	0.214 J
Cadmium	2.5	7.5	4.3	0.206 J	0.134 J	0.192 J	0.228 J	0.355 J	0.298 J	0.277 J	0.215 J	0.499 J	0.135 J	0.233 J	0.415 J	0.563 J	0.16 J	0.253 J
Calcium	~	~	~	1,380	305 J	980 J	1,240 J	1,760 J	1,010 J	1,090 J	987 J	1,540 J	868 J	23,700 J	1,380	2590	24,400	5,760
Chromium, Hexavalent	1	19	110	0.885 U	0.842 U	0.231 J	0.887 U	0.956 U	0.807 J	0.871 J	0.907 U	0.82 U	0.316 J	0.988 U	0.248 J	0.236 J	0.862 U	0.985 U
Chromium, Total	~	~	~	10.6	8.94	24.5	11.4	14.2 J	21.8 J	24.5 J	11.9 J	14.5 J	9.87 J	17.8 J	21.4	29.1	8.76	10.8
Chromium, Trivalent	30	~	180	11	8.9	24 J	11	14	21 J	24 J	12	14	9.6 J	18	21 J	29 J	8.8	11
Cobalt	~	~	~	5.6 J	3.45	4.17	6.73	5.6	8.94	7.96	5.86	5.97	4.06	8.75	6.93	6.1	4.01	6.97
Copper	50	1,720	270	10.6	8.38 J	14.7 J	14.4 J	31 J	13.2 J	13.2 J	12.1 J	35.2 J	10.2 J	19.1 J	13.9	20.2	10.7	16.5
Cyanide	27	40	27	1 UJ	1 U	1 U	1 U	1.2 U	1.1 U	1.2 U	1 U	0.96 U	0.99 U	1.1 U	1.1 UJ	1.1 UJ	0.99 UJ	1.2 UJ
Iron	~	~	~	9,000	6,790	9,740	13,000	14,400	20,200	19,300	12,600	13,200	7,700	15,300	22,100	15,300	7,370	13,300
Lead	63	450	400	2.72 J	2.62 J	4.88 J	3.14 J	**84.3** J	18 J	13 J	3.27 J	**73.8** J	2.54 J	3.14 J	19.8	**79.4**	1.71 J	2.55 J
Magnesium	~	~	~	2,710 J	1,910	1,920	4,170	1,900 J	2,500 J	2,610 J	2,790 J	2,400 J	1,880 J	14,200 J	2,030	2,360	15,000	3,620
Manganese	1,600	2,000	2,000	204	198	223	208	461	381	320	351	283	218	219	246	334	150	220
Mercury	0.18	0.73	0.81	0.016 J	0.066 U	0.066 U	0.07 U	**0.254** J	0.021 J	0.029 J	0.071 UJ	0.111 J	0.064 UJ	0.078 UJ	0.145	0.06 J	0.068 U	0.077 U
Nickel	30	130	310	11.1 J	8.44	9.74	12.1	9.47	11.9	13.1	12	11.7	8.36	14.4	12.3	12.6	7.95	12.5
Potassium	~	~	~	831 J	312	483	1,350	472 J	604 J	694 J	910 J	599 J	320 J	2,670 J	786	806	1,210	955
Selenium	3.9	4	180	0.292 J	0.31 J	0.232 J	0.492 J	0.868 J	0.676 J	0.286 J	0.269 J	0.642 J	0.42 J	0.417 J	0.713 J	0.563 J	1.68 U	0.253 J
Silver	2	8.3	180	0.858 U	0.839 U	0.802 U	0.878 U	0.933 U	0.878 U	0.893 U	0.896 U	0.792 U	0.792 U	0.97 U	0.903 U	0.908 U	0.842 U	0.973 U
Sodium	~	~	~	119 J	20.5 J	117 J	48.5 J	101 J	117 J	119 J	621 J	186 J	68.6 J	160 J	186	153 J	108 J	152 J
Thallium	~	~	~	1.72 U	1.68 U	1.6 U	1.76 U	1.87 U	1.76 U	1.78 U	1.79 U	1.58 U	1.58 U	1.94 U	1.8 U	1.82 U	1.68 U	1.94 U
Vanadium	~	~	~	16.3	8.95	12.9	18	19.7 J	27 J	25.1 J	20.8 J	20.8 J	12.5 J	26.7 J	31.8	21	10.9	23.2
Zinc	109	2,480	10,000	39.7	34 J	29.6 J	49.6 J	71.8 J	36.2 J	32.9 J	24.7 J	**119** J	16.5 J	47.7 J	40	**306**	24.8	22.7

Notes provided on Page 4.

Table 4B
Remedial Investigation Report
Soil Sample Analytical Results - Pesticides, Herbicides, PCBs, and Inorganics

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:
1. 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, Restricted Use - Protection of Groundwater and Restricted Use Restricted - Residential Soil Cleanup Objectives (SCO).
2. Only detected analytes are shown in the table.
3. Analytes detected with concentrations above Unrestricted Use SCOs are bolded.
4. Analytes detected with concentrations above Restricted Use - Protection of Groundwater SCOs are shaded.
5. Analytes detected with concentrations above Restricted Use Restricted - Residential SCOs are bordered.
6. Analytical results with reporting limits (RL) above Unrestricted Use SCOs are italicized.
7. Sample SBDUP02_100118 is a duplicate sample of SB04_23.5-24.5; sample SBDUP03_100518 is a duplicate sample of SB09_22-23; and sample SBDUP01_092718 is a duplicate sample of SB11_6.5-7.5.
8. ~ = Regulatory limit for this analyte does not exist
9. bgs = below grade surface
10. mg/kg = milligrams per kilogram
11. NA = Not analyzed
12. ND = Not detected

Qualifiers:
I = The lower value for the two columns has been reported due to obvious interference.
P = The relative percent difference (RPD) between the results for the two columns exceeds the method-specified criteria.
J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 4C
Remedial Investigation Report
Soil Sample Analytical Results - Hazardous Chromium

37-11 30th Street
Long Island City, New York
BCP Site No. C241211
Langan Project No. 170512301

Sample Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic	SB04 SB04_1-2 L1839480-01 10/1/2018 1-2	SB04 SB04_2-3 L1839480-02 10/1/2018 2-3	SB04 SB04_6-7 L1849188-01 10/1/2018 6-7	SB04 SB04_8-9 L1849739-01 10/1/2018 8-9	SB04A SB04A_3-5 L1847730-04 11/20/2018 3-5	SB04A SB04A_5-6 L1847730-02 11/20/2018 5-6	SB04.1 SB04.1_1-3 L1847730-05 11/20/2018 1-3	SB04.1 SBDUP04_112018 L1847730-03 11/20/2018 1-3	SB04.1 SB04.1_3-5 L1847730-11 11/20/2018 3-5	SB04.2 SB04.2_1-3 L1847730-30 11/20/2018 1-3	SB04.4 SB04.4_1-3 L1847730-07 11/20/2018 1-3	SB04.4 SB04.4_3-5 L1847730-28 11/20/2018 3-5	SB04.5 SB04.5_1-3 L1847730-23 11/20/2018 1-3	SB04.7 SB04.7_1-3 L1847730-06 11/20/2018 1-3
Metals (mg/kg)															
Chromium, Total	~	NA	NA	502	32.7	480	729	949	1010	172	764	295	7.41	14.7	1810
TCLP Chromium (mg/L)															
Chromium	5	**27**	**27.2**	**9.4**	0.2 U	**10.1**	**11.6**	**9.17**	**5.76**	**6.02**	1.11	**5.34**	0.2 U	0.2 U	1.83

Notes:
1. Grab soil sample analytical results are compared to the 6 New York Codes, Rules and Regulations
(NYCRR) Part 371.3 and 40 CFR 261 Subpart C and Table 1 of 40 CFR 261.24 - Environmental
2. Analytes detected with concentrations above RCRA Maximum Concentration of Contaminants for the Toxicity Characteristic are shaded and bolded.
3. mg/kg = milligram per kilogram
4. mg/L = milligram per liter
5. bgs = below grade surface
6. TCLP = Toxicity Characteristic Leaching Procedure
7. NA = Not Analyzed

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.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL; the value shown in the table is the RL.

Table 5A
Remedial Investigation Report
Groundwater Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location		MW01		MW02		MW03		MW04		MW05A		MW05B		MW06	
Sample ID	NYSDEC	MW01_101718		MW02_101518		MW03_101618		MW04_101718		MW05A_101718		MW05B_101718		MW06_101618	
Laboratory ID	SGVs	L1842363-04		L1841798-02		L1842082-02		L1842363-07		L1842363-03		L1842363-06		L1842082-01	
Sample Date		10/17/2018		10/15/2018		10/16/2018		10/17/2018		10/17/2018		10/17/2018		10/16/2018	
Volatile Organic Compounds (µg/L)															
Acetone	50	4.2	J	3.2	J	2.2	J	3.9	J	3.3	J	4.5	J	3.3	J
Benzene	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.16	J
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	2.9		0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	5	0.5	UJ	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.48	J	0.22	J
Chloroform	7	4.4		1.7	J	3.2		**36**		1.9	J	6.4		**12**	
Chloromethane	5	2.5	UJ	2.5	U	2.5	U	2.5	UJ	2.5	UJ	2.5	UJ	2.5	U
Methylene Chloride	5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	1.4	J
Tert-Butyl Methyl Ether	10	2.5	UJ	2.5	U	2.5	UJ	2.5	UJ	0.8	J	2.5	UJ	2.5	UJ
Tetrachloroethene (PCE)	5	0.5	U	0.27	J	0.63		0.2	J	0.5	U	3.2		0.84	
Semivolatile Organic Compounds (µg/L)															
2-Methylnaphthalene	~	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acenaphthene	20	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.02	J	0.1	U
Acenaphthylene	~	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.02	J	0.02	J
Anthracene	50	0.02	J	0.1	U	0.01	J	0.1	U	0.1	U	0.02	J	0.02	J
Benzo(a)Anthracene	0.002	**0.06**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.03**	J	*0.1*	U
Benzo(a)Pyrene	0	**0.02**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Benzo(b)Fluoranthene	0.002	**0.04**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.04**	J	**0.01**	J
Benzo(g,h,i)Perylene	~	0.02	J	0.1	U	0.1	U	0.1	U	0.1	U	0.02	J	0.1	U
Benzo(k)Fluoranthene	0.002	**0.02**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Bis(2-Ethylhexyl) Phthalate	5	3	U	3	U	3	U	3	U	3	U	3	U	3	U
Chrysene	0.002	**0.06**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.03**	J	*0.1*	U
Di-N-Butyl Phthalate	50	5	U	5	U	0.4	J	5	U	5	U	5	U	5	U
Fluoranthene	50	0.1		0.04	J	0.03	J	0.1	U	0.1	U	0.07	J	0.04	J
Fluorene	50	0.02	J	0.1	U	0.02	J	0.1	U	0.1	U	0.03	J	0.04	J
Indeno(1,2,3-c,d)Pyrene	0.002	**0.02**	J	*0.1*	U	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Pentachlorophenol	1	0.07	J	0.8	U	0.11	J	0.8	U	0.8	U	0.09	J	0.12	J
Phenanthrene	50	0.07	J	0.04	J	0.05	J	0.1	U	0.1	U	0.06	J	0.09	J
Pyrene	50	0.13		0.03	J	0.02	J	0.1	U	0.1	U	0.07	J	0.03	J
Pesticides (µg/L)															
4,4'-DDT	0.2	0.029	U	0.029	UJ	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U
Alpha Chlordane	~	0.014	U	0.005	J	0.014	U	0.014	U	0.014	U	0.014	U	0.014	U
Endrin Aldehyde	5	0.029	U	0.013	J	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U
Herbicides (µg/L)	~	ND		ND		ND		ND		ND		ND		ND	
Polychlorinated Biphenyls (µg/L)	~	ND		ND		ND		ND		ND		ND		ND	
Inorganics (µg/L)															
Aluminum	~	2,000		13.4		39.7		174		17,500		6,190		1,220	
Aluminum (Dissolved)	~	7.66	J	4.54	J	18.2		11.4		5.22	J	16.2		31	
Antimony	3	0.43	J	*4*	U	*4*	U	1.78	J	0.76	J	0.53	J	*4*	U
Antimony (Dissolved)	3	0.62	J	0.51	J	*4*	U	1.08	J	0.87	J	0.71	J	1.15	J
Arsenic	25	1.29	J	0.21	J	0.34	J	0.39	J	4.17	J	2.17	J	0.84	
Arsenic (Dissolved)	25	0.46	J	0.26	J	0.38	J	0.26	J	0.61		1.12		0.85	
Barium	1,000	226.7		249.8		12.71		15.38		467.1		96.25		32.5	
Barium (Dissolved)	1,000	203.2		254.6		13.29		16.09		144.2		30.17		14.66	
Beryllium	3	0.13	J	0.5	U	0.5	U	0.5	U	1.21		0.26	J	0.5	U
Beryllium (Dissolved)	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cadmium	5	0.1	J	0.06	J	0.2	U	0.2	U	0.36		0.09	J	0.2	U
Cadmium (Dissolved)	5	0.06	J	0.06	J	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Calcium	~	133,000		168,000		37,100		26,000		184,000		59,200		26,100	
Calcium (Dissolved)	~	136,000		196,000		37,200		22,600		106,000		36,800		22,800	
Chromium, Hexavalent	50	10	U	10	U	10	U	**654**		10	U	3	J	10	U
Chromium, Total	50	8.96		0.63	J	0.71	J	**1,146**		**65.25**		31.09		7.68	
Chromium, Total (Dissolved)	50	1.64		0.66	J	0.65	J	**698.6**		1	U	30.61		0.28	J
Chromium, Trivalent	~	10	U	10	U	10	U	492		65		28	J	10	U
Cobalt	~	3.76		3.7		0.88		0.24	J	25.3		5.84		2.34	
Cobalt (Dissolved)	~	1.6		3.79		0.85		0.5	U	0.64		0.41	J	0.31	J
Copper	200	7.2		1.03		1.48		0.85	J	77.8		20.74		8.94	
Copper (Dissolved)	200	0.77	J	1.06		1.69		0.64	J	1	U	0.86	J	0.59	J
Cyanide	200	5	U	2	J	2	J	5	U	5	U	5	U	11	
Iron	300	**3,640**		36.7	J	45.5	J	286	U	**37,400**		**10,200**		**2,520**	
Iron (Dissolved)	300	46.4	U	28.9	J	50	U	75	U	159	U	75	U	37	J
Lead	25	5.47	J	1	U	1	U	1	UJ	23.45	J	5.53	J	**36.97**	
Lead (Dissolved)	25	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Magnesium	35,000	**43,600**		**51,500**		9,790		7,700		**81,500**		25,500		6,750	
Magnesium (Dissolved)	35,000	**44,400**		**51,900**		10,200		7,240		**46,200**		14,200		5,100	
Manganese	300	**680.8**		**809.8**		197.6		12.54		**1,554**		**312.5**		260.9	
Manganese (Dissolved)	300	**615.6**		**817.4**		189		5.28		**411.4**		104.3		196.2	
Nickel	100	6.06		3.98		0.85	J	2	U	51.99		15		4.83	
Nickel (Dissolved)	100	3.2		3.98		1.04	J	2	U	0.85	J	1.17	J	1.69	J
Potassium	~	10,400		7,870		3,370		5,130		16,800		9,420		4,710	
Potassium (Dissolved)	~	10,300		9,130		3,440		4,830		10,400		7,390		4,730	
Selenium	10	3.85	J	3.36	J	5	U	5	U	3.24	J	3.32	J	5	U
Selenium (Dissolved)	10	3.82	J	3.71	J	5	U	5	U	5	U	2.93	J	5	U
Sodium	20,000	**322,000**		**298,000**		10,500		6,410		**41,000**		**34,900**		**48,200**	
Sodium (Dissolved)	20,000	**337,000**		**335,000**		11,400		5,840		**42,700**		**35,000**		**48,900**	
Thallium	0.5	0.5	UJ	0.5	U	0.5	U	0.5	UJ	**0.52**	J	0.16	J	0.5	U
Thallium (Dissolved)	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vanadium	~	5.63		5	U	5	U	1.77	J	53.55		15.16		2.9	J
Vanadium (Dissolved)	~	5	U	5	U	5	U	5	U	5	U	1.84	J	5	U
Zinc	2,000	14.24	J	10	U	10	U	10	UJ	109.1	J	39.35	J	13.22	
Zinc (Dissolved)	2,000	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Notes provided on Page 3.

Table 5A
Remedial Investigation Report
Groundwater Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location Sample ID Laboratory ID Sample Date	NYSDEC SGVs	MW07 MW07_101618 L1842082-03 10/16/2018	MW07 GWDUP01_101618 L1842082-04 10/16/2018	MW07 MW07_101718 L1842363-01 10/17/2018		MW07 GWDUP01_101718 L1842363-02 10/17/2018		MW10 MW10_101518 L1841798-01 10/15/2018		MW13A MW13A_101718 L1842363-05 10/17/2018		MW13B MW13B_101518 L1841798-03 10/15/2018	
Volatile Organic Compounds (µg/L)													
Acetone	50	NA	NA	2.8	J	2.6	J	3.7	J	5.4	J	4	J
Benzene	1	NA	NA	0.5	U	0.5	U	0.5	U	0.73		0.5	U
Bromodichloromethane	50	NA	NA	1.2		1.1		0.67		0.5	U	0.5	U
Carbon Tetrachloride	5	NA	NA	0.5	UJ	0.5	UJ	0.5	U	0.5	UJ	0.5	U
Chloroform	7	NA	NA	**15**		**15**		**9.9**		**11**		3.3	
Chloromethane	5	NA	NA	2.5	UJ	2.5	UJ	2.5	U	1.5	J	2.5	U
Methylene Chloride	5	NA	NA	2.5	U	2.5	U	2.5	U	3.7		2.5	U
Tert-Butyl Methyl Ether	10	NA	NA	2.5	UJ	2.5	UJ	2.5	U	2.5	UJ	2.5	U
Tetrachloroethene (PCE)	5	NA	NA	1.6		1.7		0.41	J	0.5	U	0.2	J
Semivolatile Organic Compounds (µg/L)													
2-Methylnaphthalene	~	NA	NA	0.04	J	0.1	U	0.1	U	0.02	J	0.1	U
Acenaphthene	20	NA	NA	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Acenaphthylene	~	NA	NA	0.1	U	0.1	U	0.1	UJ	0.01	J	0.1	UJ
Anthracene	50	NA	NA	0.1	U	0.1	U	0.1	U	0.02	J	0.1	U
Benzo(a)Anthracene	0.002	NA	NA	*0.1*	U	*0.1*	U	*0.1*	U	**0.03**	J	*0.1*	U
Benzo(a)Pyrene	0	NA	NA	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Benzo(b)Fluoranthene	0.002	NA	NA	*0.1*	U	**0.01**	J	*0.1*	U	**0.04**	J	*0.1*	U
Benzo(g,h,i)Perylene	~	NA	NA	0.1	U	0.1	U	0.1	U	0.01	J	0.1	U
Benzo(k)Fluoranthene	0.002	NA	NA	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Bis(2-Ethylhexyl) Phthalate	5	NA	NA	3	U	3	U	3		3	U	3	U
Chrysene	0.002	NA	NA	*0.1*	U	*0.1*	U	*0.1*	U	**0.03**	J	*0.1*	U
Di-N-Butyl Phthalate	50	NA	NA	5	U	5	U	5	U	5	U	0.48	J
Fluoranthene	50	NA	NA	0.1	U	0.1	U	0.03	J	0.13		0.04	J
Fluorene	50	NA	NA	0.02	J	0.1	U	0.1	U	0.03	J	0.1	U
Indeno(1,2,3-c,d)Pyrene	0.002	NA	NA	*0.1*	U	*0.1*	U	*0.1*	U	**0.02**	J	*0.1*	U
Pentachlorophenol	1	NA	NA	0.08	J	0.8	U	0.8	U	0.07	J	0.8	U
Phenanthrene	50	NA	NA	0.1	U	0.1	U	0.04	J	0.12		0.1	U
Pyrene	50	NA	NA	0.1	U	0.1	U	0.04	J	0.1		0.04	J
Pesticides (µg/L)													
4,4'-DDT	0.2	NA	NA	0.029	U	0.029	U	0.023	J	0.029	U	0.029	UJ
Alpha Chlordane	~	NA	NA	0.014	U	0.014	U	0.008	J	0.014	U	0.014	U
Endrin Aldehyde	5	NA	NA	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U
Herbicides (µg/L)	~	NA	NA	ND		ND		ND		ND		ND	
Polychlorinated Biphenyls (µg/L)	~	NA	NA	ND		ND		ND		ND		ND	
Inorganics (µg/L)													
Aluminum	~	NA	NA	609		738		25.8		411		126	J
Aluminum (Dissolved)	~	NA	NA	10.9		13.2		6.28	J	21.6		10.4	
Antimony	3	NA	NA	**3.52**	J	*4*	U	*4*	U	0.64	J	*4*	U
Antimony (Dissolved)	3	NA	NA	**4.09**		1.75	J	*4*	U	0.93	J	*4*	U
Arsenic	25	NA	NA	0.33	J	0.33	J	0.35	J	0.83	J	0.21	J
Arsenic (Dissolved)	25	NA	NA	0.24	J	0.45	J	0.33	J	0.56		0.27	J
Barium	1,000	NA	NA	52.13		52.3		38.21		49.07		197.1	
Barium (Dissolved)	1,000	NA	NA	47.91		47.22		37.29		40.15		216.2	
Beryllium	3	NA	NA	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Beryllium (Dissolved)	3	NA	NA	0.5	U	0.16	J	0.5	U	0.5	U	0.5	U
Cadmium	5	NA	NA	0.07	J	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium (Dissolved)	5	NA	NA	0.2	U	0.16	J	0.2	U	0.2	U	0.2	U
Calcium	~	NA	NA	46,300		44,100		48,500		43,500		95,200	
Calcium (Dissolved)	~	NA	NA	42,800		43,500		52,800		38,300		108,000	
Chromium, Hexavalent	50	NA	NA	6	J	6	J	10	U	10	U	10	U
Chromium, Total	50	NA	NA	8.26		8.35		1.32		5.02		1.88	
Chromium, Total (Dissolved)	50	NA	NA	5.9		5.93		0.68	J	**64.24**		0.35	J
Chromium, Trivalent	~	NA	NA	10	U	10	U	10	U	10	U	10	U
Cobalt	~	NA	NA	0.93		0.83		0.89		0.44	J	0.59	
Cobalt (Dissolved)	~	NA	NA	0.24	J	0.24	J	0.74	J	0.18	J	0.36	J
Copper	200	NA	NA	2.78		2.17		0.72	J	2.04		1.4	
Copper (Dissolved)	200	NA	NA	0.57	J	1.1		0.52	J	1	U	0.74	J
Cyanide	200	NA	NA	3	J	5	U	5	U	5	U	1	J
Iron	300	NA	NA	**1,010**		**1,230**		60.9		**903**		**732**	
Iron (Dissolved)	300	NA	NA	32.4	U	93	U	29.7	J	81		274	
Lead	25	NA	NA	0.97	J	1.06	J	1	U	0.43	J	1	U
Lead (Dissolved)	25	NA	NA	0.58	J	0.95	J	1	U	1	U	1	U
Magnesium	35,000	NA	NA	14,700		14,000		17,600		15,000		34,600	
Magnesium (Dissolved)	35,000	NA	NA	13,000		13,100		19,100		12,600		**36,600**	
Manganese	300	NA	NA	31.96		33.59		297.5		122.7		90.94	
Manganese (Dissolved)	300	NA	NA	6.35		7.14		**322.6**		105.7		79.17	
Nickel	100	NA	NA	3.12		3.6		1.57	J	2.58		1.66	J
Nickel (Dissolved)	100	NA	NA	0.73	J	0.76	J	1.88	J	2	U	0.94	J
Potassium	~	NA	NA	7,100		6,900		6,480		12,000		8,380	
Potassium (Dissolved)	~	NA	NA	6,700		6,680		6,980		10,300		8,960	
Selenium	10	NA	NA	2.25	J	2.06	J	5	U	5	U	2.89	J
Selenium (Dissolved)	10	NA	NA	2.24	J	2.54	J	1.93	J	5	U	2.89	J
Sodium	20,000	NA	NA	**46,200**		**44,700**		**42,300**		**38,500**		**214,000**	
Sodium (Dissolved)	20,000	NA	NA	**45,500**		**45,400**		**40,600**		**35,300**		**248,000**	
Thallium	0.5	NA	NA	0.24	J	0.5	UJ	0.5	U	0.5	UJ	0.5	U
Thallium (Dissolved)	0.5	NA	NA	0.21	J	0.44	J	0.5	U	0.5	U	0.5	U
Vanadium	~	NA	NA	2.99	J	2.96	J	5	U	5	U	5	U
Vanadium (Dissolved)	~	NA	NA	5	U	5	U	5	U	5	U	5	U
Zinc	2,000	NA	NA	4.78	J	6.13	J	10	U	10	UJ	10	U
Zinc (Dissolved)	2,000	NA	NA	10	U	9.99	J	10	U	10	U	10	U

Notes provided on Page 3.

Table 5A
Remedial Investigation Report
Groundwater Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:

1. 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).
2. Only detected analytes are shown in the table.
3. Analytes detected with concentrations above NYSDEC SGVs are bolded and shaded.
4. Analytical results with reporting limits (RL) above NYSDEC SGVs are italicized.
5. Sample GWDUP01_101618 is a duplicate sample of MW07_101618 and sample GWDUP01_101718 is a duplicate sample of MW07_101718.
6. ~ = Regulatory limit for this analyte does not exist
7. µg/L = micrograms per liter
8. NA = Not Analyzed

Qualifiers:

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

Table 5B
Remedial Investigation Report
Groundwater Sample Analytical Results - Emerging Contaminants

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location Sample ID Laboratory ID Sample Date	USEPA Health Advisory Limit	MW01 MW01_101718 L1842363-04 10/17/2018		MW05A MW05A_101718 L1842363-03 10/17/2018		MW07 MW07_101618 L1842082-03 10/16/2018		MW07 GWDUP01_101618 L1842082-04 10/16/2018		MW07 MW07_101718 L1842363-01 10/17/2018		MW07 GWDUP01_101718 L1842363-02 10/17/2018	
1,4-Dioxane (P-Dioxane) (µg/L)	~	0.16	U	0.665		NA		NA		0.147	U	0.147	U
Per and Polyfluoroalkyl Substances (µg/L)													
N-ethyl perfluorooctane- sulfonamidoacetic acid	~	0.00194	U	0.00197	U	0.00183	UJ	0.00178	UJ	NA		NA	
N-methyl perfluorooctane- sulfonamidoacetic acid	~	0.00194	UJ	0.00197	UJ	0.00183	U	0.00178	U	NA		NA	
Perfluorobutanesulfonic Acid	~	0.0116		0.00197	U	0.00277		0.00272		NA		NA	
Perfluorobutanoic acid	~	0.0111		0.00221		0.00539		0.00527		NA		NA	
Perfluorodecanesulfonic acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluorodecanoic acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluorododecanoic Acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluoroheptanesulfonic acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluoroheptanoic acid	~	0.0105		0.00197	U	0.00619		0.00564		NA		NA	
Perfluorohexanesulfonic Acid	~	0.00353		0.00197	U	0.00185	J	0.00266	J	NA		NA	
Perfluorohexanoic Acid	~	0.0191		0.00118	J	0.00469		0.00465		NA		NA	
Perfluorononanoic Acid	~	0.000527	J	0.00197	U	0.00147	J	0.00176	J	NA		NA	
Perfluorooctanesulfonamide	~	0.00194	U	0.00197	U	0.00178	U	0.00178	U	NA		NA	
Perfluorooctanesulfonic acid	0.07	0.0069		0.00197	U	0.00891		0.0113		NA		NA	
Perfluorooctanoic Acid	0.07	0.0241		0.000838	J	0.0348		0.0317		NA		NA	
Perfluoropentanoic Acid	~	0.0261		0.002		0.00522		0.0053		NA		NA	
Perfluorotetradecanoic Acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluorotridecanoic Acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Perfluoroundecanoic Acid	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	~	0.00194	U	0.00197	U	0.00183	U	0.00178	U	NA		NA	
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	~	0.0157	J	0.00908	J	0.121	U	0.0069	U	NA		NA	

Notes provided on Page 2.

Table 5B
Remedial Investigation Report
Groundwater Sample Analytical Results - Emerging Contaminants

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:

1. Regulatory criteria do not exist for per- and polyfluoroalkyl substances (PFAS) and 1,4-Dioxane in New York State. Perflourooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) are compared to the United States Environmental Protection Agency (USEPA) health advisory limit of 70 parts per trillion.
2. Only detected analytes are shown in the table.
3. Analytes detected with concentrations above the USEPA Health Advisory Limit are bolded and shaded.
4. Analytical results with reporting limits (RL) above USEPA Health Advisory Limit are italicized.
5. Sample GWDUP01_101618 is a duplicate sample of MW07_101618 and sample GWDUP01_101718 is a duplicate sample of MW07_101718.
6. ~ = Regulatory limit for this analyte does not exist
7. µg/L = micrograms per liter
8. NA = Not Analyzed

Qualifiers:

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

Table 6A
Remedial Investigation Report
Soil Vapor Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location	AA01		SV01		SV02		SV03	
Sample ID	AA01_100818		SV01_100818		SV02_100818		SV03_100818	
Laboratory ID	L1840663-11		L1840663-04		L1840663-05		L1840663-06	
Sample Date	10/8/2018		10/8/2018		10/8/2018		10/8/2018	
Sample Type	AA		SV		SV		SV	
Volatile Organic Compounds (µg/m³)								
1,1,1-Trichloroethane	0.109	U	5.46	U	5.46	U	5.46	U
1,1,2,2-Tetrachloroethane	1.37	U	6.87	U	6.87	U	6.87	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.53	U	7.66	U	7.66	U	7.66	U
1,1,2-Trichloroethane	1.09	U	5.46	U	5.46	U	5.46	U
1,1-Dichloroethane	0.809	U	4.05	U	4.05	U	4.05	U
1,1-Dichloroethene	0.079	U	3.96	U	3.96	U	3.96	U
1,2,4-Trichlorobenzene	1.48	U	7.42	U	7.42	U	7.42	U
1,2,4-Trimethylbenzene	0.983	U	8.16		5.01		4.92	U
1,2-Dibromoethane (Ethylene Dibromide)	1.54	U	7.69	U	7.69	U	7.69	U
1,2-Dichlorobenzene	1.2	U	6.01	U	6.01	U	6.01	U
1,2-Dichloroethane	0.809	U	4.05	U	4.05	U	4.05	U
1,2-Dichloropropane	0.924	U	4.62	U	4.62	U	4.62	U
1,2-Dichlorotetrafluoroethane	1.4	U	6.99	U	6.99	U	6.99	U
1,3,5-Trimethylbenzene (Mesitylene)	0.983	U	4.92	U	4.92	U	4.92	U
1,3-Butadiene	0.442	U	2.21	U	2.21	U	2.21	U
1,3-Dichlorobenzene	1.2	U	6.01	U	6.01	U	6.01	U
1,4-Dichlorobenzene	1.2	U	6.01	U	6.01	U	6.01	U
1,4-Dioxane (P-Dioxane)	0.721	U	3.6	U	3.6	U	3.6	U
2,2,4-Trimethylpentane	0.934	U	4.67	U	4.67	U	4.67	U
2-Hexanone	0.82	U	7.62		13.2		10.1	
4-Ethyltoluene	0.983	UJ	4.92	UJ	4.92	UJ	4.92	UJ
Acetone	17.1	J	687	J	865		793	
Allyl Chloride (3-Chloropropene)	0.626	U	3.13	U	3.13	U	3.13	U
Benzene	0.655		3.19	U	3.19	U	3.19	U
Benzyl Chloride	1.04	U	5.18	U	5.18	U	5.18	U
Bromodichloromethane	1.34	U	6.7	U	6.7	U	6.7	U
Bromoethene	0.874	U	4.37	U	4.37	U	4.37	U
Bromoform	2.07	U	10.3	U	10.3	U	10.3	U
Bromomethane	0.777	U	3.88	U	3.88	U	3.88	U
Carbon Disulfide	0.623	U	3.11	U	4.24		3.11	U
Carbon Tetrachloride	0.497		6.29	U	6.29	U	6.29	U
Chlorobenzene	0.921	U	4.61	U	4.61	U	4.61	U
Chloroethane	0.528	U	2.64	U	2.64	U	2.64	U
Chloroform	0.977	U	4.88	U	4.88	U	4.88	U
Chloromethane	1.14		2.07	U	2.07	U	2.07	U
Cis-1,2-Dichloroethylene	0.079	U	3.96	U	3.96	U	3.96	U
Cis-1,3-Dichloropropene	0.908	U	4.54	U	4.54	U	4.54	U
Cyclohexane	0.688	U	3.44	U	3.44	U	3.44	U
Dibromochloromethane	1.7	U	8.52	U	8.52	U	8.52	U
Dichlorodifluoromethane	2.31		4.94	U	4.94	U	4.94	U
Ethanol	11.4		47.1	U	47.1	U	47.1	U
Ethyl Acetate	1.8	U	9.01	U	9.01	U	9.01	U
Ethylbenzene	0.869	U	4.34	U	4.56		4.34	U
Hexachlorobutadiene	2.13	U	10.7	U	10.7	U	10.7	U
Isopropanol	2.01		6.42		10.3		6.88	
M,P-Xylene	2.27		12.6		14.6		13	
Methyl Ethyl Ketone (2-Butanone)	1.47	U	48.4		86.4		67.8	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.05	U	10.2	U	10.2	U	10.2	U
Methylene Chloride	1.74	U	8.69	U	8.69	U	8.69	U
n-Heptane	0.82	U	5.9		6.88		6.8	
n-Hexane	0.863		7.26		6.8		5.36	
o-Xylene (1,2-Dimethylbenzene)	0.869	U	5.43		5.91		5.04	
Styrene	0.852	U	4.26	U	4.26	U	4.26	U
Tert-Butyl Alcohol	1.52	U	13.5		17.3		12.5	
Tert-Butyl Methyl Ether	0.721	U	3.61	U	3.61	U	3.61	U
Tetrachloroethene (PCE)	1.3		12.2		26.9		7.39	
Tetrahydrofuran	1.47	U	7.37	U	7.37	U	7.37	U
Toluene	4.94		17.3		17.7		18.7	
Trans-1,2-Dichloroethene	0.793	U	3.96	U	3.96	U	3.96	U
Trans-1,3-Dichloropropene	0.908	U	4.54	U	4.54	U	4.54	U
Trichloroethene (TCE)	0.15		5.37	U	5.37	U	5.37	U
Trichlorofluoromethane	1.2		5.62	U	5.62	U	5.62	U
Vinyl Chloride	0.051	U	2.56	U	2.56	U	2.56	U
Total VOCs (µg/m³)	45.8		832		1,100		950	

Notes provided on Page 2.

Table 6A
Remedial Investigation Report
Soil Vapor Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:

1. µg/m³ = micrograms per cubic meter
2. SV = soil vapor
3. AA = ambient air
4. VOC = volatile organic compound

Qualifiers:

J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

Table 6B
Remedial Investigation Report
Sub-Slab Soil Vapor and Indoor Air Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Location		IA01		SSV01		IA02		SSV02		IA03		SSV03		SSV03	
Sample ID	NYSDOH	IA01_100818		SSV01_100818		IA02_100818		SSV02_100818		IA03_100818		SSV03_100818		SSVDUP01_100818	
Laboratory ID	Decision	L1840663-07		L1840663-01		L1840663-08		L1840663-02		L1840663-09		L1840663-03		L1840663-10	
Sample Date	Matrix	10/8/2018		10/8/2018		10/8/2018		10/8/2018		10/8/2018		10/8/2018		10/8/2018	
Sample Type		IA		SSV		IA		SSV		IA		SSV		SSV	
Volatile Organic Compounds (µg/m³)															
1,1,1-Trichloroethane	B	0.109	U	5.46	U	0.109	U	21.9	U	0.109	U	10.9	U	5.46	U
1,1,2,2-Tetrachloroethane	~	1.37	U	6.87	U	1.37	U	27.6	U	1.37	U	13.7	U	6.87	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	1.53	U	7.66	U	1.53	U	30.8	U	1.53	U	15.3	U	7.66	U
1,1,2-Trichloroethane	~	1.09	U	5.46	U	1.09	U	21.9	U	1.09	U	10.9	U	5.46	U
1,1-Dichloroethane	~	0.809	U	4.05	U	0.809	U	16.3	U	0.809	U	8.09	U	4.05	U
1,1-Dichloroethene	A	0.079	U	3.96	U	0.079	U	15.9	U	0.079	U	7.93	U	3.96	U
1,2,4-Trichlorobenzene	~	1.48	U	7.42	U	1.48	U	29.8	U	1.48	U	14.8	U	7.42	U
1,2,4-Trimethylbenzene	~	0.983	U	4.92	U	0.983	U	19.8	U	0.983	U	9.83	U	4.92	U
1,2-Dibromoethane (Ethylene Dibromide)	~	1.54	U	7.69	U	1.54	U	30.9	U	1.54	U	15.4	U	7.69	U
1,2-Dichlorobenzene	~	1.2	U	6.01	U	1.2	U	24.2	U	1.2	U	12	U	6.01	U
1,2-Dichloroethane	~	0.809	U	4.05	U	0.809	U	16.3	U	0.809	U	8.09	U	4.05	U
1,2-Dichloropropane	~	0.924	U	4.62	U	0.924	U	18.6	U	0.924	U	9.24	U	4.62	U
1,2-Dichlorotetrafluoroethane	~	1.4	U	6.99	U	1.4	U	28.1	U	1.4	U	14	U	6.99	U
1,3,5-Trimethylbenzene (Mesitylene)	~	0.983	U	4.92	U	0.983	U	19.8	U	0.983	U	9.83	U	4.92	U
1,3-Butadiene	~	0.442	U	2.21	U	0.442	U	8.89	U	0.442	U	4.42	U	2.21	U
1,3-Dichlorobenzene	~	1.2	U	6.01	U	1.2	U	24.2	U	1.2	U	12	U	6.01	U
1,4-Dichlorobenzene	~	1.2	U	6.01	U	1.2	U	24.2	U	1.2	U	12	U	6.01	U
1,4-Dioxane (P-Dioxane)	~	0.721	U	3.6	U	0.721	U	14.5	U	0.721	U	7.21	U	3.6	U
2,2,4-Trimethylpentane	~	1.01		4.67	U	0.934	U	18.8	U	0.981		9.34	U	4.67	U
2-Hexanone	~	0.82	U	4.1	U	0.82	U	16.5	U	0.82	U	8.2	U	4.1	U
4-Ethyltoluene	~	0.983	UJ	4.92	UJ	0.983	UJ	19.8	UJ	0.983	UJ	9.83	UJ	4.92	UJ
Acetone	~	14.4	J	47.3	J	13.5	J	47.7	U	14.1	J	27.8		27.1	
Allyl Chloride (3-Chloropropene)	~	0.626	U	3.13	U	0.626	U	12.6	U	0.626	U	6.26	U	3.13	U
Benzene	~	0.674		3.19	U	0.652		12.8	U	0.639	U	6.39	U	3.19	U
Benzyl Chloride	~	1.04	U	5.18	U	1.04	U	20.8	U	1.04	U	10.4	U	5.18	U
Bromodichloromethane	~	1.34	U	6.7	U	1.34	U	26.9	U	1.34	U	13.4	U	6.7	U
Bromoethene	~	0.874	U	4.37	U	0.874	U	17.6	U	0.874	U	8.74	U	4.37	U
Bromoform	~	2.07	U	10.3	U	2.07	U	41.6	U	2.07	U	20.7	U	10.3	U
Bromomethane	~	0.777	U	3.88	U	0.777	U	15.6	U	0.777	U	7.77	U	3.88	U
Carbon Disulfide	~	0.623	U	3.11	U	0.623	U	12.5	U	0.623	U	6.23	U	3.11	U
Carbon Tetrachloride	A	0.459		6.29	U	0.459		25.3	U	**0.472**		12.6	U	**11.3**	
Chlorobenzene	~	0.921	U	4.61	U	0.921	U	18.5	U	0.921	U	9.21	U	4.61	U
Chloroform	~	0.977	U	29.4		0.977	U	19.6	U	0.977	U	9.77	U	6.35	
Chloromethane	~	1.03		2.07	U	1.05		8.3	U	1.04		4.13	U	2.07	U
Cis-1,2-Dichloroethene	A	0.079	U	3.96	U	0.079	U	15.9	U	0.079	U	7.93	U	3.96	U
Cis-1,3-Dichloropropene	~	0.908	U	4.54	U	0.908	U	18.3	U	0.908	U	9.08	U	4.54	U
Cyclohexane	~	0.688	U	3.44	U	0.688	U	13.8	U	0.688	U	6.88	U	3.44	U
Dibromochloromethane	~	1.7	U	8.52	U	1.7	U	34.2	U	1.7	U	17	U	8.52	U
Dichlorodifluoromethane	~	2.48		4.94	U	2.54		19.9	U	2.58		9.89	U	4.94	U
Ethanol	~	10.5		47.1	U	9.42	U	188	U	12.2		94.2	U	47.1	U
Ethyl Acetate	~	1.8	U	9.01	U	1.8	U	36	U	1.8	U	18	U	9.01	U
Ethyl Chloride	~	0.528	U	2.64	U	0.528	U	10.6	U	0.528	U	5.28	U	2.64	U
Ethylbenzene	~	0.869	U	4.34	U	0.869	U	17.5	U	0.869	U	8.69	U	4.34	U
Hexachlorobutadiene	~	2.13	U	10.7	U	2.13	U	42.9	U	2.13	U	21.3	U	10.7	U
Isopropanol	~	2.01		6.15	U	3.07		24.6	U	2.03	J	12.3	U	6.15	U
M,P-Xylene	~	2.6		10.4		2.23		34.9	U	2.35		17.4	U	9.99	
Methyl Ethyl Ketone (2-Butanone)	~	1.47	U	7.37	U	1.47	U	29.5	U	1.47	U	14.7	U	7.37	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	2.05	U	10.2	U	2.05	U	41	U	2.05	U	20.5	U	10.2	U
Methylene Chloride	B	1.74	U	8.69	U	1.74	U	34.7	U	1.74	U	17.4	U	8.69	U
n-Heptane	~	0.992		4.1	U	0.897		16.5	U	1		8.2	U	4.1	U
n-Hexane	~	1.14		3.52	U	0.902		14.2	U	1.09		7.05	U	3.52	U
o-Xylene (1,2-Dimethylbenzene)	~	0.877		4.34	U	0.869	U	17.5	U	0.869	U	8.69	U	4.34	U
Styrene	~	0.852	U	4.26	U	0.852	U	17.1	U	0.852	U	8.52	U	4.26	U
Tert-Butyl Alcohol	~	1.52	U	7.58	U	1.52	U	30.3	U	1.52	U	15.2	U	7.58	U
Tert-Butyl Methyl Ether	~	0.721	U	3.61	U	0.721	U	14.5	U	0.721	U	7.21	U	3.61	U
Tetrachloroethene (PCE)	B	1.44		64.6		6.66		8,270		1.47		3,420		2,860	
Tetrahydrofuran	~	1.47	U	7.37	U	1.47	U	29.5	U	1.47	U	14.7	U	7.37	U
Toluene	~	6.29		10.6		5.65		15.1	U	5.92		8.06		7.24	
Trans-1,2-Dichloroethene	~	0.793	U	3.96	U	0.793	U	15.9	U	0.793	U	7.93	U	3.96	U
Trans-1,3-Dichloropropene	~	0.908	U	4.54	U	0.908	U	18.3	U	0.908	U	9.08	U	4.54	U
Trichloroethene (TCE)	A	0.177		5.37	U	0.296		21.6	U	0.156		21.8		22.3	
Trichlorofluoromethane	~	1.36		5.62	U	1.32		22.6	U	2.24		11.2	U	5.62	U
Vinyl Chloride	C	0.051	U	2.56	U	0.051	U	10.3	U	0.051	U	5.11	U	2.56	U
Total VOCs	~	47.4		162		39.2		8,270		47.6		3,480		2,940	

Notes provided on Page 2.

Table 6B
Remedial Investigation Report
Sub-Slab Soil Vapor and Indoor Air Sample Analytical Results

37-11 30th Street
Long Island City, New York
BCP Site No.: C241211
Langan Project No.: 170512301

Notes:

1. Co-located sub-slab vapor and indoor air sample analytical results are evaluated with 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).
2. For indoor air samples, 1,1,1-Trichloroethane, 1,1-Dichloroethene, Carbon tetrachloride, cis-1,2-Dichloroethene, Tetrachloroethene, Trichloroethene, and Vinyl chloride, were analyzed for TO-15 VOCs by Selected Ion Monitoring.
3. Detected analytical results evaluated to recommend monitoring are bolded.
4. Detected analytical results evaluated to recommend mitigation are shaded.
5. Sample SSVDUP01_100818 is a duplicate of parent sample SSV03_100818.
6. ~ = Regulatory limit for this analyte does not exist
7. µg/m³ = micrograms per cubic meter
8. SSV = sub-slab vapor
9. IA = indoor air

Qualifiers:

J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

APPENDIX A

PREVIOUS ENVIRONMENTAL REPORTS

SEPARATE ATTACHMENT

APPENDIX B

GEOPHYSICAL SURVEY REPORTS

GEOPHYSICAL ENGINEERING SURVEY REPORT

Commercial Site
37-11 30th Street,
Long Island City, New York 11101

NOVA PROJECT NUMBER
18-0960

DATED
October 8, 2018

PREPARED FOR:

LANGAN
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001

PREPARED BY:

NOVA
GEOPHYSICAL
ENGINEERING
Subsurface Mapping Solutions
56-01 Marathon Parkway # 765
Douglaston, New York 11362
347-556-7787 (PHONE)
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NOVA GEOPHYSICAL SERVICES

SUBSURFACE MAPPING SOLUTIONS
56-01 Marathon Parkway #765, Douglaston, New York 11362
Ph. 347-556-7787 Fax. 718-261-1527
www.nova-gsi.com

October 8, 2018

Emily Snead, PG
Project Scientist
LANGAN
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001
Direct: 212.479.5432
Mobile: 508.918.8558

Re: Geophysical Engineering Survey (GES) Report
Commercial Site
37-11 30th Street,
Long Island City, New York 11101

Dear Ms. Snead,

Nova Geophysical Services (NOVA) is pleased to provide the findings of the geophysical engineering survey (GES) at the above referenced project site: 37-11 30th Street, Long Island City, New York (the "Site").

INTRODUCTION TO GEOPHYSICAL ENGINEERING SURVEY (GES)

NOVA performed a geophysical engineering survey (GES) consisting of a Ground Penetrating Radar (GPR) and Electromagnetic (EM) survey at the site. The purpose of this survey is to locate and identify utilities, underground storage tanks and other substructures on September 26th, 2018.

The equipment selected for this investigation was a Sensors and Software Noggin 250 MHz ground penetrating radar (GPR) with a shielded antenna and a Radio Detection RD7100 Electromagnetic utility locator.

A GPR system consists of a radar control unit, control cable, and transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 250 MHz. The trigger pulse is sent to the transmitter electronics in the transduce via the control cable. The transmitter electronics amplify the trigger pulse into bipolar pulses that are radiated to the surface. The transformed pulses vary in shape and frequency according to the transducer used. In the

subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit and are represented as color graphic images for interpolation.

A typical electromagnetic (EM) utility locating system consists of a transmitter unit and a receiver unit. The receiver unit can be used independently of the transmitter unit in order to detect utility lines with an inherent EM signature (electric utility lines, water lines, etc.). If needed a current at a specific frequency can also be placed on a utility that is being located. This can be done via the transmitter unit by either direct connection or induction via an EM field varying at specific frequency. The receiver unit is then set to the selected frequency and the electromagnetic field created by the current running through the utility can be located allowing the utility to be marked.

GEOPHYSICAL METHODS

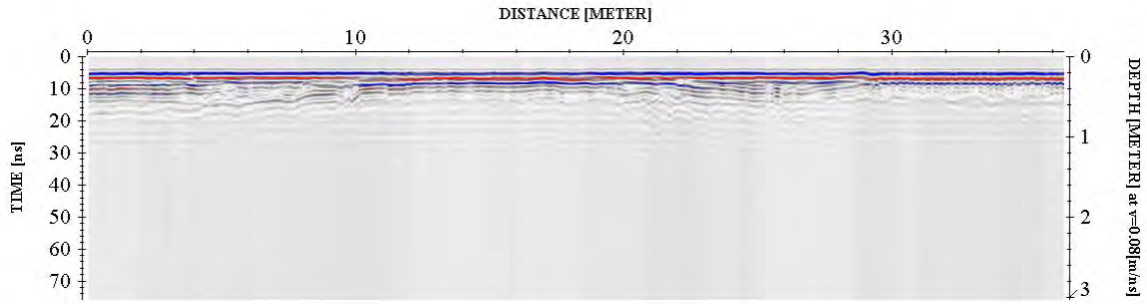
The project site was screened using GPR to search the specified area and inspected for reflections, which could be indicative of substructures and utilities within the subsurface. An EM utility locator was used to help determine the locations of utilities within the survey area.

EM data was collected and interpreted on site and suspected utilities marked as needed. GPR data profiles were collected for the areas of the Site specified by the client and processed as specified below.

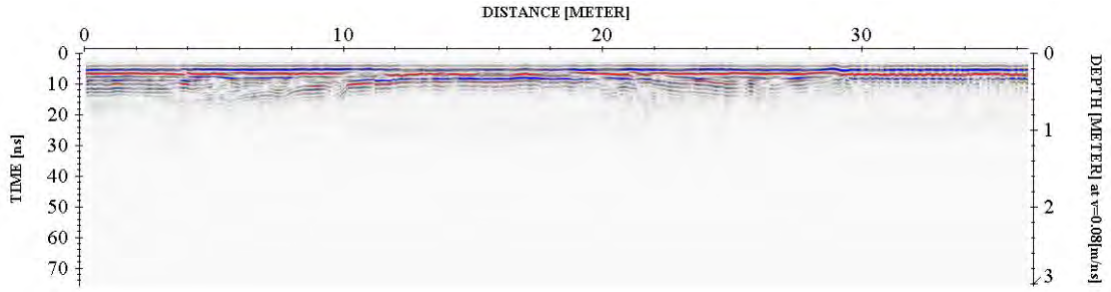
DATA PROCESSING

In order to improve the quality of the results and to better identify anomalies NOVA processed the collected data. The processing work flow is briefly described in this section.

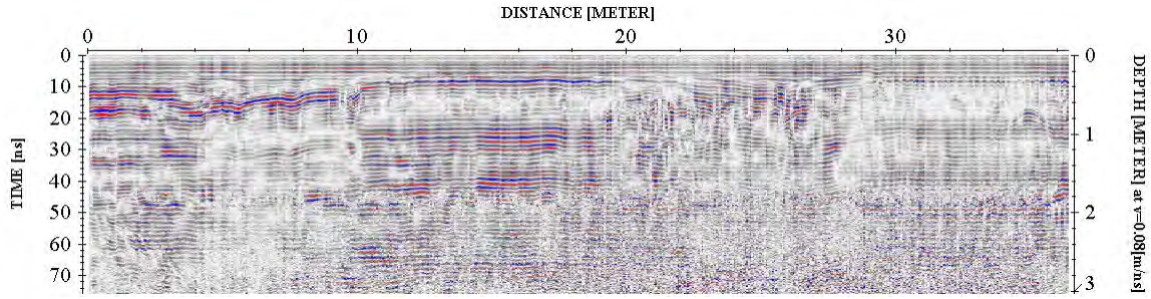
Step 1. Import Raw RAMAC data to standard processing format



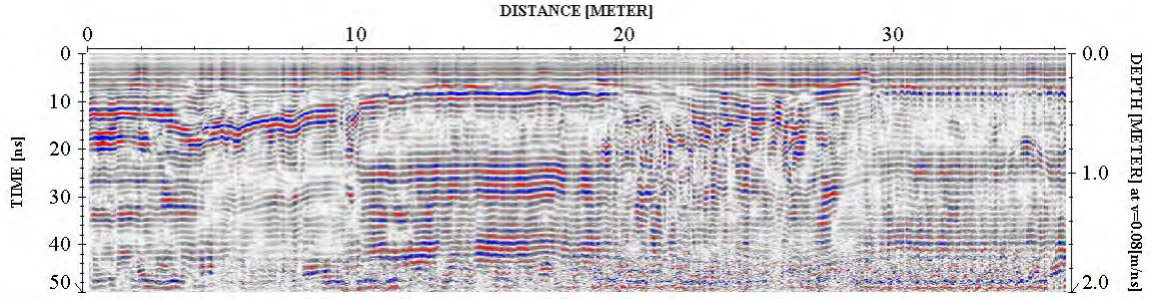
Step 2. Remove instrument noise *(dewow)*



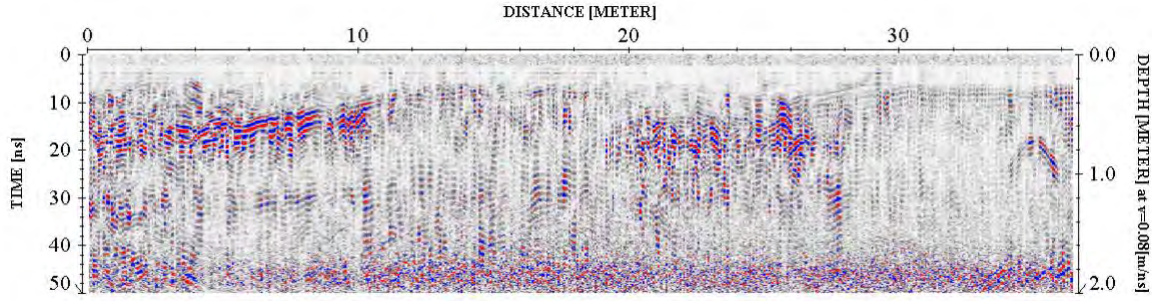
Step 3. Correct for attenuation losses *(energy decay function)*



Step 4. Remove static from bottom of profile *(time cut)*



Step 5. Mute horizontal ringing/noise *(subtracting average)*



The above example shows the significance of data processing. The last image (step 5) has higher resolution than the starting image (raw data – step 1) and represents the subsurface anomalies much more accurately.

PHYSICAL SETTINGS

NOVA observed the following physical conditions at the time of the survey.

Weather: Overcast, Rain

Temperature: 75° F

Surface: Concrete, Asphalt

Geophysical Noise Level: Geophysical noise at the site was high due to being in an urban environment.

RESULTS

The results of the geophysical engineering survey (GES) identified the following at the project site:

- Subsurface utilities; Sewer, water, gas, and electric were identified during the GES. These anomalies are shown in the survey plan.
- The GES identified two (2) anomalies at the site. However, due to high level geophysical noise activitiy at the time of the survey, NOVA could not verify the nature of these reflections (anomalies). Further investigation of these areas with CSUL and GPR indicated that they were associated suspected fill ports. These areas are shown in the survey plan.
- Multiple drywells were identified and are shown in the survey plan.
- Two partial basements were identified and their locations are shown in the survey plan.
- All detected subsurface anomalies were marked in the onsite mark out.
- All cleared boring locations were marked in the onsite mark out.

If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

NOVA Geophysical Services

Levent Eskicakit, P.G., E.P.

Project Engineer

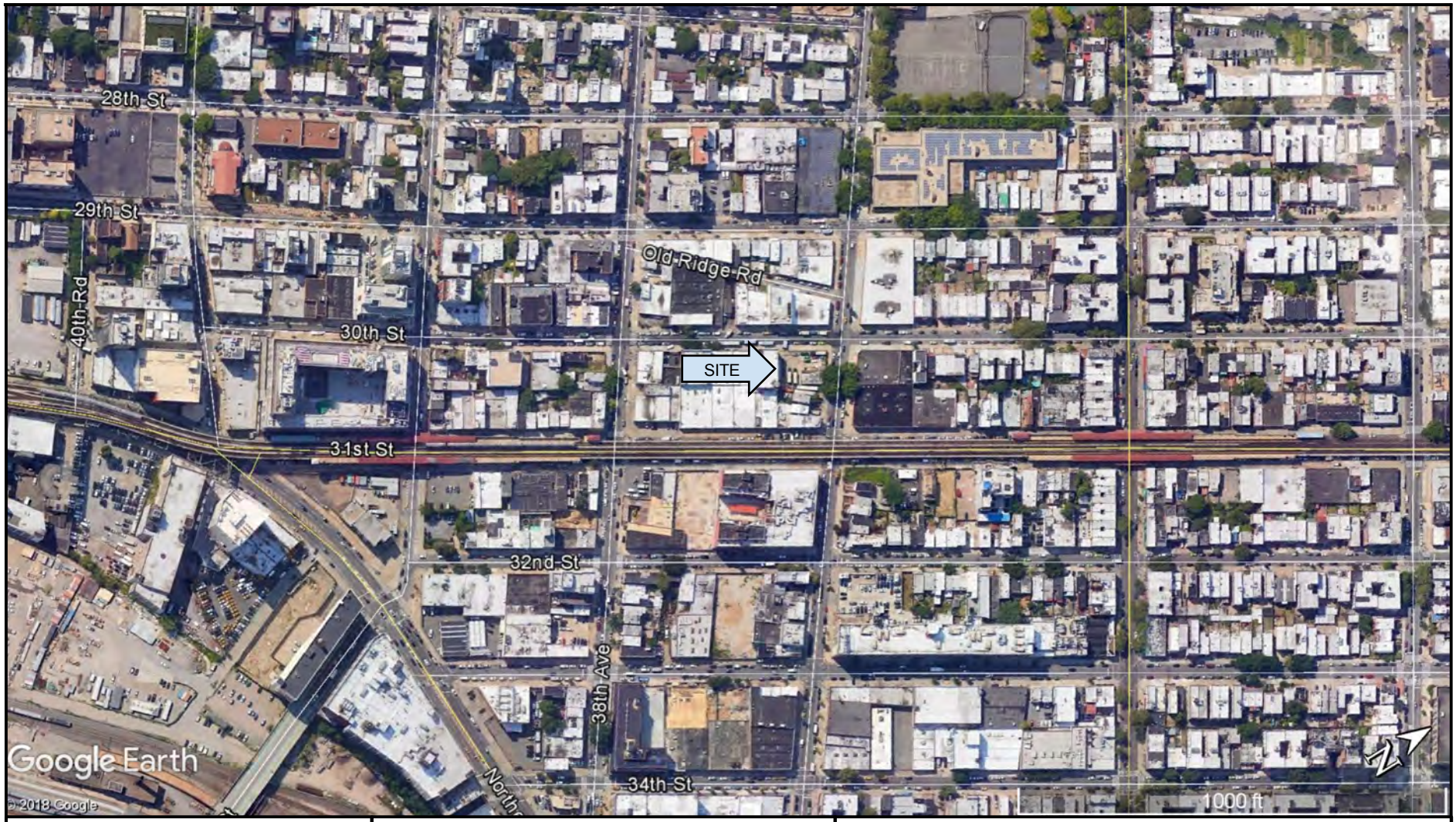
Attachments:

Geophysical Images

Survey Plan 1

Survey Plan 2

Location Map



NOVA Geophysical Services

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Douglaston, New York 11362
Phone (347) 556-7787 * Fax (718) 261-1527
www.nova-gsi.com

SURVEY PLAN

SITE:	**Commercial Site** 37-11 30th Street, Long Island City, New York 11101
CLIENT:	Langan
DATE:	September 26, 2018
AUTH:	Chris Steinley

LEGEND

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SURVEY PLAN

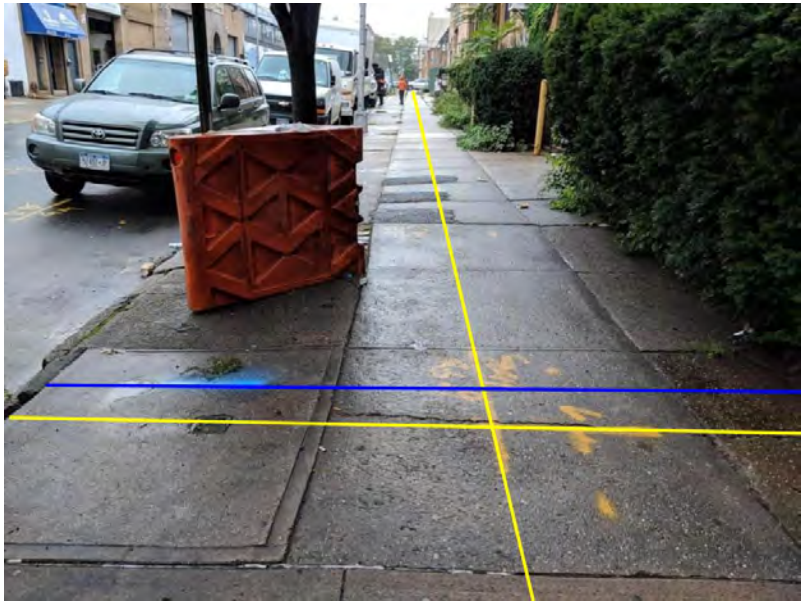
SITE:	**Commercial Site** 37-11 30th Street, Long Island City, New York 11101
CLIENT:	Langan
DATE:	September 26, 2018
AUTH:	Chris Steinley

LEGEND

- Survey Area
- Water
- Sewer
- Gas
- Electric
- Drywell
- Geophysical Anomaly
- Anomaly Line
- Suspected Fill Port

GEOPHYSICAL IMAGES

Commercial Site
37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018



GEOPHYSICAL IMAGES

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September 26th, 2018

GEOPHYSICAL IMAGES

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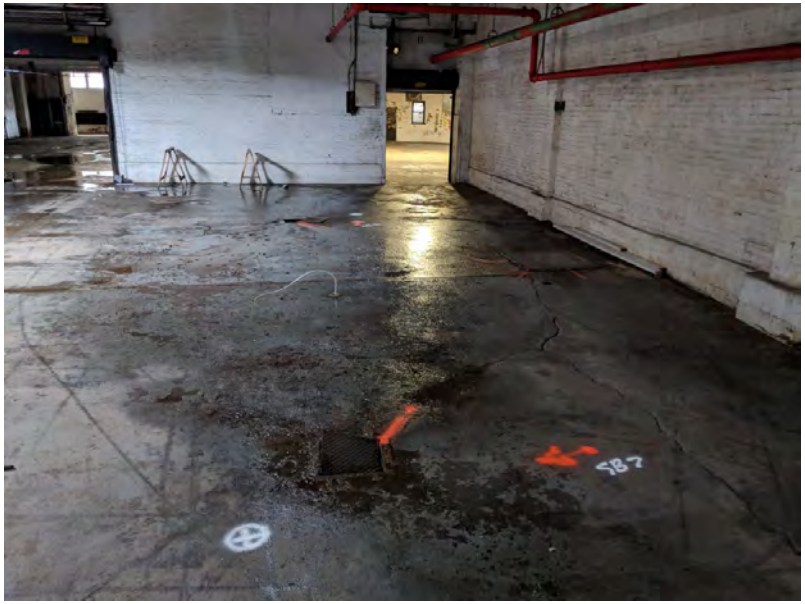
September 26th, 2018



GEOPHYSICAL IMAGES

Commercial Site
37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018

GEOPHYSICAL IMAGES

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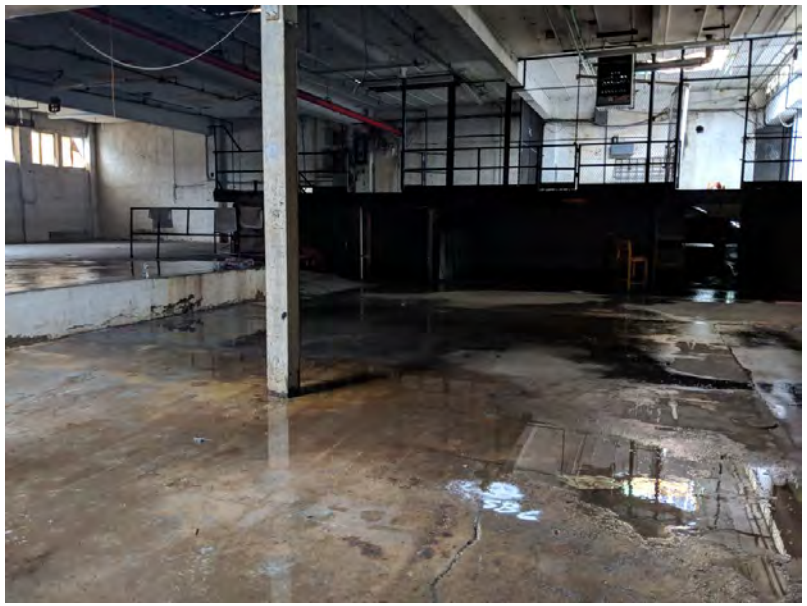
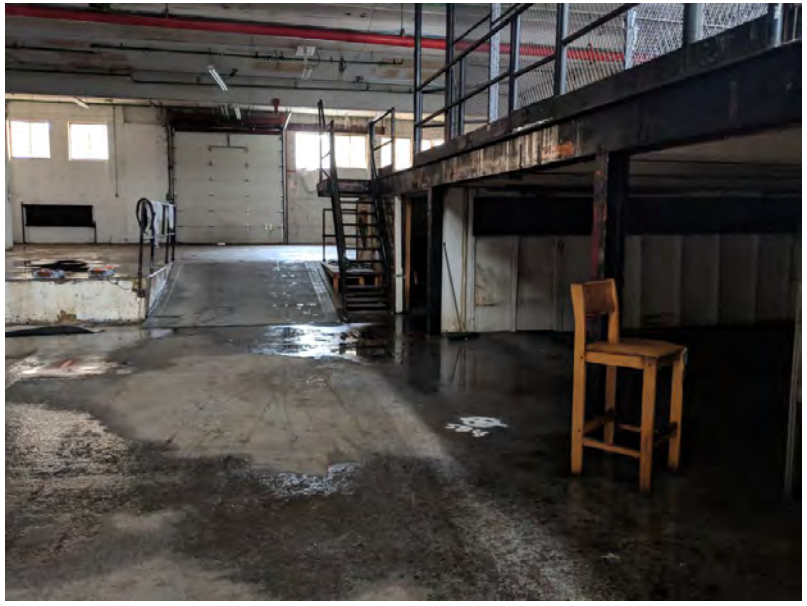
September 26th, 2018





GEOPHYSICAL IMAGES

Commercial Site
37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018

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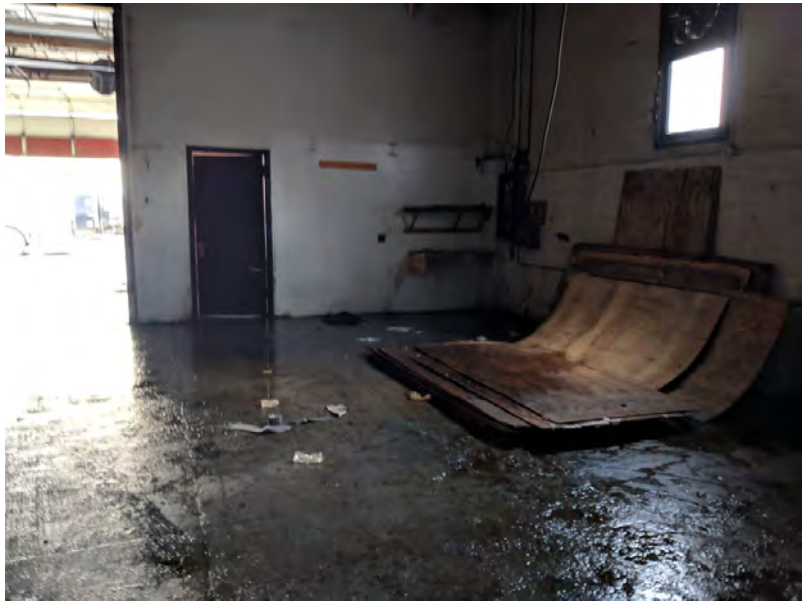
Long Island City, New York 11101
September 26th, 2018



GEOPHYSICAL IMAGES

Commercial Site
37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018

GEOPHYSICAL IMAGES

Commercial Site
37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018

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Commercial Site
37-11 30th Street,
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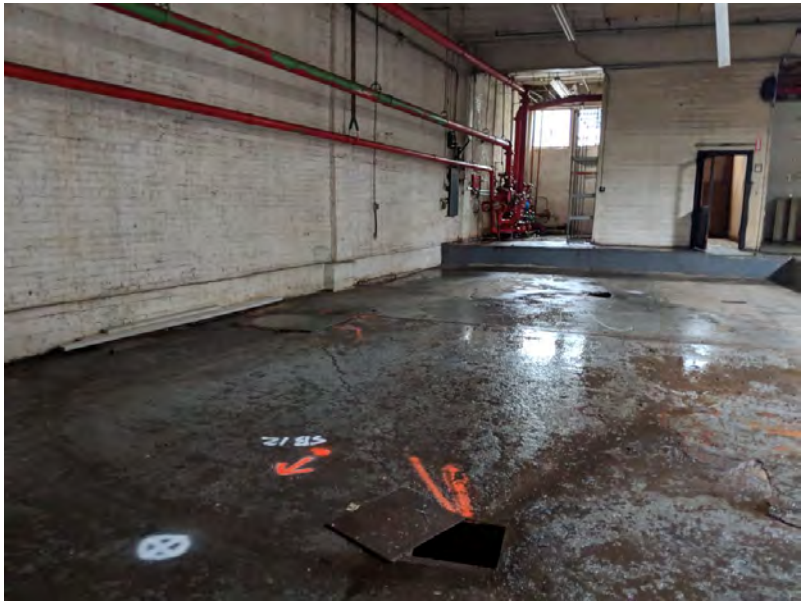
September 26th, 2018



GEOPHYSICAL IMAGES

Commercial Site

37-11 30th Street,
Long Island City, New York 11101
September 26th, 2018

APPENDIX C

SOIL BORING LOGS

LANGAN

Log of Boring **SB01** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 44.22 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/4/18 — Date Finished: 10/4/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 40 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 8 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 26 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+44.2		10" CONCRETE slab	0						
	+43.4		R1a (0-21") red-brown to dark brown fine SAND, some silt (moist) [FILL]	1	R1	MACROCORE	36	NA	0.1	Collect SB01_0.5-1.5 at 7:45
				2					0.7	Collect SB01_1.5-2 at 7:48
									0.0	Collect SB01_2-3 at 7:49
			R1b (21-36") light brown fine SAND (dry) [FILL]	3					0.0	
									0.0	
				4					0.0	
				5						
				6						
				7						Collect SB01_6.5-7.5 at 7:53
										Collect SB01_7-8 at 7:52
			R2a (0-10") gray fine SAND, trace coarse sand, trace fine gravel (dry) [FILL]	8	R2	MACROCORE	32	NA	0.0	Collect SB01_7.5-8.5 at 7:55
	+35.9		R2b (10-12") dark brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (moist) [FILL]						0.0	
									0.0	Collect SB01_8.5-9.5 at 8:01
				9					0.0	
	+34.6		R2c (12-28") light brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry)						0.0	Collect SB01_9.5-10.5 at 8:02
			R2d (28-32") soft tan SILT, wood (dry)	10						
				11						
	+32.3			12	R3	MACROCORE	37	NA	0.0	Collect SB01_12-13 at 8:05
									0.0	
			R3a (0-12") tan fine SAND, trace silt, trace clay (dry)	13					0.0	Collect SB01_13-14 at 8:07
									0.0	
			R3b (12-16") gray to tan fine SAND (dry)	14					0.0	Collect SB01_14-15 at 8:09
			R3c (16-37") light brown fine SAND, trace coarse sand, trace fine gravel (dry to moist)						0.0	
				15						
				16						
			R4a (0-10") to dense light brown fine SAND, trace coarse sand, trace fine gravel (dry)	17	R4	MACROCORE	38	NA	0.0	
			R4b (10-38") tan fine SAND (dry)						0.0	
				18					0.0	
									0.0	
				19					0.0	
									0.0	
				20						

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Log of Boring **SB01** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.22 NAVD88 (top of casing)

MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+24.2			20						
				21						
			R5a (0-14") tan fine SAND (dry)	22	R5	MACROCORE	36	NA	0.0	
			R5b (14-36") light brown fine SAND, trace medium sand, trace fine gravel, trace coarse-fine gravel (dry)	23					0.0	
				24					0.0	
				25					0.0	
			R6 (0-47") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet)	26	R6	MACROCORE	47	NA	0.0	Water Table at about 26 feet bgs Collect SB01_26-27 at 8:30
				27					0.0	
				28					0.0	
				29					0.0	
				30					0.0	
			R7 (0-48") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet)	31	R7	MACROCORE	48	NA	0.0	
				32					0.0	
				33					0.0	
				34					0.0	
				35					0.0	
			R8a (0-21") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet) R8b (21-29") brown to orange fine SAND, trace coarse sand, trace fine gravel (wet)	36	R8	MACROCORE	55	NA	0.0	
				37					0.0	
				38					0.0	
			R8c (29-55") brown fine SAND, trace coarse sand, trace fine gravel, 3 1-inch clay lenses 1-foot from end of recovery (wet)	39					0.0	
	+4.2			40					0.0	End of boring at 40 feet bgs. Monitoring well MW01 installed in borehole. See Monitoring Well Construction Log for details.
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB02** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 43.65 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/4/18 — Date Finished: 10/4/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 35 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 7 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 25 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+43.7			0						
	+43.3		R1a (0-4") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) [FILL] R1b (4-10") light brown to orange-brown SILT (moist) [FILL] R1c (10-48") brown medium SAND, trace fine sand, trace coarse sand, trace fine gravel (dry) [FILL]	1	R1	MACROCORE	48	NA	0.0	Collect SB02_0-1 at 12:59 Collect SB02_0.5-1.5 at 13:00
				2					0.0	Collect SB02_1-2 at 13:00
				3					0.0	Collect SB02_3-4 at 13:04 (R1)
				4					0.0	Collect SB02_3-4 at 13:05 (WC)
				5						
				6						
	+37.2		R2a (0-31") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) R2b (31-43") brown fine SAND, some silt (dry)	7	R2	MACROCORE	43	NA	0.0	Collect SB02_7-8 at 13:06
				8					0.0	Collect SB02_8-9 at 13:08
				9					0.0	Collect SB02_9-10 at 13:10
				10						
			R3 (0-44") light brown fine SAND, trace coarse sand, trace fine gravel (dry)	11	R3	MACROCORE	44	NA	0.0	
				12					0.0	Collect SB02_12-13 at 13:11
				13					0.0	Collect SB02_13_14 at 13:13
				14					0.0	Collect SB02_14-15 at 13:15
				15						
			R4a (0-24") light brown fine SAND, some medium sand R4b (24-48") gray fine SAND, some medium sand	16	R4	MACROCORE	48	NA	0.0	
				17					0.0	
				18					0.0	
				19					0.0	
				20					0.0	

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Log of Boring **SB02** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	43.65 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+23.7		R5 (0-60") light brown fine SAND, some medium sand (wet)	20					0.0	
				21					0.0	
				22	R5	MACROCORE	60	NA	0.0	
				23					0.0	
				24					0.0	
				25 ▽					0.0	
			R6 (0-60") light brown medium SAND, some fine sand, trace coarse sand, trace fine gravel (wet)	26					0.0	Water Table at about 25 feet bgs Collect SB02_26-27 at 13:30
				27					0.0	
				28	R6	MACROCORE	60	NA	0.0	
				29					0.0	
				30					0.0	
			R7 (0-70") light brown medium SAND, some fine sand, trace coarse sand, trace fine gravel (wet)	31					0.0	
				32					0.0	
				33	R7	MACROCORE	60	NA	0.0	
				34					0.0	
	+8.7			35					0.0	End of boring at 35 feet bgs. MW02 was installed 23-35 feet bgs. See Monitoring Well Construction Log for details.
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB03** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 42.27 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/2/18 / Date Finished: 10/2/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 40 ft / Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 8 / Undisturbed N/A / Core N/A
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 23 / Completion ▼ N/A / 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+42.3			0						
	+41.9		4-inch CONCRETE slab							
			R1a (0-3") gray fine GRAVEL (dry) [FILL]						0.2	Collect SB03_0.5-1.5 at 9:20
			R1b (3-12") gray to black medium SAND, some fine gravel, trace coarse sand (dry) [FILL]	1					0.4	
			R1c (12-26") orange-brown fine SAND, some silt (dry) [FILL]						0.0	
				2					0.0	
					R1	MACROCORE	26	NA	0.0	
				3						Collect SB03_3-4 at 9:25
				4						
				5						Collect SB03_5-6 at 9:42
				6						
	+35.6		R2a (0-2") orange-brown fine SAND, some silt (dry) [FILL]						0.0	
			R2b (2-16") light brown fine SAND, trace coarse sand, trace fine gravel (dry)	7					8.2	Collect SB03_7-8 at 9:43
			R2c (16-42") tan fine SAND, trace coarse sand, trace fine gravel (dry)		R2	MACROCORE	42	NA	7.2	
				8					0.0	Collect SB03_8-9 at 9:44
									0.0	
				9					0.0	Collect SB03_9-10 at 9:45
									0.0	
				10					0.0	Collect SB03_10-11 at 9:50
									0.0	
			R3a (0-18") light brown fine SAND, trace coarse sand, trace fine gravel (dry)	11					0.0	Collect SB03_11-12 at 9:51
									0.0	
				12					0.0	
	+29.9		R3b (18-44") brown SILT, some interbedded fine sand, clay lenses at 44-50-inches (mosit)		R3	MACROCORE	50	NA	0.0	
				13					0.0	Collect SB03_13-14 at 9:52
									0.0	
				14					0.0	
	+27.8								0.0	
			R3c (44-50") brown fine SAND, some silt, trace clay (moist)	15						
			R4a (0-24") light brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry)						0.0	
				16					0.0	
									0.0	
				17					0.0	
					R4	MACROCORE	50	NA	0.0	
			R4b (24-32") light brown fine SAND, trace silt (dry)	18					0.0	
			R4c (32-50") fine SAND, some silt, 0.5-1-cm clay lenses (moist)						0.0	
				19					0.0	
									0.0	
				20						

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Log of Boring **SB03** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	42.27 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+22.3			20						
			R5a (0-14") brown fine SAND, trace coarse sand, trace fine gravel (dry)	21					0.0 0.1	
			R5b (14-50") brown fine SAND, trace coarse sand, trace silt (moist)	22	R5	MACROCORE	50	NA	2.1 0.0 0.0	Water Table at about 23 feet bgs Collect SB03_22.5-23.5 at 9:55
				23					0.0 0.0 0.0 0.0 0.0	
				24					0.0	
				25						Collect SB03_25-26 at 10:00
			R6 (0-52") brown fine SAND lenses, 3 1-inch medium sand lenses at 42-inches, 39-inches and 52-inches (wet)	26					22	
				27	R6	MACROCORE	52	NA	6.3 0.0 0.0	
				28					0.0 0.1	
				29					0.0 1.2	
				30						
			R7 (0-54") brown fine SAND, trace medium sand, trace silt, trace fine gravel (wet)	31					0.0 0.0	
				32	R7	MACROCORE	54	NA	0.0 0.0 0.0	Collect SB03_32-33 at 10:10
				33					0.0 0.0	
				34					0.0 0.0	
				35						
			R8 (0-44") brown fine SAND, trace medium sand (wet)	36					0.0	
				37	R8	MACROCORE	44	NA	0.0 0.0	
				38					0.0 0.0	
				39					0.0 0.0	
	+2.3			40						End of boring at 40 feet bgs. MW03 was installed 32 feet bgs. See Monitoring Well Construction Log for details.
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB04** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 44.25 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/1/18 / Date Finished: 10/1/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 35 ft / Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 7 / Undisturbed N/A / Core N/A
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 24 / Completion ▼ N/A / 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+42.3			0						
	+41.8		6-inch CONCRETE slab						0.0	Collect SB04_0-1 at 12:10
			R1a (0-12") dark brown fine SAND, trace silt, trace medium sand, trace fine gravel, trace coarse sand, brick, coal (dry) [FILL]	1					0.0	Collect SB04_1-2 at 12:10
			R1b (12-21") brown/reddish-brown fine SAND, trace coarse sand, trace fine gravel, trace silt (dry) [FILL]	2	R1	MACROCORE	33	NA	0.0	Collect SB04_2-3 at 12:10
			R1c (21-33") light brown quick SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) [FILL]	3					5.0	
				4					0.0	
				5						
				6						Collect SB04_6-7 at 12:20
	+35.1			7						
			R2a (0-24") tan fine SAND, trace coarse sand, trace fine gravel (dry)		R2	MACROCORE	34	NA	0.0	
				8					0.0	Collect SB04_8-9 at 12:20
			R2b (24-34") brown fine SAND, some silt, trace coarse sand, trace fine gravel (dry)	9					0.0	
				10					0.0	
				11						
				12						Collect SB04_12-13 at 12:30
			R3a (0-8") brown fine SAND, some silt, trace clay, trace coarse sand, trace fine gravel (dry)			MACROCORE	33	NA	0.0	
			R3b (8-35") tan fine SAND, trace silt (dry)	13					0.0	
				14					0.0	Collect SB04_14-15 at 12:30
				15					0.0	
				16						
			R4a (0-32") tan fine SAND (dry)			MACROCORE	46	NA	0.0	
				17					0.0	
				18					0.0	
									0.0	
	+23.4			19					0.0	
	+23.1		R4b (32-36") tan to gray-tan SILT, some fine sand, trace clay (dry)						0.0	
			R4c (36-46") tan fine SAND (moist)	20						

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Log of Boring **SB04** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.25 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+22.3			20						
				21						
				22		MACROCORE	34	NA	0.0	
			R5a (0-20") brown fine SAND, trace silt, trace clay (moist)	23					0.0	
									0.0	Collect SB04_23.5-24.5 and SBDUP02_100118 at 14:00
			R5b (29-34") brown fine SAND, trace silt (moist)	24					0.0	Water Table at about 24 feet bgs
				25					0.0	
			R6a (0-8") dark brown fine SAND (wet)	26		MACROCORE	53	NA	0.0	
			R6b (8-53") dark brown fine SAND, trace silt (wet)	27					0.0	
				28					0.0	
				29					0.0	
				30					0.0	
				31						
			R7 (0-40") fine SAND (wet)	32		MACROCORE	40	NA	0.0	
				33					0.0	Collect SB04_34-35, MS_SS02_100118 and MSD_SS02_100118 at 14:40
				34					0.0	
	+7.3			35					0.0	End of boring at 35 feet bgs. MW04 was installed in borehole. See Monitoring Well Construction Log for details.
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB05** Sheet 1 of 3

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 44.29 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 9/28/18 — Date Finished: 9/28/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 70 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 14 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 23 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Thomas Seickel
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Luke McCartney
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+42.3			0						Collect SB05_0-2 at 8:45
	+41.9		5-inch CONCRETE slab							
			R1a (0-16") reddish-brown to brown fine SAND, trace silt, trace clay, trace fine gravel, brick, metal (moist) [FILL]	1	R1	MACROCORE	46	NA	0.0	
			R1b (16-28") stiff reddish-brown CLAY, trace fine gravel (moist) [FILL]	2					0.0	
	+39.5		R1c (28-46") reddish-brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel, trace coarse gravel (moist)	3					0.0	
				4					0.0	
				5					0.0	
				6					0.0	
				7	R2	MACROCORE	16	NA	0.0	
				8					0.0	
			R2 (0-16") tan fine SAND (moist)	9					0.0	
				10					0.0	
				11					0.0	
			R3 (0-44") tan fine SAND, trace medium sand, trace coarse sand, trace fine gravel, trace coarse gravel	12	R3	MACROCORE	44	NA	0.0	
				13					0.0	
				14					0.0	
				15					0.0	
				16						
				17	R4	MACROCORE	36	NA	0.0	
			R4a (0-24") light brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (moist)	18					0.0	
				19					0.0	
			R4b (24-36") tan fine SAND, some silt, trace coarse sand, trace fine gravel (dry)	20					0.0	
				21	R5	MACROCORE	36			
				22						

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Log of Boring **SB05** Sheet 2 of 3

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.29 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.3		R5a (0-27") tan fine SAND, some silt, trace coarse sand (dry to moist)	22	R5	MACROCORE	36	NA	0.0	Collect SB05_22-23 at 9:15
				23					0.0	
									0.0	Water Table at about 23 feet bgs
				24					0.0	
			R5b (27-36") fine SAND, brown silt, trace clay (wet)						0.0	
				25						
				26						
									0.0	
			R6 (0-39") brown fine SAND (wet)	27	R6	MACROCORE	39	NA	0.0	
									0.0	
				28					0.0	
									0.0	
				29					0.0	
									0.0	
				30						
				31					0.0	
									0.0	
			R7a (0-24") brown fine SAND (wet)	32	R7	MACROCORE	42	NA	0.0	
									0.0	
				33					0.0	
									0.0	
			R7b (24-42") olive-brown silty fine SAND, trace clay (wet)	34					0.0	
									0.0	
				35						
									0.0	
			R8 (0-50") reddish-brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (moist)	36	R8	MACROCORE	50	NA	0.0	
									0.0	
				37					0.0	
									0.0	
				38					0.0	
									0.0	
				39					0.0	
									0.0	
				40						
									0.0	
			R9a (0-25") reddish-brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (moist)	41	R9	MACROCORE	50	NA	0.0	
									0.0	
				42					0.0	
									0.0	
			R9b (25-50") olive-brown silty fine SAND, trace clay (wet)	43					0.0	
									0.0	
				44					0.0	
									0.0	
				45						Collect SB05_45-46 at 9:45
			R10a (0-10") olive silty fine SAND, trace clay (wet)						0.0	
	-4.0			46	R10	MACROCORE	55	NA	0.0	
			R10b (10-55") very stiff olive CLAY, trace coarse sand, trace fine gravel, trace medium sand, trace coarse gravel, rounded to sub-rounded clasts (moist) [TILL]						0.0	
				47					0.0	
									0.0	
				48					0.0	
									0.0	
				49					0.0	

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Log of Boring **SB05** Sheet 3 of 3

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.29 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-7.2			49.5			55		0.0	
			R11 (0-60") very stiff olive CLAY, trace coarse sand, trace fine gravel, trace medium sand, trace coarse gravel, rounded to sub-rounded clasts (moist) [TILL]	50	R11	MACROCORE	60	NA	0.0	
				51					0.0	
				52					0.0	
				53					0.0	
				54					0.0	
				55					0.0	
			R12a (0-48") stiff to very stiff olive-gray CLAY, some fine sand, trace coarse sand, trace fine gravel, trace coarse gravel, rounded to sub-rounded clasts (moist) [TILL]	56	R12	MACROCORE	60	NA	0.0	
				57					0.0	
				58					0.0	
	-16.7			59					0.0	
			R12b (48-60") brown to reddish-brown medium SAND, trace fine sand (wet)	60					0.0	
			R13a (0-18") reddish-brown medium SAND (wet)	61	R13	MACROCORE	60	NA	0.0	
			R13b (18-23") reddish-brown fine SAND, some silt, trace clay (wet)	62					0.0	
			R13c (23-60") reddish-brown fine SAND (wet)	63					0.0	
				64					0.0	
	-22.7			65					0.0	Collect SB05_65-66 at 12:00
			R14 (0-60") very stiff brown to grayish-brown CLAY, trace coarse sand, trace fine gravel, trace coarse gravel, rounded to sub-rounded clasts (dry) [TILL]	66	R14	MACROCORE	60	NA	0.0	
				67					0.0	
				68					0.0	
				69					0.0	
	-27.7			70					0.0	End of boring at 70 feet bgs. Monitoring well MW05A installed in borehole. See Monitoring Well Construction Log for details.
				71						
				72						
				73						
				74						
				75						
				76						
				77						

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Log of Boring **SB06** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40.45 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 9/27/18 / Date Finished: 9/27/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 30 ft / Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 6 / Undisturbed N/A / Core N/A
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 22 / Completion ▼ N/A / 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: Thomas Seickel
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Luke McCartney
Sampler Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.5			0						
	+40.1		4-inch CONCRETE slab							
			R1a (0-12") stiff reddish-brown CLAY, trace fine gravel, coal (moist) [FILL]	1					0.0	
			R1b (12-24") dark brown to black fine SAND, some medium sand, trace fine gravel, brick, concrete, coal, slag, glass (moist) [FILL]	2					0.0	Collect SB06_1-2 at 14:00
	+38.1		R1c (24-38") light brown fine SAND, trace fine gravel (moist)	3	R1	MACROCORE	38	NA	0.0	
				4					0.0	
			R2 (0-34") tan fine SAND, trace medium sand, trace coarse sand, trace fine gravel (moist)	5						
				6						
				7	R2	MACROCORE	34	NA	0.0	
				8					0.0	
				9					0.0	
				10					0.0	
			R3 (0-39") tan fine SAND, trace medium sand, trace coarse sand, trace fine gravel, trace coarse gravel (moist to dry)	11					0.0	
				12	R3	MACROCORE	39	NA	0.0	
				13					0.0	
				14					0.0	
				15					0.0	
			R4a (0-36") tan fine SAND, some medium sand, trace coarse sand, trace fine gravel (moist)	16					0.0	
				17	R4	MACROCORE	49	NA	0.0	
				18					0.0	
				19					0.0	
			R4b (36-49") olive-brown silty fine SAND, 1-2-inch clay lenses (moist)	20					0.0	

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Log of Boring **SB06** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40.45 NAVD88 (top of casing)

MATERIAL SYMBOL	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.5		R5a (0-7") olive brown silty fine SAND, trace clay (moist) R5b (7-31") olive brown fine SAND, some silt (moist to wet)	20					0.0	
				21					0.0	
				22					0.0	Collect SB06_21.5-22.5 AT 14:30 Water Table at about 22 feet bgs
			R5c (31-60") olive-brown fine SAND, trace clay (wet)	23	R5	MACROCORE	60	NA	0.0	
				24					0.0	
				25					0.0	
				26					0.0	
			R6 (0-42") olive-brown to brown fine SAND, trace silt, trace clay (wet)	27					0.0	
				28	R6	MACROCORE	42	NA	0.0	
				29					0.0	Collect SB06_29-30 at 14:45
	+10.5			30					0.0	End of boring at 30 feet bgs. Monitoring well MW06 installed in borehole. See Monitoring Well Construction Log for details.
				31						
				32						
				33						
				34						
				35						
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB07** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40.01 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 9/26/18 / Date Finished: 9/26/18
Drilling Equipment: Geoprobe 6610DT Drill Rig	Completion Depth: 32 ft / Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 8 / Undisturbed N/A / Core N/A
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 22.5 / Completion ▼ N/A / 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: Thomas Seickel
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Luke McCartney
Sampler Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.0		6-inch CONCRETE slab	0						Collect SB07_0-1 at 12:15
	+39.5		R1 (0-31") reddish-brown to brown fine SAND (moist) [FILL]	1	R1	MACROCORE- OPEN	31	NA	0.0	Collect SB07_0-2 at 12:55
				2					0.0	
				3					0.0	Collect SB07_3-4 and SB07_3-5 at 13:00
				4					0.0	
			R2a (0-12") reddish-brown to brown fine SAND, trace coarse sand, concrete (moist) [FILL]	5	R2	MACROCORE- OPEN	36	NA	0.0	Collect SB07_5-6 at 13:03
	+34.0		R2b (12-36") tan fine SAND, trace coarse sand, trace medium sand (moist)	6					0.0	
				7					0.0	
				8					0.0	Collect SB07_8-10 at 13:00
	+30.5		R3a (0-11") fine brown CLAY, some silt, trace fine sand (moist to wet)	9					0.0	
	+29.6		R3b (11-30") tan fine SAND, trace coarse sand, trace fine gravel (dry)	10	R3	MACROCORE- OPEN	30	NA	0.0	Collect SB07_10-11 at 13:15
				11					0.0	
				12					0.0	
			R4a (0-13") tan fine SAND, trace medium sand, trace coarse sand (dry)	13						
			R4b (13-33") tan fine SAND (dry)	14	R4	MACROCORE- OPEN	33	NA	0.0	Collect SB07_14-15 at 13:17
				15					0.0	
				16					0.0	
				17						
			R5 (0-29") tan fine SAND (dry)	18	R5	MACROCORE- OPEN	29	NA	0.0	
				19					0.0	
				20					0.0	

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Log of Boring **SB07** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40.01 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.0		R6a (0-23") light brown fine SAND (moist)	20	R6	MACROCORE- OPEN	41	NA	0.0	
				21					0.0	Collect SB07_21-13 at 13:30
				22					0.0	
				22					0.0	
			R6b (23-33") brown silty fine SAND, trace clay (moist to wet)	23					0.0	Water Table at about 22.5 feet bgs
			R6c (33-36") brown fine SAND, trace coarse sand (wet)	24					0.0	
			R6d (36-41") brown silty fine SAND, trace clay (wet)	25	R7	MACROCORE- OPEN	12	NA		
				26						
			R7 (0-12") brown fine SAND, trace fine gravel (wet)	27					0.0	
				27					0.0	
				28					0.0	
			R8a (0-18") pinkish-gray fine SAND, 3 1-inch clay lenses at 18-19-inches, 23-24-inches and 28-29-inches, sand in silt lenses (wet)	28	R8	MACROCORE- OPEN	48	NA	0.0	
				29					0.0	
	+10.5		R8b (18-34") stiff to very stiff brown clayey SILT, some sand (wet)	29					0.0	
				30					0.0	
	+9.2		R8c (34-48") fine SAND (wet)	30					0.0	
				31					0.0	
	+8.0			31					0.0	
				32						End of boring at 32 feet bgs. Monitoring well MW07 installed in borehole. See Monitoring Well Construction Log for details.
				33						
				34						
				35						
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB08** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/5/18 — Date Finished: 10/5/18
Drilling Equipment: Geoprobe 7822DT Drill Rig	Completion Depth: 36 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 9 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 22 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.0		10-inch CONCRETE slab	0						Collect SB08_0-1 at 7:45
	+39.2		R1a (0-15") brown SAND, some silt, trace clay (dry) [FILL]	1	R1	MACROCORE	28	NA	0.0	Collect SB08_1-2 at 7:47
			R1b (15-28") brown fine SAND, trace coarse sand, trace fine gravel (dry) [FILL]	2					0.0	Collect SB08_1.5-2.5 at 7:47
				3					0.0	
				4					0.0	
			R2a (0-8") brown fine SAND, trace coarse sand, trace fine gravel (dry) [FILL]	5	R2	MACROCORE	44	NA	0.0	Collect SB08_5-6 at 7:50
	+35.0		R2b (8-32") brown medium SAND, some fine sand, trace fine gravel, trace coarse sand (dry)	6					0.0	
	+33.0			7					0.0	Collect SB08_7-8 at 7:52
	+32.7		R2c (32-36") brown SILT, trace clay (dry)						0.0	
			R2d (36-44") brown fine SAND, trace medium sand, trace coarse sand	8					0.0	
			R3a (0-20") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry)	9	R3	MACROCORE	36	NA	0.0	
				10					0.0	Collect SB08_10-11 at 8:00
			R3b (20-27") gray medium SAND, trace fine sand, trace coarse sand, trace fine gravel (dry)	11					0.0	Collect SB08_11-12 at 8:02
			R3c (27-36") light brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry)	12					0.0	
			R4a (0-10") brown medium SAND, trace fine sand, trace coarse sand, trace fine gravel (dry)						0.0	
			R4b (10-19") gray fine SAND, some medium sand, trace coarse sand, trace fine gravel (dry)	13					0.0	
			R4c (19-46") brown fine SAND, trace silt, trace medium sand, trace coarse sand, trace fine gravel (dry)	14	R4	MACROCORE	46	NA	0.0	
				15					0.0	
									0.0	
			R5 (0-48") tan fine SAND, trace coarse sand	16					0.0	
				17					0.0	
				18	R5	MACROCORE	48	NA	0.0	
				19					0.0	
				20					0.0	

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Log of Boring **SB08** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.0		R6a (0-18") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry)	20					0.0	
				21					0.0	Collect SB08_21-22 at 8:15
			R6b (18-48") brown fine SAND, some medium sand, trace fine gravel, trace coarse sand (moist to wet)						0.0	
				22	R6	MACROCORE	48	NA	0.0	Water Table at about 22 feet bgs
				23					0.0	
									0.0	
				24						
			R7a (0-11") light brown fine SAND (wet)	25					0.0	
			R7b (11-35") brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (wet)	26	R7	MACROCORE	35	NA	0.0	
				27					0.0	
									0.0	
				28					0.0	
			R8a (0-4") brown fine SAND (wet)	29					0.0	
			R8b (4-35") brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (wet)	30	R8	MACROCORE	35	NA	0.0	
				31					0.0	
									0.0	
				32						
			R9 (0-48") brown fine SAND, some medium sand, trace coarse sand, trace fine gravel, trace silt (wet)	33					0.0	
									0.0	
				34	R9	MACROCORE	48	NA	0.0	
									0.0	
				35					0.0	
									0.0	
	+4.0			36						End of boring at 36 feet bgs. Borehole backfilled with soil cuttings to surface grade.
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB09** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/5/18 — Date Finished: 10/5/18
Drilling Equipment: Geoprobe 7822DT Drill Rig	Completion Depth: 36 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 9 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 23 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.0		10-inch CONCRETE slab	0						Collect SB09_0-0.5 at 9:14
	+39.2		R1a (0-10") brown-to-black fine SAND, some silt, trace fine gravel, brick (dry) [FILL]	1	R1	MACROCORE	39	NA	0.0	Collect SB09_0.5-1.5 at 9:15
			R1b (10-27") orange-brown SAND, some silt (dry) [FILL]	2					1.2 0.0 0.0	Collect SB09_2-3 at 9:18
			R1c (27-39") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) [FILL]	3					0.0 0.0	Collect SB09_3-4 at 9:20
				4						
	+34.8		R2a (0-6") orange-brown fine SAND, some silt (dry) [FILL]	5	R2	MACROCORE	40	NA	0.0	Collect SB09_4.5-5 at 9:25 Collect SB09_5-6 at 9:27
			R2b (6-7") gray fine SAND, trace fine gravel (dry) R2c (7-40") brown medium SAND, some fine sand, trace coarse sand, trace fine gravel (dry)	6					0.0 0.0	
				7					0.0 0.0	
				8						
			R3a (0-6") brown medium SAND, trace fine sand, trace coarse sand, trace fine gravel (dry) R3b (6-42") brown fine SAND, trace medium sand, trace silt, trace coarse sand, trace fine gravel (dry)	9	R3	MACROCORE	42	NA	0.0 0.0 0.0	Collect SB09_8.5-9.5 at 9:29
				10					0.0 0.0	Collect SB09_10-11 at 9:30
				11					0.0 0.0	Collect SB09_11-12 at 9:32
				12						
			R4a (0-12") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) R4b (12-42") brown fine SAND, trace medium sand (dry)	13	R4	MACROCORE	42	NA	0.0 0.0 0.0	Collect SB09_13-14 at 9:35
				14					0.0 0.0	
				15					0.0 0.0	
				16						
			R5a (0-4") brown fine SAND (dry) R5b (4-24") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry	17	R5	MACROCORE	40	NA	0.0 0.0	
				18					0.0 0.0	
			R5c (24-40") brown fine SAND (dry)	19					0.0 0.0	
				20						

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Log of Boring **SB09** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.0			20						
			R6a (0-14") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (moist) R6b (14-42") brown fine SAND (moist to wet)	21					0.0 0.0 0.0	
				22	R6	MACROCORE	42	NA	0.0 0.0	Collect SB09_22-23 at 9:40
				23 ▽					0.0 0.0	Water Table at about 23 feet bgs
			R7a (0-12") brown fine SAND (wet)	24						
			R7b (12-24") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet)	25					0.0 0.0 0.0	
			R7c (24-32") brown medium SAND, trace fine sand, trace coarse sand, trace fine gravel (wet) R7d (32-48") brown fine SAND, trace coarse sand, trace fine gravel (wet)	26	R7	MACROCORE	48	NA	0.0 0.0	
				27					0.0 0.0	
			R8 (0-48") brown fine SAND, some medium trace coarse sand, trace fine gravel (wet)	28						
				29					0.0 0.0	
				30	R8	MACROCORE	48	NA	0.0 0.0	
				31					0.0 0.0	
			R9 (0-48") brown fine SAND, trace medium sand, trace silt (wet)	32						
				33					0.0 0.0	
				34	R9	MACROCORE	48	NA	0.0 0.0	
				35					0.0 0.0	
	+4.0			36						End of boring at 36 feet bgs. Borehole backfilled with soil cuttings to surface grade.
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB10** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 43.22 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/4/18 — Date Finished: 10/4/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 35 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 8 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 23.5 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+43.2		R1a (0-36") brown to reddish-brown medium SAND, some fine sand, trace coarse sand, trace fine gravel (moist) [FILL]	0	R1	MACROCORE	42	NA	0.0	Collect SB10_0-1 at 11:00
				1					0.4	Collect SB10_1-2 at 11:04
				2					0.0	Collect SB10_2-3 at 11:04
			R1b (36-42") brown fine SAND (moist) [FILL]	3					0.0	
				4					0.0	
			R2a (0-13") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (moist) [FILL]	5	R2	MACROCORE	55	NA	0.0	
				6					0.0	Collect SB10_6-7 at 11:08
			R2b (13-39") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (moist) [FILL]	7					0.0	Collect SB10_7-8 at 11:07
				8					0.0	
	+34.6								0.0	Collect SB10_8.5-9.5 at 11:10
	+33.9		R2c (39-47") brown SILT (moist)	9					0.0	
			R2d (47-55") brown fine SAND, trace coarse sand, trace fine gravel (dry)	10					0.0	
				11						
			R3a (0-8") brown fine SAND, trace medium sand, trace coarse sand (moist)	12	R3	MACROCORE	41	NA	0.0	Collect SB10_12-13 at 11:11
			R3b (8-37") tan to gray fine SAND (dry)	13					0.0	
				14					0.0	Collect SB10_14-15 at 11:16
			R3c (37-41") tan fine SAND, some silt, trace medium sand (dry)	15					0.0	
				16						
			R4a (0-14") brown fine SAND, trace coarse sand, trace fine gravel (moist)	17	R4	MACROCORE	42	NA	0.0	
			R4b (14-42") tan fine SAND (dry)	18					0.0	
				19					0.0	
				20					0.0	

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Log of Boring **SB10** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	43.22 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+23.2			20						
			R5a (0-33") fine SAND (dry)	21					0.0	
									0.0	
				22					0.0	
					R5	MACROCORE	49	NA	0.0	
				23					0.0	
									0.0	Water Table at about 23.5 feet bgs
			R5b (33-49") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet)	24					0.0	
									0.0	Collect SB10_24-25 at 11:30
				25						
			R6a (0-30") brown medium SAND, trace fine sand, trace coarse sand, trace fine gravel (wet)	26					0.0	
									0.0	
				27					0.0	
					R6	MACROCORE	50	NA	0.0	
				28					0.0	
			R6b (30-50") brown fine SAND, trace medium sand (wet)						0.0	
				29					0.0	
									0.0	
				30						
			R7a (0-8") brown fine SAND (wet)	31					0.0	
									0.0	
			R7b (8-50") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (wet)	32					0.0	
					R7	MACROCORE	50	NA	0.0	
				33					0.0	
									0.0	
				34					0.0	
									0.0	
	+8.2			35						End of boring at 35 feet bgs. Monitoring well MW10 installed in borehole. See Monitoring Well Construction Log for details.
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB11** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 9/27/18 — Date Finished: 9/27/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 35 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 7 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 22.5 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Thomas Seickel
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Luke McCartney
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.0									
	+39.9		1-inch CONCRETE slab	0						Collect SB11_0-1 at 9:00
			R1a (0-12") firm dark brown to black CLAY, some fine sand, fine gravel, ceramics, glass (moist) [FILL]	1					0.0	
			R1b (12-40") stiff reddish-brown CLAY (moist) [FILL]						0.0	
				2					0.0	
									0.0	
				3	R1	MACROCORE	57	NA	0.0	
									0.0	
			R1c (40-57") reddish-brown fine SAND, trace silt, trace clay (moist) [FILL]	4					0.0	
									0.0	
				5					0.0	
				6						
									0.0	
			R2a (0-15") stiff reddish-brown to black CLAY, trace fine gravel (moist) [FILL]	7					0.0	Collect SB11_6.5-7.5, SBDUP01_092718, MS_SS01_092718 and MSD_SS01_092718 at 9:15
					R2	MACROCORE	38	NA	1.7	
	+32.0		R2b (15-38") reddish-brown fine SAND, trace fine gravel (dry)	8					0.0	
									0.0	
				9					0.0	
									0.0	
				10						
				11						
				12						
				13	R3	MACROCORE	27	NA	0.0	
			R3a (0-19") tan fine SAND, trace coarse sand (dry)						0.0	
									0.0	
				14					0.0	
			R3b (19-27") reddish-brown clayey fine SAND, some silt (moist)						0.0	
				15						
				16						
									0.0	
			R4a (0-6") reddish-brown clayey fine SAND, some silt (moist)						0.0	
			R4b (6-14") reddish-brown fine SAND (moist)	17					0.0	
			R4c (14-18") reddish-brown clayey fine SAND, trace coarse gravel (moist)		R4	MACROCORE	44	NA	0.0	
			R4d (18-37") tan fine SAND (moist)	18					0.0	
									0.0	
				19					0.0	
			R4e (37-41") reddish-brown silty fine SAND (moist)						0.0	
				20						

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Log of Boring **SB11** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.0		R4f (41-44") tan fine SAND, 1-2-inch clay lenses (moist)	20						
				21					0.0	
			R5a (0-22") tan fine SAND, trace coarse sand, trace fine gravel (moist to wet)						0.0	
				22					0.0	Collect SB11_22-23 at 9:35
			▽		R5	MACROCORE	44	NA	0.0	Water Table at about 22.5 feet bgs
			R5b (22-44") olive-brown silty SAND, trace clay (wet)	23					0.0	
									0.0	
				24					0.0	
									0.0	
				25					0.0	
				26						
			R6a (0-22") olive-brown silty fine SAND (wet)	27					0.0	
					R6	MACROCORE	36	NA	0.0	
				28					0.0	
									0.0	
			R6b (22-36") pinkish-gray fine SAND, trace clay (wet)	29					0.0	
									0.0	
			R7a (0-35") pinkish-gray fine SAND (wet)	30					0.0	
									0.0	
				31					0.0	
									0.0	
				32					0.0	
					R7	MACROCORE	60	NA	0.0	
			R7b (35-47") olive-brown silty fine SAND, trace clay (wet)	33					0.0	
									0.0	
			R7c (47-60") olive-brown fine SAND, trace silt (wet)	34					0.0	
									0.0	
	+5.0			35						End of boring at 35 feet bgs. Borehole backfilled with soil cuttings and capped with concrete to surface grade.
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB12** Sheet 1 of 2

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 40 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 9/26/18 — Date Finished: 9/26/18
Drilling Equipment: Geoprobe 6610DT Drill Rig	Completion Depth: 32 ft — Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 8 — Undisturbed N/A — Core N/A
Casing Diameter (in): N/A — Casing Depth (ft): N/A	Water Level (ft.): First ▽ 22 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	Drilling Foreman: Thomas Seickel
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Luke McCartney
Sampler Hammer: N/A — Weight (lbs): N/A — Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist. BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+40.0			0						
	+39.5		6-inch CONCRETE slab							Collect SB12_0-2 at 10:00
			R1 (0-36") light brown fine SAND, trace medium sand, trace fine gravel (moist) [FILL]	1						
	+38.5			2	R1	MACROCORE	36	NA		Collect SB12_2-4 at 10:05
				3						
				4						
	+34.8			5						
			R2 (0-33") tan fine SAND, trace coarse sand (dry to moist)	6	R2	MACROCORE	33	NA		
				7						Collect SB12_7-8 at 10:10
				8						
			R3a (0-8") brown fine SAND, trace coarse sand (moist)	9						
			R3b (8-14") brown fine SAND, some silt (moist)	10	R3	MACROCORE	35	NA		
			R3c (14-22") brown fine SAND, some medium sand, trace coarse sand (moist)							
	+29.1			11						
	+29.0		R3d (22-23") soft brown clayey SILT (moist)							
			R3e (23-35") brown fine SAND (moist)	12						
			R4 (0-39") tan fine SAND (moist)	13						Collect SB12_13-14 at 10:25
				14	R4	MACROCORE	39	NA		
				15						
				16						
			R5 (0-39") brown fine SAND (moist)	17						
				18	R5	MACROCORE	39	NA		
				19						
				20						

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Log of Boring **SB12** Sheet 2 of 2

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	40 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+20.0			20						
				21						Collect SB12_21-23 at 11:00
			R6a (0-8") brown fine SAND (moist)							
			R6b (8-16") brown fine SAND, some silt (wet)	22	R6	MACROCORE	32	NA		Water Table at about 22 feet bgs
			R6c (16-32") brown fine SAND, trace silt (wet)	23						
				24						
			R7a (0-14") brown fine SAND, trace silt, trace fine gravel (wet)	25						
	+13.8		R7b (24-29") very stiff brown clayey SILT (moist)	26	R7	MACROCORE	35	NA		
			R7c (24-29") very stiff brown clayey SILT (moist)	27						
	+12.5		R7d (29-35") brown fine SAND (wet)	28						
				29						
			R8a (0-10") brown fine SAND, some silt (wet)							
			R8b (10-14") brown silty fine SAND, trace clay (wet)	30	R8	MACROCORE	33	NA		
			R8c (14-27") brown fine SAND (wet)	31						
			R8d (27-29") stiff brown fine SAND, some silt, trace clay (wet)							
	+8.0		R8e (29-33") brown fine SAND (wet)	32						End of boring at 32 feet bgs. Borehole backfilled with soil cuttings to surface grade.
				33						
				34						
				35						
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

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Log of Boring **SB13** Sheet 1 of 3

Project: 37-11 30th Street	Project No.: 170512301
Location: Long Island City, NY	Elevation and Datum: 44.02 NAVD88 (top of casing)
Drilling Company: AARCO Environmental Services, Inc.	Date Started: 10/2/18 / Date Finished: 10/3/18
Drilling Equipment: Geoprobe 8140LC Sonic Drill Rig	Completion Depth: 72 ft / Rock Depth: N/A
Size and Type of Bit: 4.5-inch inside diameter sonic bit	Number of Samples: Disturbed 15, Undisturbed N/A, Core N/A
Casing Diameter (in): N/A / Casing Depth (ft): N/A	Water Level (ft.): First ▽ 28.5, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	Drilling Foreman: Dalbi Pacheco
Sampler: 4.5-inch inside diameter by 60-inch long dual tube	Field Engineer: Ashley Stappenbeck
Sampler Hammer: N/A / Weight (lbs): N/A / Drop (in): N/A	

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+44.0			0						
	+43.9		1-inch CONCRETE slab						0.0	Collect SB13_0-1 at 11:58
			R1a (0-20") brown to reddish-brown fine SAND, some silt, trace clay, brick (moist) [FILL]	1					0.0	
									0.0	Collect SB13_1-2 at 12:00
			R1b (20-31") brown fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) [FILL]	2					0.0	
					R1	MACROCORE	39	NA	0.0	Collect SB13_2-3 at 12:02
			R1c (31-39") light brown to gray fine SAND, trace medium sand, trace coarse sand, trace fine gravel (dry) [FILL]	3					0.0	
									0.0	
				4						
				5						Collect SB13_5-6 at 12:10
				6						
			R2a (0-18") brown fine SAND, some silt, trace fine gravel (dry) [FILL]						0.0	Collect SB13_6.5-7.5 at 12:10
			R2b (18-21") gray to black fine SAND, trace clay, trace silt, trace coarse sand, trace fine gravel (dry) [FILL]	7					0.0	
	+35.8				R2	MACROCORE	42	NA	1.2	
			R2c (21-32") tan to gray fine SAND, trace fine gravel, trace coarse sand (dry)	8					0.3	Collect SB13_8-9 at 12:13
									0.0	
			R2d (32-42") tan fine SAND, trace coarse sand (dry)	9					0.0	Collect SB13_9-10 at 12:14
									0.0	
				10					0.0	
				11						
				12						Collect SB13_12-13 at 12:25
			R3a (0-8") tan fine SAND, trace coarse sand, trace fine gravel (dry)						0.0	
			R3b (8-32") tan fine SAND (dry)	13					0.0	
					R3	MACROCORE	32	NA	0.0	
				14					0.0	Collect SB13_14-15 at 12:30
									0.0	
				15						
				16						
				17						
			R4a (0-15") light brown fine SAND, trace coarse sand, trace fine gravel (dry)						0.0	
				18					0.0	
			R4b (15-35") dark gray fine SAND (dry)						0.0	
				19	R4	MACROCORE	35	NA	0.0	
									0.0	
				20						
				21						
			R5a (0-10") brown fine SAND, trace silt, trace fine gravel, trace coarse sand (moist)		R5	MACROCORE	45		0.0	
				22						

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Log of Boring **SB13** Sheet 2 of 3

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.02 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	+22.0		R5b (10-13") brown fine gravel (moist) R5c (13-25") brown fine SAND, trace coarse sand, trace fine gravel (dry) R5d (25-45") tan fine SAND (dry)	22	R5	MACROCORE	45	NA	0.0 0.0 0.0 0.0 0.0 0.0	
			R6a (0-15") fine SAND (dry) R6b (15-34") brown fine SAND, trace medium sand, trace coarse sand (wet)	25	R6	MACROCORE	34	NA	0.0 0.0 0.0 0.0 0.0	Collect SB13_28-29 at 13:00 Water Table at about 28.5 feet bgs
			R7 (0-52") brown fine SAND, trace medium sand (wet)	30	R7	MACROCORE	52	NA	0.0 0.0 0.0 0.0 0.0 0.0 0.0	
			R8 (0-48") brown fine SAND, some medium sand, trace coarse sand, trace fine gravel (wet)	35	R8	MACROCORE	48	NA	0.2 0.7 0.0 0.0 0.0 0.0 0.0 0.0	
			R9 (0-60") brown fine SAND, trace coarse sand, trace medium sand, trace fine gravel (wet)	40	R9	MACROCORE	60	NA	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
			R10 (0-34") brown fine SAND (wet)	45	R10	MACROCORE	34	NA	0.0 0.0 0.0 0.0	

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Log of Boring **SB13** Sheet 3 of 3

Project	Project No.
37-11 30th Street	170512301
Location	**Elevation and Datum**
Long Island City, NY	44.02 NAVD88 (top of casing)

Material Symbol	Elev. (ft)	Building Code	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	PID Reading (ppm)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	-5.5			49.5			34		0.0	
			R11 (0-47") brown fine SAND (wet)	50	R11	MACROCORE	47	NA	0.0	
				51					0.0	
				52					0.0	
				53					0.0	
				54					0.0	
				55					0.0	
			R12a (0-10") brown fine SAND (wet)						0.0	
			R12b (10-45") gray to olive fine SAND, trace fine to medium gravel, trace clay, trace silt (wet)	56	R12	MACROCORE	60	NA	0.0	
				57					0.0	
				58					0.0	
			R12c (45-60") gray to olive fine SAND, trace fine to medium gravel, trace clay, trace silt (wet)	59					0.0	
				60					0.0	
			R13a (0-10") gray to olive fine SAND, some medium sand, trace silt (wet)	61	R13	MACROCORE	48	NA	0.0	
			R13b (10-28") gray to olive fine SAND, some medium sand, trace fine to medium gravel, trace silt, trace clay (wet)	62					0.0	
				63					0.0	
			R13c (28-48") gray to olive fine SAND, some medium to coarse sand, some fine to medium gravel, trace silt (wet)	64					0.0	
				65					0.0	
			R14a (0-20") brown fine SAND, trace fine gravel, trace medium to coarse sand (wet)	66	R14	MACROCORE	52	NA	0.0	
				67					0.0	
			R14b (20-40") gray to olive fine SAND, trace fine gravel, trace medium to coarse sand, trace clay, trace silt (wet)	68					0.0	Collect SB13_68-69 at 13:40
	-25.0								0.0	
	-25.3		R14c (40-44") rock fragments	69					0.0	
	-25.6		R14d (44-48") brown fine SAND, trace silt, trace coarse sand, trace fine gravel (wet)	70						
			R14e (48-52") rock fragments	71	R15	MACROCORE	2	NA	0.0	Possible weathered rock
	-28.0		R15 (0-2") rock fragments	72					0.0	End of boring at 72 feet bgs. Monitoring well MW13A installed in borehole. See Monitoring Well Construction Log for details.
				73						
				74						
				75						
				76						
				77						

\\LANGAN.COM\DATA\NYC\DATA3\170512301\PROJECT DATA_DISCIPLINE\ENV\IRONMENTAL\FIELD RECORDS\REMEDIAL INVESTIGATION - R\GINT\37-11 30TH GINT.GPJ ... 12/7/2018 9:35:14 AM ... Report: Log - LANGAN

APPENDIX D

WELL CONSTRUCTION LOGS

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW01

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 44.22	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/4/2018	10/4/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 40 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 35 to 23 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 21 feet bgs with No. 1 Sand and a hydrated bentonite seal from 19 to 21 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

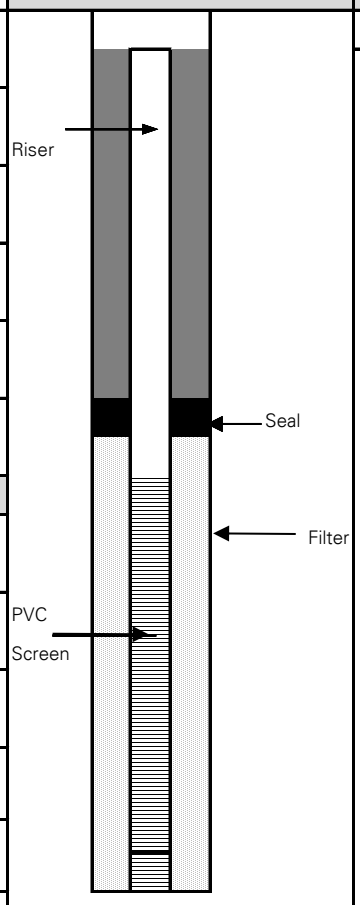
WELL DEVELOPMENT DATA

SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Driller	**MAX PUMP RATE**	1 L/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	15 gallons	AS

TOP OF CASING ELEVATION	DEPTH (ft)
44.22	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
25.22	19
TOP OF FILTER ELEVATION	**DEPTH (ft)**
23.22	21
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
21	23
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
4.22	40
SCREEN LENGTH	
	12
SLOT SIZE	
	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.62	10/17/2018	26.6 ft



WELL DETAILS	SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
		0
	See SB01 Boring Log for Details	19
		21
		23
		35
		40

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW02

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 43.65	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/4/2018	10/4/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 35 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 35 to 23 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 21 feet bgs with No. 1 Sand and a hydrated bentonite seal from 19 to 21 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

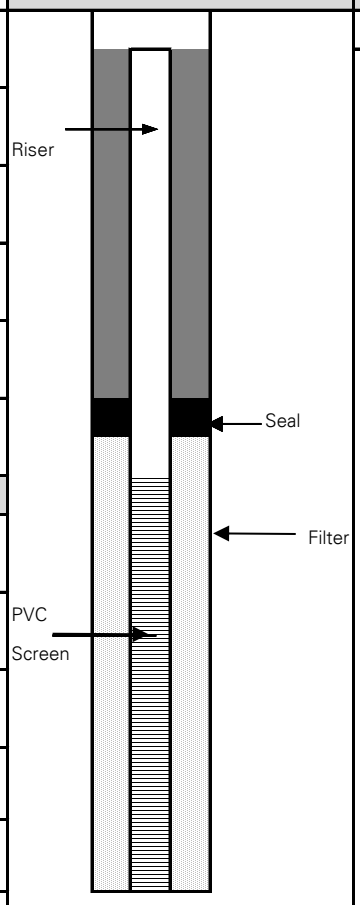
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Driller	**MAX PUMP RATE**	1 L/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	25 gallons	AS

TOP OF CASING	ELEVATION	DEPTH (ft)
	43.65	0
TOP OF SEAL	**ELEVATION**	**DEPTH (ft)**
	24.65	19
TOP OF FILTER	**ELEVATION**	**DEPTH (ft)**
	22.65	21
TOP OF SCREEN	**ELEVATION**	**DEPTH (ft)**
	21	23
BOTTOM OF BORING	**ELEVATION**	**DEPTH (ft)**
	8.65	35
SCREEN LENGTH		12
SLOT SIZE		No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.65	10/15/2018	26 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB02 Boring Log for Details	19
	21
	23
	35

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW03

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 42.27	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/4/2018	10/4/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 40 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 20 to 32 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 18 feet bgs with No. 1 Sand and a hydrated bentonite seal from 16 to 18 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2.25 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	30 gallons	LM

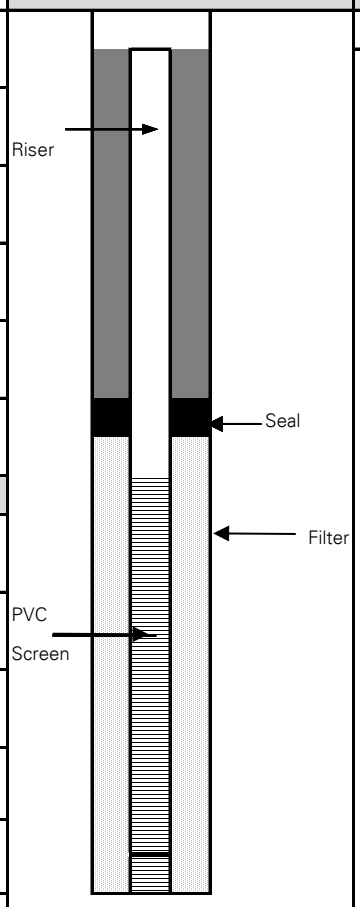
TOP OF CASING ELEVATION	DEPTH (ft)
42.27	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
26.27	16
TOP OF FILTER ELEVATION	**DEPTH (ft)**
24.27	18
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
22	20
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
2.27	40
SCREEN LENGTH	
	12
SLOT SIZE	
	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER	
17.6	10/15/2018	24.67	ft
17.59	10/16/2018	24.68	ft

ELEVATION	DATE	DEPTH TO WATER

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB03 Boring Log for Details	16
	18
	20
	32
	40

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW04

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 42.25	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/4/2018	10/4/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 35 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 20 to 32 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 18 feet bgs with No. 1 Sand and a hydrated bentonite seal from 16 to 18 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

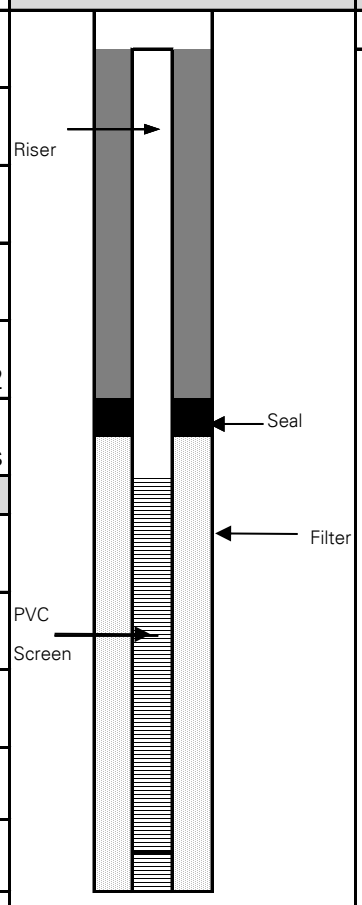
WELL DEVELOPMENT DATA

SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2.25 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	20 gallons	AS

TOP OF CASING ELEVATION	DEPTH (ft)
42.25	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
26.25	16
TOP OF FILTER ELEVATION	**DEPTH (ft)**
24.25	18
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
22	20
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
7.25	35
SCREEN LENGTH	
	12
SLOT SIZE	
	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.55	10/15/2018	24.7 ft
17.55	10/17/2018	24.7 ft



WELL DETAILS	SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
		0
	See SB04 Boring Log for Details	16
		18
		20
		32
		35

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW05A

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 42.49	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		9/28/2018	9/28/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Thomas Seickel	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Luke McCartney	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 65 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 60 to 65 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 58 feet bgs with No. 1 Sand and a hydrated bentonite seal from 56 to 58 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

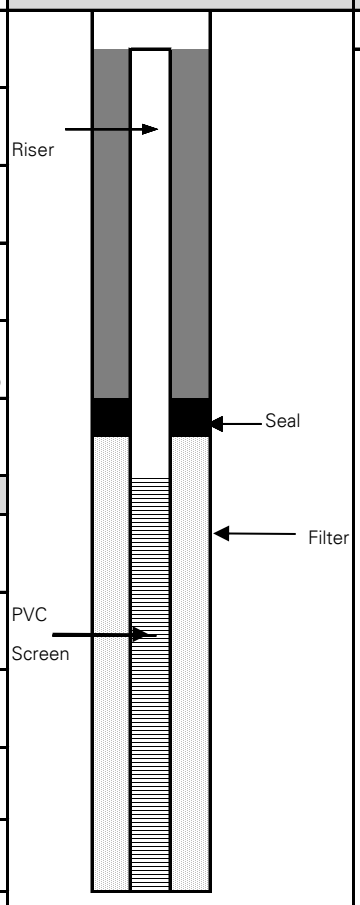
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	30 gallons	LM

TOP OF CASING	ELEVATION	DEPTH (ft)
	42.49	0
TOP OF SEAL	**ELEVATION**	**DEPTH (ft)**
	-13.51	56
TOP OF FILTER	**ELEVATION**	**DEPTH (ft)**
	-15.51	58
TOP OF SCREEN	**ELEVATION**	**DEPTH (ft)**
	-18	60
BOTTOM OF BORING	**ELEVATION**	**DEPTH (ft)**
	-22.51	65
SCREEN LENGTH		5
SLOT SIZE		No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.44	10/15/2018	25.05 ft
16.09	10/17/2018	26.4 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB05 Boring Log for Details	56
	58
	60
	65

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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW05B

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 42.48	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/1/2018	10/1/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Luke McCartney	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 32 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 20 to 32 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 18 feet bgs with No. 1 Sand and a hydrated bentonite seal from 16 to 18 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

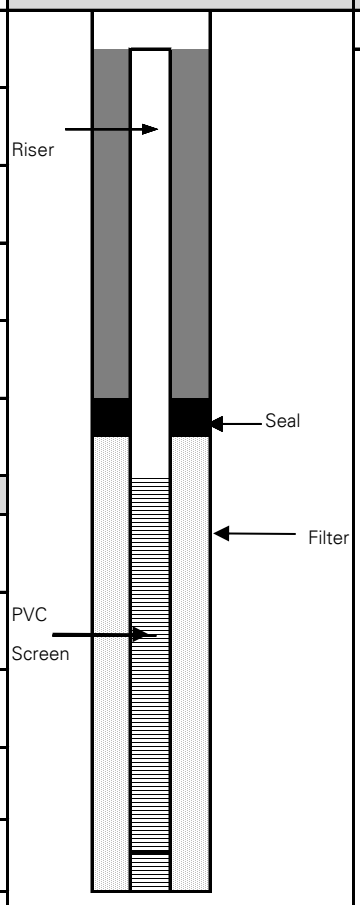
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	15 gallons	LM

TOP OF CASING	ELEVATION	DEPTH (ft)
	42.48	0
TOP OF SEAL	**ELEVATION**	**DEPTH (ft)**
	26.48	16
TOP OF FILTER	**ELEVATION**	**DEPTH (ft)**
	24.48	18
TOP OF SCREEN	**ELEVATION**	**DEPTH (ft)**
	22	20
BOTTOM OF BORING	**ELEVATION**	**DEPTH (ft)**
	10.48	32
SCREEN LENGTH		12
SLOT SIZE		No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.42	10/17/2018	25.06 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB05 Boring Log for Details	16
	18
	20
	32

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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW06

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 40.45	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		9/27/2018	9/27/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Thomas Seickel	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Luke McCartney	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 30 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 18 to 30 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 16 feet bgs with No. 1 Sand and a hydrated bentonite seal from 14 to 16 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

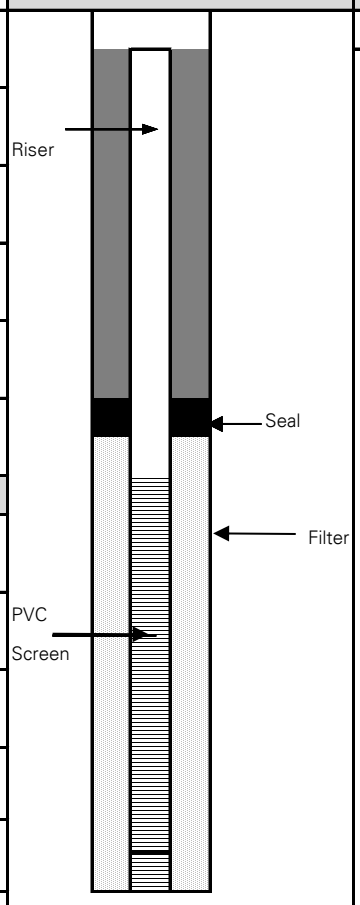
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	10 gallons	LM

TOP OF CASING ELEVATION	DEPTH (ft)
40.45	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
26.45	14
TOP OF FILTER ELEVATION	**DEPTH (ft)**
24.45	16
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
22	18
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
10.45	30
SCREEN LENGTH	12
SLOT SIZE	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.47	10/15/2018	22.98 ft
17.44	10/16/2018	23.01 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB06 Boring Log for Details	14
	16
	18
	30

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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW07

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 40.01	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		9/27/2018	9/27/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Thomas Seickel	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Luke McCartney	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 32 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 20 to 32 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 18 feet bgs with No. 1 Sand and a hydrated bentonite seal from 16 to 18 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

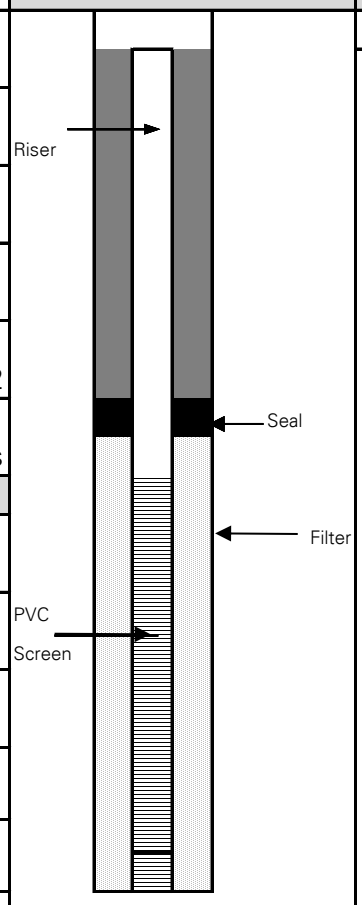
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	2 gal/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	30 gallons	LM

TOP OF CASING ELEVATION	DEPTH (ft)
40.01	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
24.01	16
TOP OF FILTER ELEVATION	**DEPTH (ft)**
22.01	18
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
20	20
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
8.01	32
SCREEN LENGTH	12
SLOT SIZE	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER	
17.25	10/15/2018	22.76	ft
17.21	10/17/2018	22.8	ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB06 Boring Log for Details	16
	18
	20
	32

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW10

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 43.22	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/4/2018	10/4/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 35 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 21 to 33 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 35 feet bgs with No. 1 Sand and a hydrated bentonite seal from 17 to 35 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

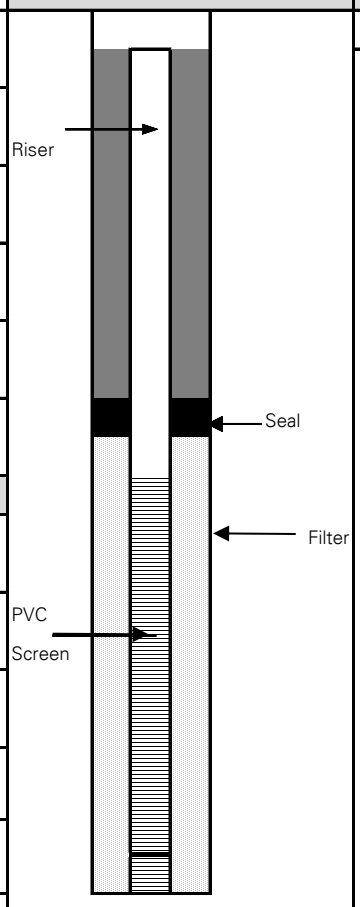
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Langan	**MAX PUMP RATE**	1 L/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	30 gallons	AS

TOP OF CASING	ELEVATION	DEPTH (ft)
	43.22	0
TOP OF SEAL	**ELEVATION**	**DEPTH (ft)**
	26.22	17
TOP OF FILTER	**ELEVATION**	**DEPTH (ft)**
	24.22	19
TOP OF SCREEN	**ELEVATION**	**DEPTH (ft)**
	22	21
BOTTOM OF BORING	**ELEVATION**	**DEPTH (ft)**
	8.22	35
SCREEN LENGTH		12
SLOT SIZE		No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
17.62	10/15/2018	25.6 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB10 Boring Log for Details	17
	19
	21
	33
	35

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WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW13A

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 44.02	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/3/2018	10/3/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 72 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 65 to 70 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 63 feet bgs with No. 1 Sand and a hydrated bentonite seal from 20 to 63 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

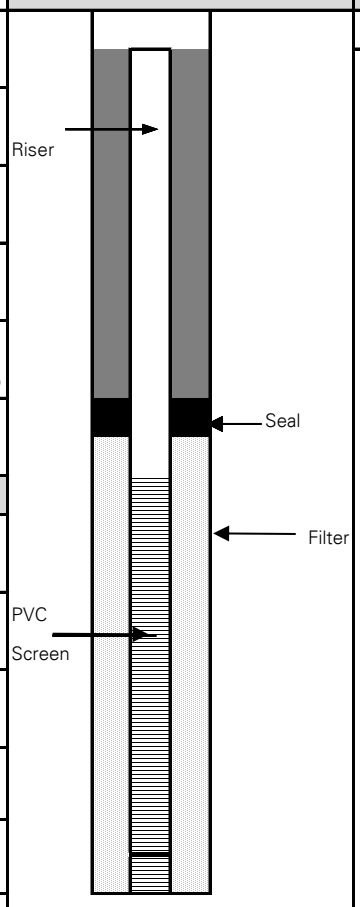
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Driller	**MAX PUMP RATE**	1 L/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	20 gallons	AS

TOP OF CASING ELEVATION	DEPTH (ft)
44.02	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
24.02	20
TOP OF FILTER ELEVATION	**DEPTH (ft)**
-18.98	63
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
-21	65
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
-27.98	72
SCREEN LENGTH	
	5
SLOT SIZE	
	No. 10 Slot; 0.010 Inches

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
16.25	10/15/2018	27.77 ft
16.29	10/17/2018	27.73 ft

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB13 Boring Log for Details	20
	63
	65
	70
	72

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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

WELL CONSTRUCTION AND DEVELOPMENT SUMMARY

Well No. MW13B

PROJECT		PROJECT NO.	
37-11 30th Street		170512301	
LOCATION		**ELEVATION AND DATUM**	
Long Island City, New York		el. 43.59	NAVD88
DRILLING AGENCY		**DATE STARTED**	**DATE FINISHED**
AARCO Environmental Services, Corp.		10/3/2018	10/3/2018
DRILLING EQUIPMENT		**DRILLER**	
Geoprobe® 8140 LC Sonic		Dalbi Pacheco	
SIZE AND TYPE OF BIT		**INSPECTOR**	
4-inch Direct Push		Ashley Stappenbeck	
BOREHOLE DIAMETER		**TYPE OF WELL (OVERBURDEN / BEDROCK)**	
4-inch		Overburden	
RISER MATERIAL	**DIAMETER**	**TYPE OF BACKFILL MATERIAL**	
PVC	2-inch	Soil Cuttings	
TYPE OF SCREEN	**DIAMETER**	**TYPE OF WELL PACK**	**TYPE OF SEAL MATERIAL**
PVC No. 10 Slot	2-inch	No. 1 Sand	Bentonite

METHOD OF INSTALLATION

AARCO Environmental Services installed a 4.25-inch steel casing to 35 feet below grade surface (bgs). AARCO installed a 10-slot Schedule 40 PVC screen from 25 to 35 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 23 feet bgs with No. 1 Sand and a hydrated bentonite seal from 21 to 23 feet bgs. Soil cuttings were backfilled above the hydrated bentonite seal to surface grade. A manhole was installed and encased in concrete at grade.

WELL DEVELOPMENT DATA

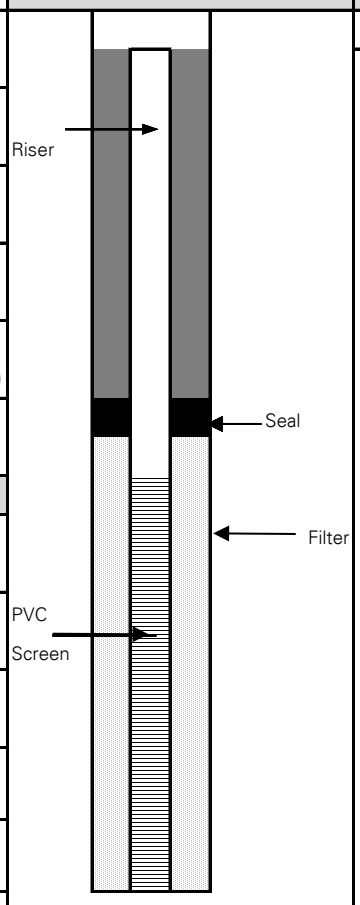
SURGE BLOCK DIAMETER	NA	**TYPE PUMP**	Submersible	**DEVELOPMENT CONFIRMATION**
DRILLER OR LANGAN	Driller	**MAX PUMP RATE**	1 L/min	
NUMBER OF SURGE CYCLES	NA	**TOTAL VOLUME**	15 gallons	AS

TOP OF CASING ELEVATION	DEPTH (ft)
43.59	0
TOP OF SEAL ELEVATION	**DEPTH (ft)**
22.59	21
TOP OF FILTER ELEVATION	**DEPTH (ft)**
20.59	23
TOP OF SCREEN ELEVATION	**DEPTH (ft)**
19	25
BOTTOM OF BORING ELEVATION	**DEPTH (ft)**
8.59	35
SCREEN LENGTH	
10	
SLOT SIZE	
No. 10 Slot; 0.010 Inches	

GROUNDWATER ELEVATIONS

ELEVATION	DATE	DEPTH TO WATER
18.02	10/15/2018	25.57 ft
ELEVATION	**DATE**	**DEPTH TO WATER**
ELEVATION	**DATE**	**DEPTH TO WATER**
ELEVATION	**DATE**	**DEPTH TO WATER**
ELEVATION	**DATE**	**DEPTH TO WATER**
ELEVATION	**DATE**	**DEPTH TO WATER**

WELL DETAILS



SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
	0
See SB13 Boring Log for Details	21
	23
	25
	35

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21 Penn Plaza, 360 West 31st Street, 8th Floor, New York

APPENDIX E

GROUNDWATER SAMPLING LOGS

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW01	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Sunny, 60s	**Sample(s):**	MW01_101718
Project Number:	**170512301**	**Well Depth:**	35.28	**Pine Number:**	**21208**	**Background PID (ppm):**	0		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	0		
Sampling	**K. Racanelli**	**Well Screen**	35	**Pine Number:**	**13300**	**Pump Intake Depth:**	33.00	**Sample Date:**	10/17/2018
Personnel:		**Interval:**	23	**Tubing Diameter:**	**3/8**	**Depth to Water Before Purge:**	N/A	**Sample Time:**	17:00

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
16:28	17.28	7.57	93	2.54	167	3.71	N/A		0.5	Clear	**N/A**
16:33	16.53	7.59	70	2.23	127	2.18	N/A	0.05	0.75	Yellow	**N/A**
16:38	16.35	7.63	61	2.38	183	1.67	N/A	0.1	1.25	Yellow	**N**
16:43	16.23	7.65	57	2.32	254	1.61	N/A	0.1	1.75	Yellow	**N**
16:48	16.25	7.67	58	2.29	290	1.92	N/A	0.1	2.25	Yellow	**N**
16:53	16.55	7.66	62	2.29	302	2.07	N/A	0.05	2.5	Yellow	**N**
16:58	16.54	7.67	63	2.28	295	2.04	N/A	0.1	3	Yellow	**Y**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

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GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW02	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Rain, 70s	**Sample(s):**	MW02_101518
Project Number:	**170512301**	**Well Depth:**	36.91	**Pine Number:**	**21208**	**Background PID (ppm):**	0		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	0		
Sampling	**K. Racanelli**	**Well Screen**	35	**Pine Number:**	**13300**	**Pump Intake Depth:**	34.00	**Sample Date:**	10/15/2018
Personnel:		**Interval:**	23	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	26.00	**Sample Time:**	13:05

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
12:10	15.08	7.37	35	2.62	117	9.35	26.01		0.5		**N/A**
12:15	16.07	7.36	21	2.66	48.3	0.25	26.01	0.1	1		**N/A**
12:20	16.18	7.36	20	2.66	27.5	0.15	26.02	0.05	1.25		**N**
12:25	16.21	7.36	19	2.66	20.8	0.12	26.03	0.05	1.5		**N**
12:30	16.37	7.36	20	2.66	18.4	0.15	26.03	0.1	2		**N**
12:35	16.56	7.37	23	2.66	16.2	0.16	26.03	0.05	2.25		**N**
12:40	16.67	7.37	24	2.66	14.4	0.18	26.00	0.05	2.5		**N**
12:45	16.79	7.37	25	2.65	13.7	0.21	26.01	0.05	2.75		**N**
12:50	16.75	7.41	43	2.62	13.9	0.55	26.01	0.1	3.25		**N**
12:55	16.52	7.37	29	2.61	13.6	0.49	26.01	0.1	3.75		**N**
13:00	16.63	7.36	34	2.59	13.3	0.54	26.03	0.1	4.25		**N**
13:05	16.65	7.36	39	2.59	13.1	0.50	26.03	0.15	5		**Y**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW03	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Indoors	**Sample(s):**	MW03_101618
Project Number:	**170512301**	**Well Depth:**	31.98	**Pine Number:**	**21208**	**Background PID (ppm):**	0.1		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	1.8		
Sampling	**K. Racanelli**	**Well Screen**	32	**Pine Number:**	**13300**	**Pump Intake Depth:**	29.00	**Sample Date:**	10/16/2018
Personnel:		**Interval:**	20	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	24.68	**Sample Time:**	14:45

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
5:31											
13:45	15.79	8.16	-52	0.23	16.5	0.51	24.96		1	Clear	**N/A**
13:50	15.86	8.18	-19	0.23	10.2	0.96	24.87	0.05	1.25		**N/A**
13:55	16.06	8.18	-7	0.23	8.7	1.31	24.93	0.05	1.5		**N**
14:00	16.09	8.19	5	0.23	7.7	1.64	24.97	0.1	2		**N**
14:05	16.06	8.18	16	0.23	8.1	1.79	24.82	0.05	2.25		**N**
14:10	16.20	8.18	20	0.24	8.6	2.22	24.98	0.05	2.5		**N**
14:15	16.09	8.17	24	0.24	9.1	2.52	25.13	0.1	3		**N**
14:20	15.76	8.15	51	0.24	6.6	3.89	25.04	0.1	3.5		**N**
14:25	15.84	8.11	61	0.25	4.6	4.62	25.09	0.1	4		**N**
14:30	15.78	8.09	62	0.25	14	4.34	24.89	0.05	4.25		**N**
14:35	16.02	8.09	61	0.26	2.7	4.78	24.97	0.05	4.5		**N**
14:40	15.98	8.09	64	0.26	1.4	4.96	24.97	0.1	5		**N**
14:45	15.96	8.08	68	0.26	1	5.07	24.95	0.1	5.5		**Y**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW04	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Indoors		MW04_101718
Project Number:	**170512301**	**Well Depth:**	32.4	**Pine Number:**	**25328**	**Background PID (ppm):**	0.1	**Sample(s):**	
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	0.0		
Sampling	**K. Racanelli**	**Well Screen**	32	**Pine Number:**	**30034**	**Pump Intake Depth:**	30.00	**Sample Date:**	10/17/2018
Personnel:	**Jade Ferrara**	**Interval:**	20	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	24.70	**Sample Time:**	10:00

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
9:00	12.25	7.05	-18	0.23	176	0.93	25.40		0.5	Yellow	**N/A**
9:05	12.01	7.75	7	0.20	157	4.98	25.60	0.15	1.25	Yellow	**N/A**
9:10	12.21	7.36	182	0.00	344	8.46	25.10	0.1	1.75	Yellow	**N**
9:15	12.27	7.95	18	0.20	151	6.30	25.40	0.15	2.5	Yellow	**N**
9:20	12.27	8.13	47	0.19	47.3	7.51	25.00	0.05	2.75	Yellow to clear	**N**
9:25	12.64	8.21	68	0.18	3.1	7.91	24.95	0.05	3	Yellow to clear	**N**
9:30	12.83	8.25	65	0.18	5.8	7.74	24.90	0.1	3.5	Clear	**N**
9:35	12.89	8.28	64	0.18	20.7	7.76	25.05	0.05	3.75		**N**
9:40	12.86	8.29	61	0.18	18.6	7.92	25.05	0.1	4.25		**N**
9:45	12.82	8.32	64	0.18	23.9	8.02	25.10	0.05	4.5		**N**
9:50	12.40	8.31	41	0.19	100	7.81	25.75	0.125	5.125		**N**
9:55	12.54	8.32	43	0.18	51.9	7.52	25.00	0.075	5.5		**N**
10:00	12.67	8.36	73	0.18	56.7	8.04	25.00	0.075	5.875		**N**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW05A	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Sunny, 60s		MW05A_101718
Project Number:	**170512301**	**Well Depth:**	65.9	**Pine Number:**	**25328**	**Background PID (ppm):**	0	**Sample(s):**	
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**Waterra**	**PID Beneath Inner Cap (ppm):**	0		
Sampling	**K. Racanelli**	**Well Screen**	65	**Pine Number:**	**12420**	**Pump Intake Depth:**	63.00	**Sample Date:**	10/17/2018
Personnel:		**Interval:**	60	**Tubing Diameter:**	**3/8**	**Depth to Water Before Purge:**	25.05	**Sample Time:**	15:00

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
13:35	16.03	8.35	-221	0.76	0	0.00	N/A		1.5	Brown turbid	**N/A**
13:40	16.16	8.32	-200	0.76	0	0.00	N/A	0.1	2	Brown turbid	**N/A**
13:45	16.37	8.32	-188	0.76	0	0.00	N/A	0.1	2.5	Brown turbid	**N**
13:50	16.24	8.34	-190	0.76	0	0.00	N/A	0.1	3	Brown turbid	**N**
13:55	16.11	8.33	-186	0.76	0	0.00	N/A	0.1	3.5	Brown turbid	**Y**
14:00	16.14	8.36	-184	0.77	0	0.00	N/A	0.1	4	Brown turbid	**Y**
14:05	Purged water appears very turbid, decon Horiba and recalibrate. Grey silt observed at bottom of Horiba. Purge without Horiba for 25 minutes										**N**
14:10											**N**
14:15											**N**
14:20											**N**
14:25	15.96	8.17	-63	0.81	208	0.82	N/A	1.4	7	Brown turbid	**N**
14:30	15.81	8.30	-158	0.80	0	0.00	N/A	0.1	7.5	Brown turbid	**N**
14:35	15.90	8.31	-164	0.79	0	0.00	N/A	0.1	8	Brown turbid	**N**
14:40	16.28	8.30	-160	0.79	0	0.00	N/A	0.1	8.5	Brown turbid	**Y**
14:45	16.41	8.30	-158	0.80	0	0.00	N/A	0.1	9	Brown turbid	**N**
14:50	16.39	8.31	-165	0.79	0	0.00	N/A	0.1	9.5	Brown turbid	**Y**
14:55	16.39	8.30	-169	0.79	0	0.00	N/A	0.1	10	Brown turbid	**N**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW05B	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Indoors	**Sample(s):**	MW05_101718
Project Number:	**170512301**	**Well Depth:**	32.25	**Pine Number:**	**25328**	**Background PID (ppm):**	0.5		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	4.9		
Sampling	**K. Racanelli**	**Well Screen**	32	**Pine Number:**	**30034**	**Pump Intake Depth:**	31.00	**Sample Date:**	10/17/2018
Personnel:	**Jade Ferrara**	**Interval:**	20	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	25.06	**Sample Time:**	13:10

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
11:30	16.58	7.84	106	0.39	631	0.62	27.95		0.75	Gray, turbid	**N/A**
11:35	16.81	7.85	82	0.39	612	1.34	28.45	0.05	1	Gray, turbid	**N/A**
11:40	17.20	7.88	57	0.39	389	2.17	29.40	0.075	1.375	Gray, turbid	**N**
11:45	17.23	7.93	5	0.39	554	1.95	30.10	0.1	1.875	Gray, turbid	**N**
11:50	17.29	7.98	-34	0.40	769	1.85	30.75	0.005	1.9	Gray, turbid	**N**
11:55	17.27	8.01	-50	0.40	957	1.51	30.88	0.02	2	Gray, turbid, ran dry at 11:57	**N**
	Allow to recharge for 65 minutes, sample collected at 13:10										

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW06	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Sunny, 60s		MW06_101618
Project Number:	**170512301**	**Well Depth:**	30.93	**Pine Number:**	**21208**	**Background PID (ppm):**	0	**Sample(s):**	
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	2.8		
Sampling	**K. Racanelli**	**Well Screen**	30	**Pine Number:**	**13300**	**Pump Intake Depth:**	28.00	**Sample Date:**	10/16/2018
Personnel:		**Interval:**	18	**Tubing Diameter:**	**.5**	**Depth to Water Before Purge:**	23.01	**Sample Time:**	12:30

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
10:03	15.52	6.66	-348	0.33	486	0.46	25.05		0.1	Clear	**N/A**
10:08	16.32	7.22	-293	0.32	420	0.52	25.67	0.08	0.5	Clear	**N/A**
10:13	16.77	7.46	-287	0.31	872	0.43	25.94	0.05	0.75	Beige turbidity	**N**
10:18	17.04	7.66	-292	0.31	0	0.34	26.23	0.05	1	Beige turbidity	**N**
10:23	17.20	7.83	-294	0.31	0	0.31	26.23	0.05	1.25	Beige turbidity	**N**
10:28	16.84	7.92	-296	0.31	0	0.31	26.03	0.03	1.4	Beige turbidity	**N**
10:33	16.84	8.06	-302	0.31	0	0.21	26.10	0.02	1.5	Brown turbidity	**N**
10:38	17.12	8.22	-322	0.32	0	0.11	26.64	0.05	1.75	Brown turbidity	**N**
10:43	17.10	8.27	-327	0.32	0	0.07	26.45	0.05	2	Brown turbidity	**N**
10:48	17.10	8.32	-335	0.31	0	0.00	26.58	0.05	2.25	Brown turbid	**N**
10:53	17.28	8.35	-345	0.32	0	0.00	26.66	0.05	2.5	Lowered pump speed to 28.5	**N**
10:58	17.16	8.34	-338	0.33	0	0.00	26.73	0.05	2.75		**N**
11:03	17.27	8.49	-388	0.34	1000	4.14	27.37	0.05	3		**N**
		Allow to recharge for 1.5 hours, collect sample at 12:30									

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

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GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW07	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Indoors		MW07_101618
Project Number:	**170512301**	**Well Depth:**	33.55	**Pine Number:**	**25328**	**Background PID (ppm):**	0.3	**Sample(s):**	GWDUP01_101618
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**Waterra**	**PID Beneath Inner Cap (ppm):**	0.4		MW07_MS/MSD
Sampling	**Luke McCartney**	**Well Screen**	30	**Pine Number:**	**34415/12420**	**Pump Intake Depth:**	30.00	**Sample Date:**	10/16/2018
Personnel:	**K. Racanelli**	**Interval:**	18	**Tubing Diameter:**	**3/8**	**Depth to Water Before Purge:**	N/A	**Sample Time:**	14:50

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
14:15	17.57	8.20	125	0.38	283	8.80	N/A		0		**N/A**
14:20	16.96	8.08	137	0.39	111	8.68	N/A	0.132	0.66		**N/A**
14:25	16.83	8.06	139	0.40	65.6	8.44	N/A	0.106	1.19		**N**
14:30	16.81	8.05	136	0.41	59	8.20	N/A	0.122	1.8		**N**
14:35	16.80	8.05	134	0.41	57.6	8.11	N/A	0.116	2.38		**N**
14:40	16.78	8.05	129	0.41	57.7	7.97	N/A	0.158	3.17		**Y**
14:45	16.75	8.05	128	0.41	56.4	7.97	N/A	0.092	3.63		**Y**
14:50	16.76	8.05	128	0.41	47.9	7.92	N/A	0.106	4.16		**N**
14:55	16.76	8.05	127	0.41	45.1	7.91	N/A	0.132	4.82		**N**
15:00	16.76	8.05	126	0.41	38.6	7.85	N/A	0.146	5.55		**N**
15:05	16.76	8.06	125	0.41	36.2	7.83	N/A	0.132	6.21		**N**
15:10	16.77	8.06	125	0.41	32.5	7.81	N/A	0.132	6.87		**N**
15:15	16.77	8.06	126	0.41	31	7.76	N/A	0.132	7.53		**N**
	PFAS Sampling on 10/16/2018 only, well pumped dry. All other parameters collected on 10/17/2018 after groundwater recovery										

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW07	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Indoors		MW07_101718
Project Number:	**170512301**	**Well Depth:**	33.55	**Pine Number:**	**25328**	**Background PID (ppm):**	0.3	**Sample(s):**	GWDUP01_101718
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**Waterra**	**PID Beneath Inner Cap (ppm):**	0.4		MW07_MS/MSD
Sampling	**Luke McCartney**	**Well Screen**	30	**Pine Number:**	**34415/12420**	**Pump Intake Depth:**	30.00	**Sample Date:**	10/17/2018
Personnel:	**K. Racanelli**	**Interval:**	18	**Tubing Diameter:**	**3/8**	**Depth to Water Before Purge:**	N/A	**Sample Time:**	9:45

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
											N/A
	See notes from 10/16/2018, sample collected at 9:45 after well recovery overnight										**N/A**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW10	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Rain, 70s	**Sample(s):**	MW10_101518
Project Number:	**170512301**	**Well Depth:**	34.14	**Pine Number:**	**21208**	**Background PID (ppm):**	0		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	0		
Sampling Personnel:	**K. Racanelli**	**Well Screen Interval:**	29 – 17	**Pine Number:**	**13300**	**Pump Intake Depth:**	32.00	**Sample Date:**	10/15/2018
				Tubing Diameter:	**0.5**	**Depth to Water Before Purge:**	25.6	**Sample Time:**	11:28

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
10:28	13.28	7.05	-21	0.53	125	0.96	25.64		0.75		**N/A**
10:33	13.65	7.45	-20	0.52	115	1.12	25.63	0.05	1		**N/A**
10:38	13.89	7.56	-26	0.52	112	1.16	25.64	0.05	1.25		**N**
10:43	13.95	7.62	-32	0.51	60.5	6.11	25.64	0.03	1.4		**N**
10:48	13.39	7.70	-24	0.50	60.1	5.48	25.65	0.12	2		**N**
10:53	13.30	7.72	-12	0.50	55.8	4.97	25.63	0.05	2.25		**N**
10:58	13.38	7.74	-3	0.49	55.4	4.59	25.63	0.05	2.5		**N**
11:03	13.44	7.76	3	0.49	58	4.33	25.63	0.1	3		**N**
11:08	13.37	7.78	11	0.50	53.7	4.12	25.63	0.05	3.25		**N**
11:13	13.42	7.80	15	0.50	22.2	4.07	25.63	0.05	3.5		**N**
11:18	13.56	7.81	17	0.49	15.3	3.98	25.63	0.05	3.75		**N**
11:23	13.56	7.83	22	0.49	13.4	3.96	25.63	0.05	4		**N**
11:28	13.71	7.83	24	0.49	13.4	3.93	25.62	0.05	4.25		**N**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW13A	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	60s, Sunny		MW13A_101718
Project Number:	**170512301**	**Well Depth:**	70.8	**Pine Number:**	**25328**	**Background PID (ppm):**	0	**Sample(s):**	
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	2.7		
Sampling	**K. Racanelli**	**Well Screen**	70	**Pine Number:**	**30034**	**Pump Intake Depth:**	68.00	**Sample Date:**	10/17/2018
Personnel:	**Jade Ferrara**	**Interval:**	65	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	27.73	**Sample Time:**	15:30

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
14:30	16.16	8.25	-423	0.35	0	8.37	29.70		0.25	Turbid	**N/A**
14:35	16.40	8.30	-438	0.35	0	7.04	30.09	0.05	0.5	Turbid	**N/A**
14:40	16.25	8.34	-461	0.34	974	5.15	30.59	0.075	0.875	Turbid	**N**
14:45	16.39	8.35	-475	0.34	997	3.67	30.60	0.025	1	Turbid	**N**
14:50	16.54	8.36	-484	0.34	875	2.99	30.68	0.05	1.25	Turbid	**N**
14:55	16.42	8.38	-479	0.35	680	2.27	31.00	0.05	1.5	Turbid	**N**
15:00	16.37	8.39	-485	0.35	587	1.94	31.10	0.05	1.75		**N**
15:05	16.39	8.39	-493	0.36	741	1.62	31.21	0.05	2		**N**
15:10	16.56	8.38	-506	0.37	547	1.38	31.08	0.05	2.25		**N**
15:15	16.54	8.38	-515	0.38	284	1.22	31.15	0.025	2.375		**N**
15:20	16.27	8.39	-524	0.39	752	1.07	31.40	0.05	2.625		**N**
15:25	16.35	8.38	-533	0.40	188	0.93	31.47	0.05	2.875		**N**
15:30	16.39	8.38	-544	0.41	233	0.84	31.42	0.05	3.125		**N**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

GROUND WATER SAMPLE FIELD INFORMATION FORM

Project Information		Well Information		Equipment Information		Sampling Conditions		Sampling Information	
Project Name:	**37-11 30th Street**	**Well No:**	MW13B	**Water Quality Device Model:**	**Horiba U52**	**Weather:**	Rain, 70s	**Sample(s):**	MW13B_101518
Project Number:	**170512301**	**Well Depth:**	35.62	**Pine Number:**	**21208**	**Background PID (ppm):**	0		
Site Location:	**Queens, NY**	**Well Diameter:**	2	**Pump Make and Model:**	**SS Monsoon**	**PID Beneath Inner Cap (ppm):**	0		
Sampling	**K. Racanelli**	**Well Screen**	35	**Pine Number:**	**13300**	**Pump Intake Depth:**	33.00	**Sample Date:**	10/15/2018
Personnel:		**Interval:**	25	**Tubing Diameter:**	**0.5**	**Depth to Water Before Purge:**	25.96	**Sample Time:**	15:03

STABILIZATION = 3 successive readings within limits

TIME	TEMP °Celsius (+/- 3%)	pH (+/- 0.1)	ORP mV (+/- 10mV)	CONDUCTIVITY mS/cm (+/- 3%)	TURBIDITY NTU (+/- 10%) above 5 NTU	DO mg/L (+/- 10%) above 0.5 mg/L	DTW ft Drawdown < 0.33 ft	Flow Rate (gpm) (<0.13 gpm)	Cumulative Discharge Volume (Gal)	NOTES color, odor etc.	Stabilized?
BEGIN PURGING											
14:03	16.72	7.92	-248	1.56	266	0.70	27.35		1.25		**N/A**
14:08	16.49	7.79	-233	1.59	252	0.89	27.00	0.15	2		**N/A**
14:13	16.82	7.72	-213	1.73	248	1.33	26.63	0.05	2.25		**N**
14:18	16.80	7.65	-197	1.85	67	1.68	26.59	0.07	2.6		**N**
14:23	16.76	7.68	-211	1.76	68.6	1.31	26.56	0.08	3		**N**
14:28	16.99	7.69	-209	1.75	64.4	1.35	26.41	0.04	3.2		**N**
14:33	17.01	7.66	-201	1.79	56.8	1.76	26.60	0.06	3.5		**N**
14:38	16.76	7.70	-216	1.69	64.1	1.43	26.68	0.1	4		**N**
14:43	16.71	7.68	-202	1.73	54.2	1.50	26.66	0.1	4.5		**N**
14:48	16.73	7.67	-195	1.76	47	1.51	26.60	0.05	4.75		**N**
14:53	16.85	7.65	-186	1.78	37.7	1.58	26.58	0.1	5.25		**N**
14:58	16.86	7.64	-186	1.77	34.5	1.55	26.58	0.05	5.5		**N**
15:03	16.81	7.64	-186	1.76	33.6	1.52	26.57	0.05	5.75		**N**

Notes:

1. Well depths and groundwater depths were measured in feet below the top of well casing.
2. Well and tubing diameters are measured in inches.
3. PID = Photoionization Detector
4. ppm = Parts per million
5. pH = Hydrogen ion concentration
6. ORP = Oxidation-reduction potential, measured in millivolts (mV)
7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L)
8. DTW = Depth to water
9. mV = Millivolts
10. mS/cm = Milli-Siemans per centimeter
11. NTU = Nephelometric Turbidity Unit
12. gpm = Gallons per minute

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APPENDIX F

SOIL VAPOR CONSTRUCTION AND SAMPLING LOGS

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SSVDUP01_1001818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced subslab vapor point to approximately 3-inches below the top of the slab. A small amount of No. 1 sand was backfilled into the borehole to set the vapor tubing. No. 1 sand was backfilled around the tubing to 1 inch bgs, and the remainder of the borehole was sealed with bentonite.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60	
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)	
PID AFTER PURGE (PPM):	5.4	
HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	48.8%	49.0%
HELIUM TEST IN TUBE (PPM):	1625	2.70%
SAMPLE START TIME:	9:34	
SAMPLE STOP TIME:	17:34	
TOTAL SAMPLE TIME (MIN):	480	
REGULATOR FLOW RATE (L/MIN):	0.0045	
VOLUME OF SAMPLE (LITERS):	2.7	
PID AFTER SAMPLE (PPM):	4	
SAMPLE MOISTURE CONTENT:	NA	
CAN SERIAL NUMBER:	2371	
REGULATOR SERIAL NUMBER:	0201	
CAN START VACUUM PRESS. (" HG):	-29.09	
CAN STOP VACUUM PRESS. (" HG):	-4.12	

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	**DEPTH (FEET FROM SURFACE)**	**NOTES**
SURFACE / SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Tube Depth	0.25	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SSV01_1001818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced subslab vapor point to approximately 3-inches below the top of the slab. A small amount of No. 1 sand was backfilled into the borehole to set the vapor tubing. No. 1 sand was backfilled around the tubing to 1 inch bgs, and the remainder of the borehole was sealed with bentonite.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60	
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)	
PID AFTER PURGE (PPM):	2.6	
HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	42.1%	36.4%
HELIUM TEST IN TUBE (PPM):	0	0
SAMPLE START TIME:	9:59	
SAMPLE STOP TIME:	17:59	
TOTAL SAMPLE TIME (MIN):	480	
REGULATOR FLOW RATE (L/MIN):	0.0045	
VOLUME OF SAMPLE (LITERS):	2.7	
PID AFTER SAMPLE (PPM):	0	
SAMPLE MOISTURE CONTENT:	NA	
CAN SERIAL NUMBER:	2006	
REGULATOR SERIAL NUMBER:	576	
CAN START VACUUM PRESS. (" HG):	-30.42	
CAN STOP VACUUM PRESS. (" HG):	-6.16	

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	**DEPTH (FEET FROM SURFACE)**	**NOTES**
SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Tube Depth	0.25	
SURFACE		

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SSV02_1001818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced subslab vapor point to approximately 3-inches below the top of the slab. A small amount of No. 1 sand was backfilled into the borehole to set the vapor tubing. No. 1 sand was backfilled around the tubing to 1 inch bgs, and the remainder of the borehole was sealed with bentonite.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60	
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)	
PID AFTER PURGE (PPM):	2.0	
HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	42.1%	41.2%
HELIUM TEST IN TUBE (PPM):	0	0
SAMPLE START TIME:	10:21	
SAMPLE STOP TIME:	18:21	
TOTAL SAMPLE TIME (MIN):	480	
REGULATOR FLOW RATE (L/MIN):	0.0045	
VOLUME OF SAMPLE (LITERS):	2.7	
PID AFTER SAMPLE (PPM):	0	
SAMPLE MOISTURE CONTENT:	NA	
CAN SERIAL NUMBER:	122	
REGULATOR SERIAL NUMBER:	1101	
CAN START VACUUM PRESS. (" HG):	-30.45	
CAN STOP VACUUM PRESS. (" HG):	-6.91	

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	**DEPTH (FEET FROM SURFACE)**	**NOTES**
SURFACE / SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Tube Depth	0.25	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SSV03_1001818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced subslab vapor point to approximately 3-inches below the top of the slab. A small amount of No. 1 sand was backfilled into the borehole to set the vapor tubing. No. 1 sand was backfilled around the tubing to 1 inch bgs, and the remainder of the borehole was sealed with bentonite.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60	
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)	
PID AFTER PURGE (PPM):	6.1	
HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	49.2%	52.1%
HELIUM TEST IN TUBE (PPM):	0	17500
SAMPLE START TIME:	9:34	
SAMPLE STOP TIME:	17:34	
TOTAL SAMPLE TIME (MIN):	480	
REGULATOR FLOW RATE (L/MIN):	0.0045	
VOLUME OF SAMPLE (LITERS):	2.7	
PID AFTER SAMPLE (PPM):	4	
SAMPLE MOISTURE CONTENT:	NA	
CAN SERIAL NUMBER:	126	
REGULATOR SERIAL NUMBER:	492	
CAN START VACUUM PRESS. (" HG):	-30.31	
CAN STOP VACUUM PRESS. (" HG):	-7.65	

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	DEPTH (FEET FROM SURFACE)	NOTES
SURFACE / SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Tube Depth	0.25	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV01_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced SV01 to 5 feet below grade surface (ft bgs). #1 sand was backfilled around and above the implant and the remainder of the borehole was sealed with hydrated bentonite powder to grade. A MultiRAE PID set to low flow was used to purge the soil vapor point.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)
PID AFTER PURGE (PPM):	NA
HELIUM TESTS	Pre-sampling / Post-sampling
HELIUM TEST IN BUCKET(%):	NA / 35.2%
HELIUM TEST IN TUBE (PPM):	NA / 0
SAMPLE START TIME:	10:48
SAMPLE STOP TIME:	18:50
TOTAL SAMPLE TIME (MIN):	482
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	2421
REGULATOR SERIAL NUMBER:	340
CAN START VACUUM PRESS. (" HG):	-30.3
CAN STOP VACUUM PRESS. (" HG):	-6.23

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	DEPTH (FEET FROM SURFACE)	NOTES
SURFACE / SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Probe Depth	5.00	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV02_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced SV02 to 5 feet below grade surface (ft bgs). #1 sand was backfilled around and above the implant and the remainder of the borehole was sealed with hydrated bentonite powder to grade. A MultiRAE PID set to low flow was used to purge the soil vapor point.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)
PID AFTER PURGE (PPM):	NA

HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	NA	36.0%
HELIUM TEST IN TUBE (PPM):	NA	0

SAMPLE START TIME:	10:45
SAMPLE STOP TIME:	18:47
TOTAL SAMPLE TIME (MIN):	482
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0.9
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	2209
REGULATOR SERIAL NUMBER:	675
CAN START VACUUM PRESS. (" HG):	-30.38
CAN STOP VACUUM PRESS. (" HG):	-7.45

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	**DEPTH (FEET FROM SURFACE)**	**NOTES**
SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Probe Depth	5.00	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

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SOIL VAPOR SAMPLING LOG SHEET

Sample Number: SV03_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
DRILLING FIRM OR LANGAN INSTALLER: AARCO Environmental Services, Corp.	**INSTALLATION DATE STARTED:** 10/5/2018 **DATE FINISHED:** 10/5/2018
INSTALLATION FOREMAN: Daybi Pacheco	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSTALLATION EQUIPMENT: Geoprobe® 7822 DT	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
INSPECTOR: Ashley Stappenbeck	**SAMPLER:** Ashley Stappenbeck
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND PURGING:

AARCO advanced SV03 to 5 feet below grade surface (ft bgs). #1 sand was backfilled around and above the implant and the remainder of the borehole was sealed with hydrated bentonite powder to grade. A MultiRAE PID set to low flow was used to purge the soil vapor point.

TUBING TYPE/DIAMETER: 1/4-Inch Teflon-lined Polyethylene Tubing	**TYPE OF MATERIAL ABOVE SEAL:** Seal to grade
IMPLANT SCREEN TYPE/LENGTH/DIAMETER: 2-Inch Polyethylene Probe	**SEAL MATERIAL (Bentonite, Beeswax, Modeling Clay, etc.):** Bentonite
BOREHOLE DIAMETER: 2-inch	**FILTER PACK MATERIAL (Sand or Glass Beads):** Sand

PURGE VOLUME (L):	0.60	
PURGE FLOW RATE (ML/MIN):	200 (3-minute purge)	
PID AFTER PURGE (PPM):	5.8	
HELIUM TESTS	Pre-sampling	Post-sampling
HELIUM TEST IN BUCKET(%):	NA	40.6%
HELIUM TEST IN TUBE (PPM):	NA	0
SAMPLE START TIME:	10:54	
SAMPLE STOP TIME:	19:03	
TOTAL SAMPLE TIME (MIN):	489	
REGULATOR FLOW RATE (L/MIN):	0.0045	
VOLUME OF SAMPLE (LITERS):	2.7	
PID AFTER SAMPLE (PPM):	0.6	
SAMPLE MOISTURE CONTENT:	NA	
CAN SERIAL NUMBER:	2180	
REGULATOR SERIAL NUMBER:	437	
CAN START VACUUM PRESS. (" HG):	-30.54	
CAN STOP VACUUM PRESS. (" HG):	-5.92	

IMPLANT/PROBE DETAILS (SEAL, FILTER, ETC.)	**DEPTH (FEET FROM SURFACE)**	**NOTES**
SURFACE		
Top of Seal	0.00	
Top of Pack	0.08	
Probe Depth	5.00	

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

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AIR SAMPLING LOG SHEET

Sample Number: IA01_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
SAMPLER: AARCO Environmental Services, Corp.	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSPECTOR: Ashley Stappenbeck	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND SAMPLING:

A 2.7L Summa canister fitted with a 8-hour flow control valve was set up in the eastern part of the site at about 3 to 4 feet above grade surface. The flow controller was zeroed and valve opened to initiate collection of the ambient air sample. The sample and flow controller were checked during the sampling period to ensure proper operation until completion.

SAMPLE DETAILS

HEIGHT ABOVE GROUND (FT):	3.96
PID BEFORE SAMPLE (PPM):	0.0
SAMPLE START TIME:	9:59
SAMPLE STOP TIME:	17:59
TOTAL SAMPLE TIME (MIN):	480
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0.0
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	2188
REGULATOR SERIAL NUMBER:	0331
CAN START VACUUM PRESS. (" HG):	-30.58
CAN STOP VACUUM PRESS. (" HG):	-6.08

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

QA/QC ambient air sample. AA01 intake set at a height of about 3-4 feet above grade level in eastern part of site.

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AIR SAMPLING LOG SHEET

Sample Number: IA02_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
SAMPLER: AARCO Environmental Services, Corp.	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSPECTOR: Ashley Stappenbeck	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND SAMPLING:

A 2.7L Summa canister fitted with a 8-hour flow control valve was set up in the eastern part of the site at about 3 to 4 feet above grade surface. The flow controller was zeroed and valve opened to initiate collection of the ambient air sample. The sample and flow controller were checked during the sampling period to ensure proper operation until completion.

SAMPLE DETAILS

HEIGHT ABOVE GROUND (FT):	4.25
PID BEFORE SAMPLE (PPM):	0.0
SAMPLE START TIME:	10:21
SAMPLE STOP TIME:	18:21
TOTAL SAMPLE TIME (MIN):	480
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0.0
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	238
REGULATOR SERIAL NUMBER:	0771
CAN START VACUUM PRESS. (" HG):	-30.08
CAN STOP VACUUM PRESS. (" HG):	-5.35

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

QA/QC ambient air sample. AA01 intake set at a height of about 3-4 feet above grade level in eastern part of site.

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727

AIR SAMPLING LOG SHEET

Sample Number: IA03_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
SAMPLER: AARCO Environmental Services, Corp.	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSPECTOR: Ashley Stappenbeck	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND SAMPLING:

A 2.7L Summa canister fitted with a 8-hour flow control valve was set up in the eastern part of the site at about 3 to 4 feet above grade surface. The flow controller was zeroed and valve opened to initiate collection of the ambient air sample. The sample and flow controller were checked during the sampling period to ensure proper operation until completion.

SAMPLE DETAILS

HEIGHT ABOVE GROUND (FT):	4.13
PID BEFORE SAMPLE (PPM):	0.0
SAMPLE START TIME:	9:34
SAMPLE STOP TIME:	17:34
TOTAL SAMPLE TIME (MIN):	480
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0.0
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	2597
REGULATOR SERIAL NUMBER:	1061
CAN START VACUUM PRESS. (" HG):	-30.37
CAN STOP VACUUM PRESS. (" HG):	-3.86

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

QA/QC ambient air sample. AA01 intake set at a height of about 3-4 feet above grade level in eastern part of site.

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, New York 10001-2727

AIR SAMPLING LOG SHEET

Sample Number: AA01_100818

PROJECT: 37-11 30th Street	**PROJECT NO.:** 170512301
LOCATION: Long Island City, New York	**SURFACE ELEVATION AND DATUM:** NA
SAMPLER: AARCO Environmental Services, Corp.	**SAMPLE DATE STARTED:** 10/8/2018 **DATE FINISHED:** 10/8/2018
INSPECTOR: Ashley Stappenbeck	**TYPE OF SAMPLING DEVICE:** 2.7-Liter Summa Canister
POTENTIAL SAMPLE INTERFERENCES: None Observed	**WEATHER CONDITIONS (PRECIP., TEMP., PRESS., WIND SPEED AND DIR.):** Temp: 64-66°F Wind: 0-10 mph N Precipitation: 0'' rainfall Pressure: 30.31'' pressure

METHOD OF INSTALLATION AND SAMPLING:

A 2.7L Summa canister fitted with a 8-hour flow control valve was set up in the eastern part of the site at about 3 to 4 feet above grade surface. The flow controller was zeroed and valve opened to initiate collection of the ambient air sample. The sample and flow controller were checked during the sampling period to ensure proper operation until completion.

SAMPLE DETAILS

HEIGHT ABOVE GROUND (FT):	4.29
PID BEFORE SAMPLE (PPM):	0.0
SAMPLE START TIME:	10:43
SAMPLE STOP TIME:	18:46
TOTAL SAMPLE TIME (MIN):	483
REGULATOR FLOW RATE (L/MIN):	0.0045
VOLUME OF SAMPLE (LITERS):	2.7
PID AFTER SAMPLE (PPM):	0.0
SAMPLE MOISTURE CONTENT:	NA
CAN SERIAL NUMBER:	182
REGULATOR SERIAL NUMBER:	0044
CAN START VACUUM PRESS. (" HG):	-30.36
CAN STOP VACUUM PRESS. (" HG):	-7.39

SAMPLE LOCATION SKETCH

See Sample Location Plan

NOTES

QA/QC ambient air sample. AA01 intake set at a height of about 3-4 feet above grade level in eastern part of site.

Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology D.P.C.
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APPENDIX G

DATA USABILITY SUMMARY REPORTS

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Nicole Kung, Langan Senior Staff Engineer

From: Emily Strake, Langan Senior Project Chemist

Date: October 30, 2018

Re: Data Usability Summary Report
For 37-11 30th Street
Samples Collected on October 8, 2018
Langan Project No.: 170512301

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of canister air samples collected on October 8, 2018 by Langan Engineering and Environmental Services ("Langan") at the 37-11 30th Street site ("the site"). The samples were analyzed by Alpha Analytical Laboratories, Inc. (NYSDOH NELAC registration # 11148) for volatile organic compounds (VOCs) by the methods specified below.

- VOCs by USEPA Method TO-15 and TO-15 SIM

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

TABLE 1: SAMPLE SUMMARY

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1840663	L1840663-01	SSV01_100818	10/8/2018	VOCs
L1840663	L1840663-02	SSV02_100818	10/8/2018	VOCs
L1840663	L1840663-03	SSV03_100818	10/8/2018	VOCs
L1840663	L1840663-04	SV01_100818	10/8/2018	VOCs
L1840663	L1840663-05	SV02_100818	10/8/2018	VOCs
L1840663	L1840663-06	SV03_100818	10/8/2018	VOCs
L1840663	L1840663-07	IA01_100818	10/8/2018	VOCs
L1840663	L1840663-08	IA02_100818	10/8/2018	VOCs
L1840663	L1840663-09	IA03_100818	10/8/2018	VOCs
L1840663	L1840663-10	SSVDUP01_100818	10/8/2018	VOCs
L1840663	L1840663-11	AA01_100818	10/8/2018	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II SOP #HW-31, "Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-I5" (September 2016, Revision 6) and the specifics of the methods employed.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, target compound identification and quantification, chromatograms, overall system performance, and field duplicate.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
AA01_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
AA01_100818	TO-15	67-64-1	ACETONE	J
IA01_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
IA01_100818	TO-15	67-64-1	ACETONE	J
IA02_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
IA02_100818	TO-15	67-64-1	ACETONE	J
IA03_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
IA03_100818	TO-15	67-64-1	ACETONE	J
IA03_100818	TO-15	67-63-0	ISO-PROPYL ALCOHOL	J
SSV01_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SSV01_100818	TO-15	67-64-1	ACETONE	J
SSV02_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SSV03_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SSVDUP01_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SV01_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SV01_100818	TO-15	67-64-1	ACETONE	J
SV02_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ
SV03_100818	TO-15	622-96-8	4-ETHYLTOLUENE	UJ

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by USEPA Method TO-15:

The initial calibration verification (ICV) for batch WG1167836 on instrument AIRPIANO3 exhibited a percent difference (%D) above the control limit for 4-ethyltoluene (-37.9%). The associated results in samples SSV01_100818, SSV02_100818, SSV03_100818, SV01_100818,

SV02_100818, SV03_100818, IA01_100818, IA02_100818, IA03_100818, SSVDUP01_100818, and AA01_100818 are qualified as "UJ" based on potential indeterminate bias.

Sample IA03_100818 results for iso-propyl alcohol should be considered estimated due to co-elution with a non-target peak.

Samples AA01_100818, IA01_100818, IA02_100818, IA03_100818, SSV01_100818, and SV01_100818 results for acetone should be considered estimated due to coelution with a non-target peak.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by USEPA Method TO-15:

The method blank (MB) for batch WG1167836 exhibited a detection of acetone (0.278 $\mu g/m^3$). The associated results in samples SSV01_100818, SSV02_100818, SSV03_100818, SV01_100818, SV02_100818, SV03_100818, IA01_100818, IA02_100818, IA03_100818, SSVDUP01_100818, and AA01_100818 are non-detect or greater than 10X the blank concentration. No qualification is necessary.

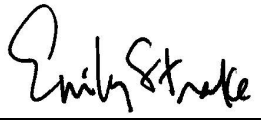
COMMENTS:

Field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 2X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 2X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50% for soil vapor. All analytes met the precision criteria.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Nicole Kung, Langan Senior Staff Engineer

From: Emily Strake, Langan Senior Project Chemist

Date: October 30, 2018

Re: Data Usability Summary Report
For 37-11 30th Street
Samples Collected in September and October 2018
Langan Project No.: 170512301

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of soil samples collected in September and October 2018 by Langan Engineering and Environmental Services ("Langan") at the 37-11 30th Street site ("the site"). The samples were analyzed by Alpha Analytical Laboratories, Inc. (NYSDOH NELAC registration # 11148) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, polychlorinated biphenyls (PCBs), pesticides, metals, mercury (Hg), cyanide (CN), hexavalent chromium (CrVI), trivalent chromium (CrIII), and total solids by the methods specified below.

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Metals by SW-846 Method 6010D
- Mercury by SW-846 Method 7471B
- Cyanide by SW-846 Method 9012B
- Hexavalent Chromium by SW-846 Method 7196A
- Trivalent Chromium (calculated)
- Total Solids by Standard Method 2540G

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

TABLE 1: SAMPLE SUMMARY

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1839010	L1839010-01	SB06_1-2	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-02	SB06_21.5-22.5	9/27/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-03	SB06_29-30	9/27/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-04	SB07_0-2	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-05	SB07_3-5	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-06	SB07_21-23	9/27/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-07	SB11_0-1	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-08	SB11_6.5-7.5	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-09	SB11_22-23	9/27/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-10	SB12_0-2	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-11	SB12_2-4	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-12	SB12_22-23	9/27/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-13	SBDUP01_092718	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-14	SBFB01_092718	9/27/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839010	L1839010-15	SBTB01_092718	9/27/2018	VOCs

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1839310	L1839310-01	SB05_0-2	9/28/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839310	L1839310-02	SB05_22-23	9/28/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839310	L1839310-03	SB05_45-46	9/28/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839310	L1839310-04	SB05_64-65	9/28/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839310	L1839310-05	SBTB02_092818	9/28/2018	VOCs
L1839481	L1839481-01	SB04_0-1	10/1/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839481	L1839481-02	SB04_23.5-24.5	10/1/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839481	L1839481-03	SB04_34-35	10/1/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839481	L1839481-04	SBDUP02_100118	10/1/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839481	L1839481-05	SBTB03_100118	10/1/2018	VOCs
L1839481	L1839481-06	SBFB02_100118	10/1/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-01	SB03_0.5-1.5	10/2/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-02	SB03_22.5-23.5	10/2/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-03	SB03_25-26	10/2/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-04	SB03_32-33	10/2/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-05	SB13_0-1	10/2/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-06	SB13_6.5-7.5	10/2/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-07	SB13_28-29	10/2/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839661	L1839661-08	SBTB04_100218	10/2/2018	VOCs

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1839825	L1839825-01	SB13_68-69	10/3/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1839825	L1839825-02	SBTB05_100318	10/3/2018	VOCs
L1840256	L1840256-01	SB01_0.5-1.5	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-02	SB01_6.5-7.5	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-03	SB01_26-27	10/4/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-04	SB02_0.5-1.5	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-05	SB02_3-4	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-06	SB02_26-27	10/4/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-07	SB10_1-2	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-08	SB10_6-7	10/4/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-09	SB10_24-25	10/4/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840256	L1840256-10	SBTB06_100418	10/4/2018	VOCs
L1840500	L1840500-01	SB08_0-1	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-02	SB08_1.5-2.5	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-03	SB08_21-22	10/5/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-04	SB09_0.5-1.5	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1840500	L1840500-05	SB09_3-4	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-06	SB09_22-23	10/5/2018	VOCs, SVOCs, PCBs, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-07	SBFB03_100518	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-08	SBDUP03_100518	10/5/2018	VOCs, SVOCs, Herbicides, PCBs, Pesticides, Metals, Hg, CN, CrVI, CrIII, Total Solids
L1840500	L1840500-09	SBTB07_100518	10/5/2018	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34A, "Trace Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-33A, "Low/Medium Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-35A, "Semivolatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-17, "Validating Chlorinated Herbicides" (December 2010, Revision 3.1), USEPA Region II SOP #HW-37A, "Polychlorinated Biphenyl (PCB) Aroclor Data Validation" (June 2015, Revision 0), USEPA Region II SOP #HW-36A, "Pesticide Data Validation" (October 2016, Revision 1), USEPA Region II SOP #HW-3a, "ICP-AES Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3c, "Mercury and Cyanide Data Validation" (September 2016, Revision 1), the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017), USEPA "National Functional Guidelines for Inorganic Superfund Methods Data Review" (EPA-540-R-2017-001, January 2017) and the specifics of the methods employed.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and

quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB06_1-2	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB06_1-2	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB06_1-2	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB06_1-2	8260C	67-64-1	ACETONE	J
SB06_1-2	6010D	7440-70-2	CALCIUM, TOTAL	J
SB06_1-2	8260C	74-87-3	CHLOROMETHANE	UJ
SB06_1-2	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB06_1-2	6010D	7440-50-8	COPPER, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB06_1-2	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SB06_1-2	6010D	7439-92-1	LEAD, TOTAL	J
SB06_1-2	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB06_1-2	7471B	7439-97-6	MERCURY, TOTAL	J
SB06_1-2	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB06_1-2	6010D	7440-23-5	SODIUM, TOTAL	J
SB06_1-2	8081B	8001-35-2	TOXAPHENE	UJ
SB06_1-2	6010D	7440-62-2	VANADIUM, TOTAL	J
SB06_1-2	8260C	75-01-4	VINYL CHLORIDE	UJ
SB06_1-2	6010D	7440-66-6	ZINC, TOTAL	J
SB06_21.5-22.5	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB06_21.5-22.5	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB06_21.5-22.5	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB06_21.5-22.5	8260C	67-64-1	ACETONE	J
SB06_21.5-22.5	6010D	7440-70-2	CALCIUM, TOTAL	J
SB06_21.5-22.5	8260C	74-87-3	CHLOROMETHANE	UJ
SB06_21.5-22.5	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB06_21.5-22.5	6010D	7440-50-8	COPPER, TOTAL	J
SB06_21.5-22.5	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SB06_21.5-22.5	6010D	7439-92-1	LEAD, TOTAL	J
SB06_21.5-22.5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB06_21.5-22.5	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB06_21.5-22.5	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB06_21.5-22.5	6010D	7440-23-5	SODIUM, TOTAL	J
SB06_21.5-22.5	6010D	7440-62-2	VANADIUM, TOTAL	J
SB06_21.5-22.5	8260C	75-01-4	VINYL CHLORIDE	UJ
SB06_21.5-22.5	6010D	7440-66-6	ZINC, TOTAL	J
SB06_29-30	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB06_29-30	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB06_29-30	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB06_29-30	8260C	67-64-1	ACETONE	J
SB06_29-30	6010D	7440-70-2	CALCIUM, TOTAL	J
SB06_29-30	8260C	74-87-3	CHLOROMETHANE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB06_29-30	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB06_29-30	6010D	7440-50-8	COPPER, TOTAL	J
SB06_29-30	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SB06_29-30	6010D	7439-92-1	LEAD, TOTAL	J
SB06_29-30	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB06_29-30	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB06_29-30	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB06_29-30	6010D	7440-23-5	SODIUM, TOTAL	J
SB06_29-30	6010D	7440-62-2	VANADIUM, TOTAL	J
SB06_29-30	8260C	75-01-4	VINYL CHLORIDE	UJ
SB06_29-30	6010D	7440-66-6	ZINC, TOTAL	J
SB07_0-2	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB07_0-2	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB07_0-2	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB07_0-2	6010D	7440-70-2	CALCIUM, TOTAL	J
SB07_0-2	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB07_0-2	6010D	7440-50-8	COPPER, TOTAL	J
SB07_0-2	6010D	7439-92-1	LEAD, TOTAL	J
SB07_0-2	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB07_0-2	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB07_0-2	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB07_0-2	6010D	7440-23-5	SODIUM, TOTAL	J
SB07_0-2	8081B	8001-35-2	TOXAPHENE	UJ
SB07_0-2	6010D	7440-62-2	VANADIUM, TOTAL	J
SB07_0-2	6010D	7440-66-6	ZINC, TOTAL	J
SB07_21-23	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB07_21-23	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB07_21-23	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB07_21-23	6010D	7440-70-2	CALCIUM, TOTAL	J
SB07_21-23	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB07_21-23	6010D	7440-50-8	COPPER, TOTAL	J
SB07_21-23	6010D	7439-92-1	LEAD, TOTAL	J
SB07_21-23	6010D	7439-95-4	MAGNESIUM, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB07_21-23	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB07_21-23	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB07_21-23	6010D	7440-23-5	SODIUM, TOTAL	J
SB07_21-23	6010D	7440-62-2	VANADIUM, TOTAL	J
SB07_21-23	6010D	7440-66-6	ZINC, TOTAL	J
SB07_3-5	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB07_3-5	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB07_3-5	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB07_3-5	6010D	7440-70-2	CALCIUM, TOTAL	J
SB07_3-5	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB07_3-5	6010D	7440-50-8	COPPER, TOTAL	J
SB07_3-5	6010D	7439-92-1	LEAD, TOTAL	J
SB07_3-5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB07_3-5	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB07_3-5	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB07_3-5	6010D	7440-23-5	SODIUM, TOTAL	J
SB07_3-5	8081B	8001-35-2	TOXAPHENE	UJ
SB07_3-5	6010D	7440-62-2	VANADIUM, TOTAL	J
SB07_3-5	6010D	7440-66-6	ZINC, TOTAL	J
SB11_0-1	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB11_0-1	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB11_0-1	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB11_0-1	6010D	7440-70-2	CALCIUM, TOTAL	J
SB11_0-1	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB11_0-1	6010D	7440-50-8	COPPER, TOTAL	J
SB11_0-1	6010D	7439-92-1	LEAD, TOTAL	J
SB11_0-1	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB11_0-1	7471B	7439-97-6	MERCURY, TOTAL	J
SB11_0-1	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB11_0-1	6010D	7440-23-5	SODIUM, TOTAL	J
SB11_0-1	8081B	8001-35-2	TOXAPHENE	UJ
SB11_0-1	6010D	7440-62-2	VANADIUM, TOTAL	J
SB11_0-1	6010D	7440-66-6	ZINC, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB11_22-23	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB11_22-23	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB11_22-23	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB11_22-23	6010D	7440-70-2	CALCIUM, TOTAL	J
SB11_22-23	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB11_22-23	6010D	7440-50-8	COPPER, TOTAL	J
SB11_22-23	6010D	7439-92-1	LEAD, TOTAL	J
SB11_22-23	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB11_22-23	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB11_22-23	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB11_22-23	6010D	7440-23-5	SODIUM, TOTAL	J
SB11_22-23	6010D	7440-62-2	VANADIUM, TOTAL	J
SB11_22-23	6010D	7440-66-6	ZINC, TOTAL	J
SB11_6.5-7.5	8260C	630-20-6	1,1,1,2-TETRACHLOROETHANE	UJ
SB11_6.5-7.5	8260C	71-55-6	1,1,1-TRICHLOROETHANE	UJ
SB11_6.5-7.5	8260C	79-34-5	1,1,2,2-TETRACHLOROETHANE	UJ
SB11_6.5-7.5	8260C	79-00-5	1,1,2-TRICHLOROETHANE	UJ
SB11_6.5-7.5	8260C	75-34-3	1,1-DICHLOROETHANE	UJ
SB11_6.5-7.5	8260C	75-35-4	1,1-DICHLOROETHENE	UJ
SB11_6.5-7.5	8260C	563-58-6	1,1-DICHLOROPROPENE	UJ
SB11_6.5-7.5	8260C	87-61-6	1,2,3-TRICHLOROBENZENE	UJ
SB11_6.5-7.5	8260C	96-18-4	1,2,3-TRICHLOROPROPANE	UJ
SB11_6.5-7.5	8260C	120-82-1	1,2,4-TRICHLOROBENZENE	UJ
SB11_6.5-7.5	8260C	95-63-6	1,2,4-TRIMETHYLBENZENE	UJ
SB11_6.5-7.5	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SB11_6.5-7.5	8260C	106-93-4	1,2-DIBROMOETHANE	UJ
SB11_6.5-7.5	8260C	95-50-1	1,2-DICHLOROBENZENE	UJ
SB11_6.5-7.5	8260C	107-06-2	1,2-DICHLOROETHANE	UJ
SB11_6.5-7.5	8260C	78-87-5	1,2-DICHLOROPROPANE	UJ
SB11_6.5-7.5	8260C	108-67-8	1,3,5-TRIMETHYLBENZENE	UJ
SB11_6.5-7.5	8260C	541-73-1	1,3-DICHLOROBENZENE	UJ
SB11_6.5-7.5	8260C	142-28-9	1,3-DICHLOROPROPANE	UJ
SB11_6.5-7.5	8260C	106-46-7	1,4-DICHLOROBENZENE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB11_6.5-7.5	8260C	123-91-1	1,4-DIOXANE	UJ
SB11_6.5-7.5	8260C	594-20-7	2,2-DICHLOROPROPANE	UJ
SB11_6.5-7.5	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB11_6.5-7.5	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB11_6.5-7.5	8260C	591-78-6	2-HEXANONE	UJ
SB11_6.5-7.5	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB11_6.5-7.5	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB11_6.5-7.5	8260C	67-64-1	ACETONE	J
SB11_6.5-7.5	8260C	107-13-1	ACRYLONITRILE	UJ
SB11_6.5-7.5	8260C	71-43-2	BENZENE	UJ
SB11_6.5-7.5	8260C	108-86-1	BROMOBENZENE	UJ
SB11_6.5-7.5	8260C	74-97-5	BROMOCHLOROMETHANE	UJ
SB11_6.5-7.5	8260C	75-27-4	BROMODICHLOROMETHANE	UJ
SB11_6.5-7.5	8260C	75-25-2	BROMOFORM	UJ
SB11_6.5-7.5	8260C	74-83-9	BROMOMETHANE	UJ
SB11_6.5-7.5	6010D	7440-70-2	CALCIUM, TOTAL	J
SB11_6.5-7.5	8260C	75-15-0	CARBON DISULFIDE	UJ
SB11_6.5-7.5	8260C	56-23-5	CARBON TETRACHLORIDE	UJ
SB11_6.5-7.5	8260C	108-90-7	CHLOROBENZENE	UJ
SB11_6.5-7.5	8260C	75-00-3	CHLOROETHANE	UJ
SB11_6.5-7.5	8260C	67-66-3	CHLOROFORM	UJ
SB11_6.5-7.5	8260C	74-87-3	CHLOROMETHANE	UJ
SB11_6.5-7.5	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB11_6.5-7.5	8260C	156-59-2	CIS-1,2-DICHLOROETHENE	UJ
SB11_6.5-7.5	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SB11_6.5-7.5	6010D	7440-50-8	COPPER, TOTAL	J
SB11_6.5-7.5	8260C	124-48-1	DIBROMOCHLOROMETHANE	UJ
SB11_6.5-7.5	8260C	74-95-3	DIBROMOMETHANE	UJ
SB11_6.5-7.5	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SB11_6.5-7.5	8260C	60-29-7	ETHYL ETHER	UJ
SB11_6.5-7.5	8260C	100-41-4	ETHYLBENZENE	UJ
SB11_6.5-7.5	8260C	98-82-8	ISOPROPYLBENZENE	UJ
SB11_6.5-7.5	6010D	7439-92-1	LEAD, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB11_6.5-7.5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB11_6.5-7.5	7471B	7439-97-6	MERCURY, TOTAL	J
SB11_6.5-7.5	8260C	1634-04-4	METHYL TERT BUTYL ETHER	UJ
SB11_6.5-7.5	8260C	75-09-2	METHYLENE CHLORIDE	UJ
SB11_6.5-7.5	8260C	91-20-3	NAPHTHALENE	J
SB11_6.5-7.5	8260C	103-65-1	N-PROPYLBENZENE	UJ
SB11_6.5-7.5	8260C	95-49-8	O-CHLOROTOLUENE	UJ
SB11_6.5-7.5	8260C	95-47-6	O-XYLENE	UJ
SB11_6.5-7.5	8260C	179601-23-1	P/M-XYLENE	UJ
SB11_6.5-7.5	8260C	106-43-4	P-CHLOROTOLUENE	UJ
SB11_6.5-7.5	8270D	85-01-8	PHENANTHRENE	J
SB11_6.5-7.5	8260C	99-87-6	P-ISOPROPYLTOLUENE	UJ
SB11_6.5-7.5	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB11_6.5-7.5	8260C	135-98-8	SEC-BUTYLBENZENE	UJ
SB11_6.5-7.5	6010D	7440-23-5	SODIUM, TOTAL	J
SB11_6.5-7.5	8260C	100-42-5	STYRENE	UJ
SB11_6.5-7.5	8260C	98-06-6	TERT-BUTYLBENZENE	UJ
SB11_6.5-7.5	8260C	127-18-4	TETRACHLOROETHENE	J
SB11_6.5-7.5	8260C	108-88-3	TOLUENE	UJ
SB11_6.5-7.5	8081B	8001-35-2	TOXAPHENE	UJ
SB11_6.5-7.5	8260C	156-60-5	TRANS-1,2-DICHLOROETHENE	UJ
SB11_6.5-7.5	8260C	10061-02-6	TRANS-1,3-DICHLOROPROPENE	UJ
SB11_6.5-7.5	8260C	79-01-6	TRICHLOROETHENE	UJ
SB11_6.5-7.5	8260C	75-69-4	TRICHLOROFLUOROMETHANE	UJ
SB11_6.5-7.5	6010D	7440-62-2	VANADIUM, TOTAL	J
SB11_6.5-7.5	8260C	108-05-4	VINYL ACETATE	UJ
SB11_6.5-7.5	8260C	75-01-4	VINYL CHLORIDE	UJ
SB11_6.5-7.5	6010D	7440-66-6	ZINC, TOTAL	J
SB12_0-2	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB12_0-2	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB12_0-2	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB12_0-2	6010D	7440-70-2	CALCIUM, TOTAL	J
SB12_0-2	6010D	7440-47-3	CHROMIUM, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB12_0-2	6010D	7440-50-8	COPPER, TOTAL	J
SB12_0-2	6010D	7439-92-1	LEAD, TOTAL	J
SB12_0-2	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB12_0-2	7471B	7439-97-6	MERCURY, TOTAL	J
SB12_0-2	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB12_0-2	6010D	7440-23-5	SODIUM, TOTAL	J
SB12_0-2	8081B	8001-35-2	TOXAPHENE	UJ
SB12_0-2	6010D	7440-62-2	VANADIUM, TOTAL	J
SB12_0-2	6010D	7440-66-6	ZINC, TOTAL	J
SB12_22-23	8260C	563-58-6	1,1-DICHLOROPROPENE	UJ
SB12_22-23	8260C	123-91-1	1,4-DIOXANE	UJ
SB12_22-23	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB12_22-23	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB12_22-23	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB12_22-23	8260C	67-64-1	ACETONE	J
SB12_22-23	6010D	7440-70-2	CALCIUM, TOTAL	J
SB12_22-23	8260C	75-15-0	CARBON DISULFIDE	UJ
SB12_22-23	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB12_22-23	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SB12_22-23	6010D	7440-50-8	COPPER, TOTAL	J
SB12_22-23	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SB12_22-23	8260C	60-29-7	ETHYL ETHER	UJ
SB12_22-23	6010D	7439-92-1	LEAD, TOTAL	J
SB12_22-23	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB12_22-23	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB12_22-23	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB12_22-23	6010D	7440-23-5	SODIUM, TOTAL	J
SB12_22-23	6010D	7440-62-2	VANADIUM, TOTAL	J
SB12_22-23	8260C	75-01-4	VINYL CHLORIDE	UJ
SB12_22-23	6010D	7440-66-6	ZINC, TOTAL	J
SB12_2-4	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SB12_2-4	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB12_2-4	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB12_2-4	6010D	7440-70-2	CALCIUM, TOTAL	J
SB12_2-4	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB12_2-4	6010D	7440-50-8	COPPER, TOTAL	J
SB12_2-4	6010D	7439-92-1	LEAD, TOTAL	J
SB12_2-4	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB12_2-4	7471B	7439-97-6	MERCURY, TOTAL	UJ
SB12_2-4	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB12_2-4	6010D	7440-23-5	SODIUM, TOTAL	J
SB12_2-4	8081B	8001-35-2	TOXAPHENE	UJ
SB12_2-4	6010D	7440-62-2	VANADIUM, TOTAL	J
SB12_2-4	6010D	7440-66-6	ZINC, TOTAL	J
SBDUP01_092718	8260C	75-35-4	1,1-DICHLOROETHENE	UJ
SBDUP01_092718	8260C	563-58-6	1,1-DICHLOROPROPENE	UJ
SBDUP01_092718	8260C	123-91-1	1,4-DIOXANE	UJ
SBDUP01_092718	8260C	594-20-7	2,2-DICHLOROPROPANE	UJ
SBDUP01_092718	8270D	88-06-2	2,4,6-TRICHLOROPHENOL	UJ
SBDUP01_092718	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SBDUP01_092718	8260C	78-93-3	2-BUTANONE	UJ
SBDUP01_092718	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SBDUP01_092718	8260C	67-64-1	ACETONE	UJ
SBDUP01_092718	6010D	7440-70-2	CALCIUM, TOTAL	J
SBDUP01_092718	8260C	75-15-0	CARBON DISULFIDE	UJ
SBDUP01_092718	8260C	56-23-5	CARBON TETRACHLORIDE	UJ
SBDUP01_092718	6010D	7440-47-3	CHROMIUM, TOTAL	J
SBDUP01_092718	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SBDUP01_092718	6010D	7440-50-8	COPPER, TOTAL	J
SBDUP01_092718	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBDUP01_092718	6010D	7439-92-1	LEAD, TOTAL	J
SBDUP01_092718	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SBDUP01_092718	7471B	7439-97-6	MERCURY, TOTAL	J
SBDUP01_092718	8270D	85-01-8	PHENANTHRENE	J
SBDUP01_092718	6010D	7440-09-7	POTASSIUM, TOTAL	J
SBDUP01_092718	6010D	7440-23-5	SODIUM, TOTAL	J

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SBDUP01_092718	8260C	127-18-4	TETRACHLOROETHENE	J
SBDUP01_092718	8081B	8001-35-2	TOXAPHENE	UJ
SBDUP01_092718	8260C	75-69-4	TRICHLOROFLUOROMETHANE	UJ
SBDUP01_092718	6010D	7440-62-2	VANADIUM, TOTAL	J
SBDUP01_092718	8260C	108-05-4	VINYL ACETATE	UJ
SBDUP01_092718	8260C	75-01-4	VINYL CHLORIDE	UJ
SBDUP01_092718	6010D	7440-66-6	ZINC, TOTAL	J
SBFB01_092718	8260C	79-34-5	1,1,2,2-TETRACHLOROETHANE	UJ
SBFB01_092718	8260C	79-00-5	1,1,2-TRICHLOROETHANE	UJ
SBFB01_092718	8260C	87-61-6	1,2,3-TRICHLOROBENZENE	UJ
SBFB01_092718	8260C	120-82-1	1,2,4-TRICHLOROBENZENE	UJ
SBFB01_092718	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBFB01_092718	8260C	123-91-1	1,4-DIOXANE	UJ
SBFB01_092718	8260C	78-93-3	2-BUTANONE	UJ
SBFB01_092718	8260C	591-78-6	2-HEXANONE	UJ
SBFB01_092718	8270D	88-74-4	2-NITROANILINE	UJ
SBFB01_092718	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBFB01_092718	8270D	100-01-6	4-NITROANILINE	UJ
SBFB01_092718	8260C	67-64-1	ACETONE	U (5.0)
SBFB01_092718	8260C	107-13-1	ACRYLONITRILE	UJ
SBFB01_092718	8270D	65-85-0	BENZOIC ACID	UJ
SBFB01_092718	8260C	75-25-2	BROMOFORM	UJ
SBFB01_092718	8260C	74-83-9	BROMOMETHANE	UJ
SBFB01_092718	8270D	86-74-8	CARBAZOLE	UJ
SBFB01_092718	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SBFB01_092718	8081B	5103-71-9	CIS-CHLORDANE	UJ
SBFB01_092718	8260C	74-95-3	DIBROMOMETHANE	UJ
SBFB01_092718	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBFB01_092718	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SBFB01_092718	8260C	91-20-3	NAPHTHALENE	UJ
SBFB01_092718	6010D	7440-23-5	SODIUM, TOTAL	U (2.00)
SBFB01_092718	8081B	8001-35-2	TOXAPHENE	UJ
SBFB01_092718	8260C	10061-02-6	TRANS-1,3-DICHLOROPROPENE	UJ

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SBTB01_092718	8260C	79-34-5	1,1,2,2-TETRACHLOROETHANE	UJ
SBTB01_092718	8260C	79-00-5	1,1,2-TRICHLOROETHANE	UJ
SBTB01_092718	8260C	87-61-6	1,2,3-TRICHLOROBENZENE	UJ
SBTB01_092718	8260C	120-82-1	1,2,4-TRICHLOROBENZENE	UJ
SBTB01_092718	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBTB01_092718	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB01_092718	8260C	78-93-3	2-BUTANONE	UJ
SBTB01_092718	8260C	591-78-6	2-HEXANONE	UJ
SBTB01_092718	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB01_092718	8260C	107-13-1	ACRYLONITRILE	UJ
SBTB01_092718	8260C	75-25-2	BROMOFORM	UJ
SBTB01_092718	8260C	74-83-9	BROMOMETHANE	UJ
SBTB01_092718	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SBTB01_092718	8260C	74-95-3	DIBROMOMETHANE	UJ
SBTB01_092718	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB01_092718	8260C	91-20-3	NAPHTHALENE	UJ
SBTB01_092718	8260C	10061-02-6	TRANS-1,3-DICHLOROPROPENE	UJ
SB05_0-2	8260C	123-91-1	1,4-DIOXANE	UJ
SB05_0-2	8151A	94-75-7	2,4-D	UJ
SB05_0-2	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB05_0-2	8260C	78-93-3	2-BUTANONE	UJ
SB05_0-2	8260C	67-64-1	ACETONE	UJ
SB05_0-2	8260C	107-13-1	ACRYLONITRILE	UJ
SB05_0-2	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB05_0-2	8260C	74-83-9	BROMOMETHANE	UJ
SB05_0-2	6010D	7440-70-2	CALCIUM, TOTAL	J
SB05_0-2	8260C	74-87-3	CHLOROMETHANE	UJ
SB05_0-2	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB05_0-2	6010D	7440-23-5	SODIUM, TOTAL	J
SB05_0-2	8081B	8001-35-2	TOXAPHENE	UJ
SB05_22-23	8260C	123-91-1	1,4-DIOXANE	UJ
SB05_22-23	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB05_22-23	8260C	78-93-3	2-BUTANONE	UJ

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SB05_22-23	8260C	67-64-1	ACETONE	UJ
SB05_22-23	8260C	107-13-1	ACRYLONITRILE	UJ
SB05_22-23	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB05_22-23	8260C	74-83-9	BROMOMETHANE	UJ
SB05_22-23	6010D	7440-70-2	CALCIUM, TOTAL	J
SB05_22-23	8260C	74-87-3	CHLOROMETHANE	UJ
SB05_22-23	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB05_22-23	6010D	7440-23-5	SODIUM, TOTAL	J
SB05_45-46	8260C	123-91-1	1,4-DIOXANE	UJ
SB05_45-46	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB05_45-46	8260C	78-93-3	2-BUTANONE	UJ
SB05_45-46	8260C	67-64-1	ACETONE	J
SB05_45-46	8260C	107-13-1	ACRYLONITRILE	UJ
SB05_45-46	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB05_45-46	8260C	74-83-9	BROMOMETHANE	UJ
SB05_45-46	6010D	7440-70-2	CALCIUM, TOTAL	J
SB05_45-46	8260C	74-87-3	CHLOROMETHANE	UJ
SB05_45-46	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB05_45-46	6010D	7440-23-5	SODIUM, TOTAL	J
SB05_64-65	8260C	123-91-1	1,4-DIOXANE	UJ
SB05_64-65	8270D	51-28-5	2,4-DINITROPHENOL	UJ
SB05_64-65	8260C	78-93-3	2-BUTANONE	UJ
SB05_64-65	8260C	67-64-1	ACETONE	J
SB05_64-65	8260C	107-13-1	ACRYLONITRILE	UJ
SB05_64-65	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB05_64-65	8260C	74-83-9	BROMOMETHANE	UJ
SB05_64-65	6010D	7440-70-2	CALCIUM, TOTAL	J
SB05_64-65	8260C	74-87-3	CHLOROMETHANE	UJ
SB05_64-65	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB05_64-65	6010D	7440-23-5	SODIUM, TOTAL	J
SBTB02_092818	8260C	87-61-6	1,2,3-TRICHLOROBENZENE	UJ
SBTB02_092818	8260C	96-18-4	1,2,3-TRICHLOROPROPANE	UJ
SBTB02_092818	8260C	120-82-1	1,2,4-TRICHLOROBENZENE	UJ

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SBTB02_092818	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBTB02_092818	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB02_092818	8260C	591-78-6	2-HEXANONE	UJ
SBTB02_092818	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB02_092818	8260C	107-13-1	ACRYLONITRILE	UJ
SBTB02_092818	8260C	75-25-2	BROMOFORM	UJ
SBTB02_092818	8260C	74-83-9	BROMOMETHANE	UJ
SBTB02_092818	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SBTB02_092818	8260C	74-95-3	DIBROMOMETHANE	UJ
SBTB02_092818	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB02_092818	8260C	91-20-3	NAPHTHALENE	UJ
SB04_0-1	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB04_0-1	8270D	100-02-7	4-NITROPHENOL	UJ
SB04_0-1	8260C	67-64-1	ACETONE	J
SB04_0-1	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB04_0-1	7196A	18540-29-9	CHROMIUM, HEXAVALENT	J
SB04_0-1	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB04_0-1	9012B	57-12-5	CYANIDE, TOTAL	J
SB04_0-1	6010D	7439-96-5	MANGANESE, TOTAL	J
SB04_0-1	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB04_0-1	8081B	8001-35-2	TOXAPHENE	UJ
SB04_23.5-24.5	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB04_23.5-24.5	8270D	100-02-7	4-NITROPHENOL	UJ
SB04_23.5-24.5	8260C	67-64-1	ACETONE	J
SB04_23.5-24.5	6010D	7429-90-5	ALUMINUM, TOTAL	J
SB04_23.5-24.5	6010D	7440-39-3	BARIUM, TOTAL	J
SB04_23.5-24.5	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB04_23.5-24.5	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB04_23.5-24.5	CALC	16065-83-1	CHROMIUM, TRIVALENT	J
SB04_23.5-24.5	6010D	7440-48-4	COBALT, TOTAL	J
SB04_23.5-24.5	6010D	7440-50-8	COPPER, TOTAL	J
SB04_23.5-24.5	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB04_23.5-24.5	6010D	7439-89-6	IRON, TOTAL	J

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SB04_23.5-24.5	6010D	7439-96-5	MANGANESE, TOTAL	J
SB04_23.5-24.5	6010D	7440-02-0	NICKEL, TOTAL	J
SB04_23.5-24.5	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB04_23.5-24.5	6010D	7440-62-2	VANADIUM, TOTAL	J
SB04_34-35	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SB04_34-35	8270D	100-02-7	4-NITROPHENOL	UJ
SB04_34-35	8260C	67-64-1	ACETONE	UJ
SB04_34-35	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SB04_34-35	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB04_34-35	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB04_34-35	6010D	7439-96-5	MANGANESE, TOTAL	J
SB04_34-35	6010D	7440-09-7	POTASSIUM, TOTAL	J
SBDUP02_100118	8270D	534-52-1	4,6-DINITRO-O-CRESOL	UJ
SBDUP02_100118	8270D	100-02-7	4-NITROPHENOL	UJ
SBDUP02_100118	8260C	67-64-1	ACETONE	J
SBDUP02_100118	6010D	7429-90-5	ALUMINUM, TOTAL	J
SBDUP02_100118	6010D	7440-39-3	BARIUM, TOTAL	J
SBDUP02_100118	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SBDUP02_100118	6010D	7440-47-3	CHROMIUM, TOTAL	J
SBDUP02_100118	CALC	16065-83-1	CHROMIUM, TRIVALENT	J
SBDUP02_100118	6010D	7440-48-4	COBALT, TOTAL	J
SBDUP02_100118	6010D	7440-50-8	COPPER, TOTAL	J
SBDUP02_100118	9012B	57-12-5	CYANIDE, TOTAL	UJ
SBDUP02_100118	6010D	7439-89-6	IRON, TOTAL	J
SBDUP02_100118	6010D	7439-96-5	MANGANESE, TOTAL	J
SBDUP02_100118	6010D	7440-02-0	NICKEL, TOTAL	J
SBDUP02_100118	6010D	7440-09-7	POTASSIUM, TOTAL	J
SBDUP02_100118	6010D	7440-62-2	VANADIUM, TOTAL	J
SBFB02_100118	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBFB02_100118	8260C	123-91-1	1,4-DIOXANE	UJ
SBFB02_100118	8260C	78-93-3	2-BUTANONE	UJ
SBFB02_100118	8260C	591-78-6	2-HEXANONE	UJ
SBFB02_100118	8081B	72-54-8	4,4'-DDD	UJ

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SBFB02_100118	8081B	72-55-9	4,4'-DDE	UJ
SBFB02_100118	8081B	50-29-3	4,4'-DDT	UJ
SBFB02_100118	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBFB02_100118	8260C	67-64-1	ACETONE	U (5.0)
SBFB02_100118	8081B	309-00-2	ALDRIN	UJ
SBFB02_100118	8081B	319-84-6	ALPHA-BHC	UJ
SBFB02_100118	8081B	319-85-7	BETA-BHC	UJ
SBFB02_100118	8260C	75-25-2	BROMOFORM	UJ
SBFB02_100118	8260C	74-83-9	BROMOMETHANE	UJ
SBFB02_100118	8260C	74-87-3	CHLOROMETHANE	UJ
SBFB02_100118	8081B	319-86-8	DELTA-BHC	UJ
SBFB02_100118	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBFB02_100118	8081B	60-57-1	DIELDRIN	UJ
SBFB02_100118	8081B	959-98-8	ENDOSULFAN I	UJ
SBFB02_100118	8081B	33213-65-9	ENDOSULFAN II	UJ
SBFB02_100118	8081B	1031-07-8	ENDOSULFAN SULFATE	UJ
SBFB02_100118	8081B	72-20-8	ENDRIN	UJ
SBFB02_100118	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SBFB02_100118	8081B	53494-70-5	ENDRIN KETONE	UJ
SBFB02_100118	8081B	76-44-8	HEPTACHLOR	UJ
SBFB02_100118	8081B	1024-57-3	HEPTACHLOR EPOXIDE	UJ
SBFB02_100118	8081B	58-89-9	LINDANE	UJ
SBFB02_100118	8081B	8001-35-2	TOXAPHENE	UJ
SBFB02_100118	8081B	5103-74-2	TRANS-CHLORDANE	UJ
SBFB02_100118	8260C	108-05-4	VINYL ACETATE	UJ
SBFB02_100118	8260C	75-01-4	VINYL CHLORIDE	UJ
SBTB03_100118	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBTB03_100118	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB03_100118	8260C	78-93-3	2-BUTANONE	UJ
SBTB03_100118	8260C	591-78-6	2-HEXANONE	UJ
SBTB03_100118	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB03_100118	8260C	67-64-1	ACETONE	J
SBTB03_100118	8260C	75-25-2	BROMOFORM	UJ

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SBTB03_100118	8260C	74-83-9	BROMOMETHANE	UJ
SBTB03_100118	8260C	74-87-3	CHLOROMETHANE	UJ
SBTB03_100118	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB03_100118	8260C	108-05-4	VINYL ACETATE	UJ
SBTB03_100118	8260C	75-01-4	VINYL CHLORIDE	UJ
SB03_0.5-1.5	8260C	123-91-1	1,4-DIOXANE	UJ
SB03_0.5-1.5	8260C	78-93-3	2-BUTANONE	UJ
SB03_0.5-1.5	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB03_0.5-1.5	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB03_0.5-1.5	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB03_0.5-1.5	8081B	8001-35-2	TOXAPHENE	UJ
SB03_0.5-1.5	8260C	108-05-4	VINYL ACETATE	UJ
SB03_22.5-23.5	8260C	123-91-1	1,4-DIOXANE	UJ
SB03_22.5-23.5	8260C	78-93-3	2-BUTANONE	UJ
SB03_22.5-23.5	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB03_22.5-23.5	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB03_22.5-23.5	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB03_22.5-23.5	8260C	108-05-4	VINYL ACETATE	UJ
SB03_25-26	8260C	123-91-1	1,4-DIOXANE	UJ
SB03_25-26	8260C	78-93-3	2-BUTANONE	UJ
SB03_25-26	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB03_25-26	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB03_25-26	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB03_25-26	8260C	108-05-4	VINYL ACETATE	UJ
SB03_32-33	8260C	123-91-1	1,4-DIOXANE	UJ
SB03_32-33	8260C	78-93-3	2-BUTANONE	UJ
SB03_32-33	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB03_32-33	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB03_32-33	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB03_32-33	6010D	7440-23-5	SODIUM, TOTAL	U (187)
SB03_32-33	8260C	108-05-4	VINYL ACETATE	UJ
SB13_0-1	8260C	123-91-1	1,4-DIOXANE	UJ
SB13_0-1	8260C	78-93-3	2-BUTANONE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB13_0-1	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB13_0-1	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB13_0-1	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB13_0-1	8260C	108-05-4	VINYL ACETATE	UJ
SB13_28-29	8260C	123-91-1	1,4-DIOXANE	UJ
SB13_28-29	8260C	78-93-3	2-BUTANONE	UJ
SB13_28-29	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB13_28-29	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB13_28-29	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB13_28-29	8260C	108-05-4	VINYL ACETATE	UJ
SB13_6.5-7.5	8260C	123-91-1	1,4-DIOXANE	UJ
SB13_6.5-7.5	8260C	78-93-3	2-BUTANONE	J
SB13_6.5-7.5	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SB13_6.5-7.5	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB13_6.5-7.5	8270D	87-86-5	PENTACHLOROPHENOL	UJ
SB13_6.5-7.5	8260C	108-05-4	VINYL ACETATE	UJ
SBTB04_100218	8260C	87-61-6	1,2,3-TRICHLOROBENZENE	UJ
SBTB04_100218	8260C	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	UJ
SBTB04_100218	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB04_100218	8260C	78-93-3	2-BUTANONE	UJ
SBTB04_100218	8260C	591-78-6	2-HEXANONE	UJ
SBTB04_100218	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB04_100218	8260C	67-64-1	ACETONE	J
SBTB04_100218	8260C	75-25-2	BROMOFORM	UJ
SBTB04_100218	8260C	74-83-9	BROMOMETHANE	UJ
SBTB04_100218	8260C	74-87-3	CHLOROMETHANE	UJ
SBTB04_100218	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB04_100218	8260C	91-20-3	NAPHTHALENE	UJ
SBTB04_100218	8260C	108-05-4	VINYL ACETATE	UJ
SBTB04_100218	8260C	75-01-4	VINYL CHLORIDE	UJ
SB13_68-69	8260C	107-06-2	1,2-DICHLOROETHANE	UJ
SB13_68-69	8260C	78-93-3	2-BUTANONE	UJ
SB13_68-69	8260C	75-27-4	BROMODICHLOROMETHANE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB13_68-69	8260C	74-83-9	BROMOMETHANE	UJ
SB13_68-69	8260C	75-00-3	CHLOROETHANE	UJ
SB13_68-69	9012B	57-12-5	CYANIDE, TOTAL	UJ
SBTB05_100318	8260C	630-20-6	1,1,1,2-TETRACHLOROETHANE	UJ
SBTB05_100318	8260C	71-55-6	1,1,1-TRICHLOROETHANE	UJ
SBTB05_100318	8260C	95-63-6	1,2,4-TRIMETHYLBENZENE	UJ
SBTB05_100318	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB05_100318	8260C	594-20-7	2,2-DICHLOROPROPANE	UJ
SBTB05_100318	8260C	591-78-6	2-HEXANONE	UJ
SBTB05_100318	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB05_100318	8260C	67-64-1	ACETONE	J
SBTB05_100318	8260C	107-13-1	ACRYLONITRILE	UJ
SBTB05_100318	8260C	71-43-2	BENZENE	UJ
SBTB05_100318	8260C	74-97-5	BROMOCHLOROMETHANE	UJ
SBTB05_100318	8260C	74-83-9	BROMOMETHANE	UJ
SBTB05_100318	8260C	56-23-5	CARBON TETRACHLORIDE	UJ
SBTB05_100318	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB05_100318	8260C	75-69-4	TRICHLOROFLUOROMETHANE	UJ
SBTB05_100318	8260C	108-05-4	VINYL ACETATE	UJ
SBTB05_100318	8260C	75-01-4	VINYL CHLORIDE	UJ
SB01_0.5-1.5	8260C	67-64-1	ACETONE	J
SB01_0.5-1.5	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB01_26-27	8260C	67-64-1	ACETONE	J
SB01_6.5-7.5	8260C	67-64-1	ACETONE	J
SB01_6.5-7.5	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB02_0.5-1.5	8260C	67-64-1	ACETONE	J
SB02_0.5-1.5	6010D	7429-90-5	ALUMINUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-38-2	ARSENIC, TOTAL	J
SB02_0.5-1.5	6010D	7440-39-3	BARIUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-70-2	CALCIUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-47-3	CHROMIUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-48-4	COBALT, TOTAL	J
SB02_0.5-1.5	6010D	7440-50-8	COPPER, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB02_0.5-1.5	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB02_0.5-1.5	6010D	7439-89-6	IRON, TOTAL	J
SB02_0.5-1.5	6010D	7439-92-1	LEAD, TOTAL	J
SB02_0.5-1.5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB02_0.5-1.5	6010D	7440-66-6	ZINC, TOTAL	J
SB02_26-27	8260C	67-64-1	ACETONE	J
SB02_26-27	6010D	7440-70-2	CALCIUM, TOTAL	J
SB02_26-27	6010D	7440-50-8	COPPER, TOTAL	J
SB02_26-27	6010D	7439-92-1	LEAD, TOTAL	J
SB02_26-27	6010D	7440-66-6	ZINC, TOTAL	J
SB02_3-4	8260C	67-64-1	ACETONE	J
SB02_3-4	6010D	7440-70-2	CALCIUM, TOTAL	J
SB02_3-4	6010D	7440-50-8	COPPER, TOTAL	J
SB02_3-4	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB02_3-4	6010D	7439-92-1	LEAD, TOTAL	J
SB02_3-4	6010D	7440-66-6	ZINC, TOTAL	J
SB10_1-2	8260C	67-64-1	ACETONE	J
SB10_1-2	6010D	7440-70-2	CALCIUM, TOTAL	J
SB10_1-2	6010D	7440-50-8	COPPER, TOTAL	J
SB10_1-2	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB10_1-2	6010D	7439-92-1	LEAD, TOTAL	J
SB10_1-2	6010D	7440-66-6	ZINC, TOTAL	J
SB10_24-25	8260C	67-64-1	ACETONE	J
SB10_24-25	6010D	7440-70-2	CALCIUM, TOTAL	J
SB10_24-25	6010D	7440-50-8	COPPER, TOTAL	J
SB10_24-25	6010D	7439-92-1	LEAD, TOTAL	J
SB10_24-25	6010D	7440-66-6	ZINC, TOTAL	J
SB10_6-7	8260C	67-64-1	ACETONE	J
SB10_6-7	6010D	7440-70-2	CALCIUM, TOTAL	J
SB10_6-7	6010D	7440-50-8	COPPER, TOTAL	J
SB10_6-7	8081B	7421-93-4	ENDRIN ALDEHYDE	UJ
SB10_6-7	6010D	7439-92-1	LEAD, TOTAL	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB10_6-7	6010D	7440-66-6	ZINC, TOTAL	J
SBTB06_100418	8260C	630-20-6	1,1,1,2-TETRACHLOROETHANE	UJ
SBTB06_100418	8260C	71-55-6	1,1,1-TRICHLOROETHANE	UJ
SBTB06_100418	8260C	95-63-6	1,2,4-TRIMETHYLBENZENE	UJ
SBTB06_100418	8260C	78-87-5	1,2-DICHLOROPROPANE	UJ
SBTB06_100418	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB06_100418	8260C	594-20-7	2,2-DICHLOROPROPANE	UJ
SBTB06_100418	8260C	78-93-3	2-BUTANONE	UJ
SBTB06_100418	8260C	591-78-6	2-HEXANONE	UJ
SBTB06_100418	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB06_100418	8260C	67-64-1	ACETONE	J
SBTB06_100418	8260C	107-13-1	ACRYLONITRILE	UJ
SBTB06_100418	8260C	71-43-2	BENZENE	UJ
SBTB06_100418	8260C	74-97-5	BROMOCHLOROMETHANE	UJ
SBTB06_100418	8260C	74-83-9	BROMOMETHANE	UJ
SBTB06_100418	8260C	56-23-5	CARBON TETRACHLORIDE	UJ
SBTB06_100418	8260C	10061-01-5	CIS-1,3-DICHLOROPROPENE	UJ
SBTB06_100418	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB06_100418	8260C	60-29-7	ETHYL ETHER	UJ
SBTB06_100418	8260C	1634-04-4	METHYL TERT BUTYL ETHER	UJ
SBTB06_100418	8260C	75-09-2	METHYLENE CHLORIDE	UJ
SBTB06_100418	8260C	110-57-6	TRANS-1,4-DICHLORO-2-BUTENE	UJ
SBTB06_100418	8260C	75-69-4	TRICHLOROFLUOROMETHANE	UJ
SBTB06_100418	8260C	108-05-4	VINYL ACETATE	UJ
SBTB06_100418	8260C	75-01-4	VINYL CHLORIDE	UJ
SB08_0-1	8260C	67-64-1	ACETONE	UJ
SB08_0-1	6010D	7440-36-0	ANTIMONY, TOTAL	U (4.45)
SB08_0-1	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB08_0-1	8081B	8001-35-2	TOXAPHENE	UJ
SB08_1.5-2.5	8260C	67-64-1	ACETONE	J
SB08_1.5-2.5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB08_1.5-2.5	8081B	8001-35-2	TOXAPHENE	UJ
SB08_21-22	8260C	79-00-5	1,1,2-TRICHLOROETHANE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SB08_21-22	8260C	67-64-1	ACETONE	J
SB08_21-22	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB08_21-22	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB09_0.5-1.5	8260C	67-64-1	ACETONE	J
SB09_0.5-1.5	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB09_0.5-1.5	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB09_0.5-1.5	8081B	8001-35-2	TOXAPHENE	UJ
SB09_22-23	8260C	67-64-1	ACETONE	J
SB09_22-23	6010D	7440-48-4	COBALT, TOTAL	J
SB09_22-23	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB09_22-23	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB09_22-23	6010D	7440-02-0	NICKEL, TOTAL	J
SB09_22-23	6010D	7440-09-7	POTASSIUM, TOTAL	J
SB09_22-23	8260C	1330-20-7	XYLENE (TOTAL)	UJ
SB09_3-4	8260C	67-64-1	ACETONE	J
SB09_3-4	9012B	57-12-5	CYANIDE, TOTAL	UJ
SB09_3-4	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SB09_3-4	8081B	8001-35-2	TOXAPHENE	UJ
SBDUP03_100518	8260C	67-64-1	ACETONE	J
SBDUP03_100518	6010D	7440-48-4	COBALT, TOTAL	J
SBDUP03_100518	9012B	57-12-5	CYANIDE, TOTAL	UJ
SBDUP03_100518	6010D	7439-95-4	MAGNESIUM, TOTAL	J
SBDUP03_100518	6010D	7440-02-0	NICKEL, TOTAL	J
SBDUP03_100518	6010D	7440-09-7	POTASSIUM, TOTAL	J
SBDUP03_100518	8081B	8001-35-2	TOXAPHENE	UJ
SBDUP03_100518	8260C	1330-20-7	XYLENE (TOTAL)	J
SBFB03_100518	8260C	123-91-1	1,4-DIOXANE	UJ
SBFB03_100518	8260C	78-93-3	2-BUTANONE	UJ
SBFB03_100518	8260C	591-78-6	2-HEXANONE	UJ
SBFB03_100518	8270D	95-48-7	2-METHYLPHENOL	UJ
SBFB03_100518	8270D	88-75-5	2-NITROPHENOL	UJ
SBFB03_100518	8270D	91-94-1	3,3'-DICHLOROBENZIDINE	UJ
SBFB03_100518	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
SBFB03_100518	8270D	100-02-7	4-NITROPHENOL	UJ
SBFB03_100518	8260C	67-64-1	ACETONE	U (6.0)
SBFB03_100518	8270D	207-08-9	BENZO(K)FLUORANTHENE	J
SBFB03_100518	8270D	65-85-0	BENZOIC ACID	UJ
SBFB03_100518	8270D	108-60-1	BIS(2-CHLOROISOPROPYL)ETHER	UJ
SBFB03_100518	8270D	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	UJ
SBFB03_100518	8260C	74-87-3	CHLOROMETHANE	UJ
SBFB03_100518	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBFB03_100518	8270D	78-59-1	ISOPHORONE	UJ
SBFB03_100518	8081B	72-43-5	METHOXYCHLOR	UJ
SBFB03_100518	8270D	98-95-3	NITROBENZENE	UJ
SBFB03_100518	8270D	621-64-7	N-NITROSODI-N-PROPYLAMINE	UJ
SBFB03_100518	8081B	8001-35-2	TOXAPHENE	UJ
SBFB03_100518	8260C	108-05-4	VINYL ACETATE	UJ
SBFB03_100518	8260C	75-01-4	VINYL CHLORIDE	UJ
SBTB07_100518	8260C	123-91-1	1,4-DIOXANE	UJ
SBTB07_100518	8260C	78-93-3	2-BUTANONE	UJ
SBTB07_100518	8260C	591-78-6	2-HEXANONE	UJ
SBTB07_100518	8260C	108-10-1	4-METHYL-2-PENTANONE	UJ
SBTB07_100518	8260C	67-64-1	ACETONE	J
SBTB07_100518	8260C	74-87-3	CHLOROMETHANE	UJ
SBTB07_100518	8260C	75-71-8	DICHLORODIFLUOROMETHANE	UJ
SBTB07_100518	8260C	108-05-4	VINYL ACETATE	UJ
SBTB07_100518	8260C	75-01-4	VINYL CHLORIDE	UJ

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

L1839010:

VOCs by SW-846 Method 8260C:

The laboratory control sample (LCS) for batch WG1163368 exhibited a percent recovery below the lower control limit (LCL) for naphthalene (56%, 59%), 1,2,3-trichlorobenzene (56%, 59%), and 1,2,4-trichlorobenzene (68%). The associated results in samples SBFB01_092718 and SBTB01_092718 are qualified as "UJ" based on potential low bias.

The laboratory control sample and duplicate (LCS/LCSD) for batch WG1163719 exhibited a relative percent difference (RPD) above the control limit for acetone (35%). The associated results in samples SB11_6.5-7.5 and SB12_22-23 are qualified as "J" based on potential indeterminate bias.

The LCS for batch WG1164263 exhibited a percent recovery below the LCL for 1,1-dichloropropene (66%) and 2-butanone (64%). The associated results in sample SBDUP01_092718 are qualified as "UJ" based on potential low bias.

The matrix spike and duplicate (MS/MSD) for batch WG1163719 exhibited a RPD above the control limit for methylene chloride (44%), 1,1-dichloroethane (45%), chloroform (44%), carbon tetrachloride (48%), 1,2-dichloropropane (43%), dibromochloromethane (39%), 1,1,2-trichloroethane (41%), tetrachloroethene (40%), chlorobenzene (41%), trichlorofluoromethane (48%), 1,2-dichloroethane (41%), 1,1,1-trichloroethane (47%), bromodichloromethane (41%), trans-1,3-dichloropropene (42%), cis-1,3-dichloropropene (41%), 1,1-dichloropropene (46%), bromoform (41%), 1,1,2,2-tetrachloroethane (38%), benzene (45%), toluene (45%), ethylbenzene (41%), chloromethane (46%), bromomethane (38%), vinyl chloride (46%), chloroethane (48%), 1,1-dichloroethene (48%), trans-1,2-dichloroethene (45%), trichloroethene (45%), 1,2-dichlorobenzene (37%), 1,3-dichlorobenzene (37%), 1,4-dichlorobenzene (38%), methyl tert butyl ether (38%), p/m-xylene (40%), o-xylene (41%), cis-1,2-dichloroethene (44%), dibromomethane (40%), styrene (41%), dichlorodifluoromethane (47%), carbon disulfide (46%), vinyl acetate (48%), 4-methyl-2-pentanone (35%), 1,2,3-trichloropropane (37%), 2-hexanone (33%), bromochloromethane (44%), 2,2-dichloropropane (46%), 1,2-dibromoethane (39%), 1,3-dichloropropane (39%), 1,1,1,2-tetrachloroethane (41%), bromobenzene (41%), sec-butylbenzene (34%), tert-butylbenzene (37%), o-chlorotoluene (39%), p-chlorotoluene (38%), 1,2-dibromo-3-chloropropane (32%), isopropylbenzene (40%), p-isopropyltoluene (32%), naphthalene (38%), acrylonitrile (35%), n-propylbenzene (37%), 1,2,3-trichlorobenzene (31%), 1,2,4-trichlorobenzene (31%), 1,3,5-trimethylbenzene (37%), 1,2,4-trimethylbenzene (36%), and 1,4-dioxane (33%). The associated results in sample SB11_6.5-7.5 are qualified as "J" or "UJ" based on potential indeterminate bias.

The field duplicate SBDUP01_092718 and parent sample SB11_6.5-7.5 exhibited an absolute difference above the reporting limit for acetone (24 µg/kg) and tetrachloroethene (6.1 µg/kg). The associated results in samples SBDUP01_092718 and SB11_6.5-7.5 are qualified as "J" and "UJ" based on potential indeterminate bias.

The initial calibration (ICAL) for batch WG1163368 on instrument VOA101 exhibited a response factor (RF) below the control limit for 1,4-dioxane (0.0010), 4-methyl-2-pentanone (0.0610), and acrylonitrile (0.0410). The associated results in samples SBFB01_092718 and SBTB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The initial calibration verification (ICV) for batch WG1163368 on instrument VOA101 exhibited a percent difference (%D) above the control limit for bromomethane (-47%) and dichlorodifluoromethane (-39.1%). The associated results in samples SBFB01_092718 and SBTB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1163368 on instrument VOA101 exhibited a RF below the control limit for 2-hexanone (0.0980). The associated results in samples SBFB01_092718 and SBTB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The continuing calibration verification (CCV) for batch WG1163368 on instrument VOA101 exhibited a %D above the control limit for 1,1,2,2-tetrachloroethane (27.6%), 1,1,2-trichloroethane (21%), 1,2-dibromo-3-chloropropane (32.2%), 2-butanone (29.5%), bromoform (24.6%), cis-1,3-dichloropropene (22.2%), dibromomethane (20.3%), and trans-1,3-dichloropropene (22.8%). The associated results in samples SBFB01_092718 and SBTB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1163856 on instrument VOA104 exhibited a RF below the control limit for acetone (0.0620). The associated results in samples SB06_1-2, SB06_21.5-22.5, and SB06_29-30 are qualified as "J" based on potential indeterminate bias.

The CCV for batch WG1163856 on instrument VOA104 exhibited a %D above the control limit for chloromethane (28.2%), dichlorodifluoromethane (51.1%), and vinyl chloride (23.7%). The associated results in samples SB06_1-2, SB06_21.5-22.5, and SB06_29-30 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1163719 on instrument VOA110 exhibited a RF below the control limit for 1,4-dioxane (0.0020). The associated results in samples SB11_6.5-7.5 and SB12_22-23 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1163719 on instrument VOA110 exhibited a %D above the control limit for 1,1-dichloropropene (25.2%), carbon disulfide (22.2%), cis-1,3-dichloropropene (25%), dichlorodifluoromethane (28.9%), ethyl ether (21.9%), and vinyl chloride (20.7%). The associated results in samples SB11_6.5-7.5 and SB12_22-23 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164263 on instrument VOA110 exhibited a RF below the control limit for 1,4-dioxane (0.0020). The associated results in sample SBDUP01_092718 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1164263 on instrument VOA110 exhibited a %D above the control limit for 1,1-dichloroethene (20.6%), 2,2-dichloropropane (26.2%), carbon disulfide (25.8%), carbon tetrachloride (22%), cis-1,3-dichloropropene (22.8%), dichlorodifluoromethane (38.3%), trichlorofluoromethane (23%), vinyl acetate (-21.9%), and vinyl chloride (24.5%). The associated results in sample SBDUP01_092718 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The LCS for batch WG1162406 exhibited a percent recovery below the LCL for benzoic acid (0%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch WG1162406 exhibited a RPD above the control limit for 2,4-dinitrophenol (55%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "UJ" based on potential indeterminate bias.

The LCS/LCSD for batch WG1162636 exhibited a RPD above the control limit for 2-nitroaniline (50%), 4-nitroaniline (44%), benzoic acid (0, 0%), and carbazole (52%). The associated results in sample SBFB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The field duplicate SBDUP01_092718 and parent sample SB11_6.5-7.5 exhibited an absolute difference above the reporting limit for phenanthrene (120 µg/kg). The associated results in samples SBDUP01_092718 and SB11_6.5-7.5 are qualified as "J" based on potential indeterminate bias.

The CCV for batch WG1162406 on instrument SV103 exhibited a %D above the control limit for 2,4,6-trichlorophenol (21.5%) and 4,6-dinitro-o-cresol (25.7%). The associated results in

samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8082A:

The LCS/LCSD for batch WG1162454 exhibited a RPD above the control limit for endrin aldehyde (28%) and cis-chlordane (24%). The associated results in sample SBFB01_092718 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1162413 on instrument PEST10 exhibited a %D above the control limit for toxaphene (-25%). The associated results in samples SB06_1-2, SB07_0-2, SB07_3-5, SB11_0-1, SB11_6.5-7.5, SB12_0-2, SB12_2-4, and SBDUP01_092718 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1162454 on instrument PEST10 exhibited a %D above the control limit for toxaphene (-25%). The associated results in sample SBFB01_092718 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The method blank (MB) for batch WG1163157 exhibited a detection of sodium, total (0.156 mg/L). The associated results in sample SBFB01_092718 are qualified as "U" based on potential blank contamination.

The MS/MSD for batch WG1163857 exhibited a RPD above the control limit for chromium, total (22%), lead, total (22%), magnesium, total (24%), potassium, total (24%), and vanadium, total (22%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "J" based on potential indeterminate bias.

The MS for batch WG1163857 exhibited a percent recovery above the upper control limit (UCL) for calcium, total (140%, 150%), copper, total (129%, 150%), sodium, total (130%), and zinc, total (126%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "J" based on potential high bias.

The field duplicate SBDUP01_092718 and parent sample SB11_6.5-7.5 exhibited an absolute difference above the reporting limit for lead, total (5 mg/kg). The associated results in samples SBDUP01_092718 and SB11_6.5-7.5 are qualified as "J" based on potential indeterminate bias.

Mercury by SW-846 Method 7471B:

The MS/MSD for batch WG1163468 exhibited a RPD above the control limit for mercury, total (55%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are qualified as "J" or "UJ" based on potential indeterminate bias.

L1839310:

VOCs by SW-846 Method 8260C:

The trip blank (TB) SBTB01_092718 exhibited a detection of acetone (5.6 µg/L). The associated results in sample SBFB01_092718 are qualified as "U" based on potential blank contamination.

The LCS for batch WG1164392 exhibited a percent recovery above the UCL for acetone (141%). The associated results in samples SB05_45-46 and SB05_64-65 are qualified as "J" based on potential high bias.

The LCS for batch WG1164707 exhibited a percent recovery below the LCL for naphthalene (59%, 66%) and 1,2,3-trichlorobenzene (61%, 67%). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch WG1164707 exhibited a RPD above the control limit for bromomethane (24%). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164396 on instrument VOA123 exhibited a RF below the control limit for 1,4-dioxane (0.0040). The associated results in sample SB05_0-2 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164396 on instrument VOA123 exhibited a %D above the control limit for bromomethane (-28.9%). The associated results in sample SB05_0-2 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1164396 on instrument VOA123 exhibited a %D above the control limit for 2-butanone (-31.3%), acetone (-40.8%), acrylonitrile (-35.9%), and chloromethane (-38.5%). The associated results in sample SB05_0-2 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164392 on instrument VOA123 exhibited a RF below the control limit for 1,4-dioxane (0.0040). The associated results in samples SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164392 on instrument VOA123 exhibited a %D above the control limit for bromomethane (-28.9%). The associated results in samples SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1164392 on instrument VOA123 exhibited a %D above the control limit for 2-butanone (-31.3%), acetone (-40.8%), acrylonitrile (-35.9%), and chloromethane (-38.5%). The associated results in samples SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164707 on instrument VOA101 exhibited a RF below the control limit for 1,4-dioxane (0.0010), 4-methyl-2-pentanone (0.0610), and acrylonitrile (0.0410). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164707 on instrument VOA101 exhibited a %D above the control limit for dichlorodifluoromethane (-39.1%). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164707 on instrument VOA101 exhibited a RF below the control limit for 2-hexanone (0.0980). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1164707 on instrument VOA101 exhibited a %D above the control limit for 1,2,3-trichloropropane (20.7%), 1,2,4-trichlorobenzene (25.9%), 1,2-dibromo-3-chloropropane (30.5%), bromoform (23.6%), cis-1,3-dichloropropene (21.5%), and dibromomethane (20.3%). The associated results in sample SBTB02_092818 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The CCV for batch WG1162987 on instrument SV103 exhibited a %D above the control limit for 2,4-dinitrophenol (26%) and bis(2-chloroisopropyl)ether (-25.5%). The associated results in samples SB05_0-2, SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "UJ" based on potential indeterminate bias.

Herbicides by SW-846 Method 8151A:

The CCV for batch WG1162464 on instrument PEST8 exhibited a %D above the control limit for 2,4-D (-15.4%). The associated results in sample SB05_0-2 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The CCV for batch WG1162959 on instrument PEST11 exhibited a %D above the control limit for toxaphene (-29.1%). The associated results in sample SB05_0-2 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The MB for batch WG1163857 exhibited a detection of calcium, total (1.98 mg/kg) and sodium, total (1.36 mg/kg). The associated results in samples SB05_0-2, SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "J" based on potential blank contamination.

Cyanide by SW-846 Method 9012B:

The LCS for batch WG1162467 exhibited a percent recovery below the LCL for cyanide, total (69%). The associated results in samples SB05_0-2, SB05_22-23, SB05_45-46, and SB05_64-65 are qualified as "UJ" based on potential low bias.

L1839481:

VOCs by SW-846 Method 8260C:

The TB SBTB03_100118 exhibited a detection of acetone (3.8 µg/L). The associated results in sample SBFB02_100118 are qualified as "U" based on potential blank contamination.

The LCS for batch WG1164762 exhibited a percent recovery below the LCL for bromomethane (35%). The associated results in samples SBTB03_100118 and SBFB02_100118 are qualified as "UJ" based on potential low bias.

The LCS/LCSD for batch WG1164762 exhibited a RPD above the control limit for 1,4-dioxane (69%). The associated results in samples SBTB03_100118 and SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164754 on instrument VOA104 exhibited a RF below the control limit for acetone (0.0620). The associated results in samples SB04_0-1, SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICAL for batch WG1164762 on instrument ELAINE exhibited a RF below the control limit for 2-butanone (0.0830) and 4-methyl-2-pentanone (0.0870). The associated results in samples SBTB03_100118 and SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164762 on instrument ELAINE exhibited a %D above the control limit for 2-hexanone (23.5%), chloromethane (-35.6%), dichlorodifluoromethane (-73.5%), vinyl

acetate (27%), and vinyl chloride (-29.7%). The associated results in samples SBTB03_100118 and SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1164762 on instrument ELAINE exhibited a %D above the control limit for acetone (25.3%). The associated results in sample SBTB03_100118 are qualified as "J" based on potential indeterminate bias.

The CCV for batch WG1164762 on instrument ELAINE exhibited a %D above the control limit for 1,2-dibromo-3-chloropropane (24.1%) and bromoform (28.4%). The associated results in samples SBTB03_100118 and SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The CCV for batch WG1163707 on instrument SV112 exhibited a %D above the control limit for 4,6-dinitro-o-cresol (-20.6%), 4-nitrophenol (-25.6%), and bis(2-chloroisopropyl)ether (-25.9%). The associated results in samples SB04_0-1, SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The LCS/LCSD for batch WG1164174 exhibited a RPD above the control limit for delta-BHC (30%), lindane (28%), alpha-BHC (29%), beta-BHC (24%), heptachlor (25%), aldrin (26%), heptachlor epoxide (25%), endrin (24%), endrin aldehyde (21%), endrin ketone (22%), dieldrin (23%), 4,4'-DDE (21%), 4,4'-DDD (21%), 4,4'-DDT (24%), endosulfan I (24%), endosulfan II (23%), endosulfan sulfate (25%), and trans-chlordane (21%). The associated results in sample SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1163382 on instrument PEST11 exhibited a %D above the control limit for toxaphene (-58.1%). The associated results in sample SB04_0-1 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1164174 on instrument PEST10 exhibited a %D above the control limit for toxaphene (-31.8%). The associated results in sample SBFB02_100118 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The MS for batch WG1164838 exhibited a percent recovery above the UCL for chromium, total (132%, 134%), manganese, total (206%, 172%), and potassium, total (284%, 288%). The associated results in samples SB04_0-1, SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are qualified as "J" based on potential high bias.

The field duplicate SBDUP02_100118 and parent sample SB04_23.5-24.5 exhibited a relative percent difference (RPD) above the control limit for aluminum, total (81%), barium, total (119.4%), chromium, total (73.1%), copper, total (52.4%), iron, total (59.1%), and vanadium, total (70.5%). The associated results in samples SBDUP02_100118 and SB04_23.5-24.5 are qualified as "J" based on potential indeterminate bias.

The field duplicate SBDUP02_100118 and parent sample SB04_23.5-24.5 exhibited an absolute difference above the reporting limit for cobalt, total (2.68 mg/kg), nickel, total (6.42 mg/kg) and potassium, total (1905 mg/kg). The associated results in samples SBDUP02_100118 and SB04_23.5-24.5 are qualified as "J" based on potential indeterminate bias.

Cyanide by SW-846 Method 9012B:

The LCS for batch WG1163184 exhibited a percent recovery below the LCL for cyanide, total (63%). The associated results in samples SB04_0-1, SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are qualified as "J" or "UJ" based on potential low bias.

Hexavalent Chromium by SW-846 Method 7196A:

The MS/MSD for batch WG1163367 exhibited a RPD above the control limit for chromium, hexavalent (29%). The associated results in sample SB04_0-1 are qualified as "J" based on potential indeterminate bias.

Trivalent Chromium (Calculated):

The field duplicate SBDUP02_100118 and parent sample SB04_23.5-24.5 exhibited a relative percent difference (RPD) above the control limit for chromium, trivalent (72.7%). The associated results in samples SBDUP02_100118 and SB04_23.5-24.5 are qualified as "J" based on potential indeterminate bias.

L1839661:

VOCs by SW-846 Method 8260C:

The ICAL for batch WG1165316 on instrument VOA100 exhibited a RF below the control limit for 1,4-dioxane (0.0020), 2-butanone (0.0770), and 4-methyl-2-pentanone (0.0940). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5, SB03_25-26, SB03_32-33, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are qualified as "J" and "UJ" based on potential indeterminate bias.

The CCV for batch WG1165316 on instrument VOA100 exhibited a %D above the control limit for vinyl acetate (22.6%). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5,

SB03_25-26, SB03_32-33, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1165571 on instrument ELAINE exhibited a RF below the control limit for 1,4-dioxane (0.0020), 2-butanone (0.0830), and 4-methyl-2-pentanone (0.0870). The associated results in sample SBTB04_100218 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1165571 on instrument ELAINE exhibited a %D above the control limit for 2-hexanone (23.5%), acetone (25.3%), chloromethane (-35.6%), dichlorodifluoromethane (-73.5%), vinyl acetate (27%), and vinyl chloride (-29.7%). The associated results in sample SBTB04_100218 are qualified as "J" and "UJ" based on potential indeterminate bias.

The CCV for batch WG1165571 on instrument ELAINE exhibited a %D above the control limit for 1,2,3-trichlorobenzene (27.1%), 1,2-dibromo-3-chloropropane (33.6%), bromoform (29%), bromomethane (31.4%), and naphthalene (30.3%). The associated results in sample SBTB04_100218 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The CCV for batch WG1164229 on instrument SV112 exhibited a %D above the control limit for pentachlorophenol (25.1%). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5, SB03_25-26, SB03_32-33, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The CCV for batch WG1164278 on instrument PEST10 exhibited a %D above the control limit for toxaphene (-31.8%). The associated results in samples SB03_0.5-1.5, SB13_0-1, and SB13_6.5-7.5 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The MB for batch WG1165519 exhibited a detection of sodium, total (9.33 mg/kg). The associated results in sample SB03_32-33 are qualified as "U" based on potential blank contamination.

Cyanide by SW-846 Method 9012B:

The LCS for batch WG1163541 exhibited a percent recovery below the LCL for cyanide, total (63%). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5, SB03_25-26, SB03_32-33, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are qualified as "UJ" based on potential low bias.

L1839825:

VOCs by SW-846 Method 8260C:

The LCS/LCSD for batch WG1165958 exhibited a RPD above the control limit for 1,4-dioxane (29%). The associated results in sample SBTB05_100318 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1165805 on instrument VOA111 exhibited a %D above the control limit for 1,2-dichloroethane (-21.6%), 2-butanone (-25.2%), bromodichloromethane (-20.3%), bromomethane (-23.9%), and chloroethane (-26.7%). The associated results in sample SB13_68-69 are qualified as "UJ" based on potential indeterminate bias.

The ICAL for batch WG1165958 on instrument VOA122 exhibited a RF below the control limit for 4-methyl-2-pentanone (0.0750). The associated results in sample SBTB05_100318 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1165958 on instrument VOA122 exhibited a %D above the control limit for 2-hexanone (24.6%), acetone (22.7%), bromomethane (-35.7%), dichlorodifluoromethane (-24.7%), and vinyl acetate (28.7%). The associated results in sample SBTB05_100318 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICV for batch WG1165958 on instrument VOA122 exhibited a RF below the control limit for acrylonitrile (0.0480). The associated results in sample SBTB05_100318 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1165958 on instrument VOA122 exhibited a %D above the control limit for 1,1,1,2-tetrachloroethane (-20.3%), 1,1,1-trichloroethane (-25.1%), 1,2,4-trimethylbenzene (-61.2%), 2,2-dichloropropane (-24.9%), benzene (21.5%), bromochloromethane (-22.1%), carbon tetrachloride (-40.4%), trichlorofluoromethane (-38.7%), and vinyl chloride (-24.7%). The associated results in sample SBTB05_100318 are qualified as "UJ" based on potential indeterminate bias.

Cyanide by SW-846 Method 9012B:

The LCS for batch WG1164602 exhibited a percent recovery below the LCL for cyanide, total (70%). The associated results in sample SB13_68-69 are qualified as "UJ" based on potential low bias.

L1840256:

VOCs by SW-846 Method 8260C:

The LCS/LCSD for batch WG1165958 exhibited a RPD above the control limit for 1,4-dioxane (29%). The associated results in sample SBTB06_100418 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1166260 on instrument VOA104 exhibited a %D above the control limit for acetone (0.062%). The associated results in samples SB01_0.5-1.5, SB01_6.5-7.5, SB01_26-27, SB02_0.5-1.5, SB02_3-4, SB02_26-27, SB10_1-2, SB10_6-7, and SB10_24-25 are qualified as "J" based on potential indeterminate bias.

The ICAL for batch WG1165958 on instrument VOA122 exhibited a RF below the control limit for 4-methyl-2-pentanone (0.0750). The associated results in sample SBTB06_100418 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1165958 on instrument VOA122 exhibited a %D above the control limit for acetone (22.7%), bromomethane (-35.7%), dichlorodifluoromethane (-24.7%), vinyl acetate (28.7%), and 2-hexanone (24.6%). The associated results in sample SBTB06_100418 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICV for batch WG1165958 on instrument VOA122 exhibited a RF below the control limit for acrylonitrile (0.0480). The associated results in sample SBTB06_100418 are qualified as "J" and "UJ" based on potential indeterminate bias.

The CCV for batch WG1165958 on instrument VOA122 exhibited a %D above the control limit for 1,1,1,2-tetrachloroethane (-20.3%), 1,1,1-trichloroethane (-25.1%), 1,2,4-trimethylbenzene (-61.2%), 2,2-dichloropropane (-24.9%), benzene (21.5%), bromochloromethane (-22.1%), carbon tetrachloride (-40.4%), trichlorofluoromethane (-38.7%), and vinyl chloride (-24.7%). The associated results in sample SBTB06_100418 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1165958 on instrument VOA122 exhibited an area percent below the control limit for 1,2-dichloropropane (48%), 2-butanone (45%), cis-1,3-dichloropropene (48%), ethyl ether (46%), methyl tert butyl ether (47%), methylene chloride (49%), and trans-1,4-dichloro-2-butene (48%). The associated results in sample SBTB06_100418 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The CCV for batch WG1165182 on instrument PEST11 exhibited a %D above the control limit for endrin aldehyde (20.3%). The associated results in samples SB01_0.5-1.5, SB01_6.5-7.5,

SB02_0.5-1.5, SB02_3-4, SB10_1-2, and SB10_6-7 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The lab duplicate and parent sample SB02_0.5-1.5 exhibited a RPD above the control limit for aluminum, total (31%), arsenic, total (25%), barium, total (23%), chromium, total (30%), cobalt, total (28%), copper, total (49%), iron, total (28%), lead, total (58%), magnesium, total (27%), potassium, total (23%), and zinc, total (23%). The associated results in sample SB02_0.5-1.5 are qualified as "J" based on potential indeterminate bias.

The MS for batch WG1166095 exhibited a percent recovery below the LCL for calcium, total (65%). The associated results in samples SB02_0.5-1.5, SB02_3-4, SB02_26-27, SB10_1-2, SB10_6-7, and SB10_24-25 are qualified as "J" based on potential low bias.

The MS for batch WG1166095 exhibited a percent recovery above the UCL for copper, total (181%), lead, total (501%), and zinc, total (198%). The associated results in samples SB02_0.5-1.5, SB02_3-4, SB02_26-27, SB10_1-2, SB10_6-7, and SB10_24-25 are qualified as "J" based on potential high bias.

L1840500:

VOCs by SW-846 Method 8260C:

The TB SBTB07_100518 exhibited a detection of acetone (4.9 µg/L). The associated results in sample SBFB03_100518 are qualified as "U" based on potential blank contamination.

The LCS/LCSD for batch WG1166658 exhibited a RPD above the control limit for 1,4-dioxane (34%). The associated results in samples SBFB03_100518 and SBTB07_100518 are qualified as "UJ" based on potential indeterminate bias.

The field duplicate SBDUP03_100518 and parent sample SB09_22-23 exhibited an absolute difference above the reporting limit for xylene, total (2.6 µg/kg). The associated results in samples SBDUP03_100518 and SB09_22-23 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICAL for batch WG1166796 on instrument VOA104 exhibited a RF below the control limit for acetone (0.0620). The associated results in samples SB08_0-1, SB08_1.5-2.5, SB08_21-22, SB09_0.5-1.5, SB09_3-4, SB09_22-23, and SBDUP03_100518 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICAL for batch WG1166658 on instrument ELAINE exhibited a RF below the control limit for 2-butanone (0.0830) and 4-methyl-2-pentanone (0.0870). The associated results in samples SBFB03_100518 and SBTB07_100518 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1166658 on instrument ELAINE exhibited a %D above the control limit for 2-hexanone (23.5%), chloromethane (-35.6%), dichlorodifluoromethane (-73.5%), vinyl acetate (27%), and vinyl chloride (-29.7%). The associated results in samples SBFB03_100518 and SBTB07_100518 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1166658 on instrument ELAINE exhibited a %D above the control limit for acetone (25.3%). The associated results in sample SBTB07_100518 are qualified as "J" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The CCV for batch WG1166568 on instrument SV107 exhibited a %D above the control limit for 2-methylphenol (-20.1%), 2-nitrophenol (-36.3%), 3,3'-dichlorobenzidine (-36.7%), 4-nitrophenol (-24.5%), benzo(k)fluoranthene (20.8%), benzoic acid (-35.5%), bis(2-chloroisopropyl)ether (-22.3%), bis(2-ethylhexyl)phthalate (-22%), isophorone (-23.7%), nitrobenzene (-23%), and n-nitrosodi-n-propylamine (-24.6%). The associated results in sample SBFB03_100518 are qualified as "J" and "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The CCV for batch WG1165775 on instrument PEST10 exhibited a %D above the control limit for toxaphene (-37.4%). The associated results in samples SB08_0-1, SB08_1.5-2.5, SB09_0.5-1.5, SB09_3-4, and SBDUP03_100518 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1166627 on instrument PEST20 exhibited a %D above the control limit for methoxychlor (-21.3%) and toxaphene (-56%). The associated results in sample SBFB03_100518 are qualified as "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6010D:

The MB for batch WG1166613 exhibited a detection of antimony, total (0.160 mg/kg). The associated results in sample SB08_0-1 are qualified as "U" based on potential blank contamination.

The MS for batch WG1166613 exhibited a percent recovery below the LCL for magnesium, total (71%). The associated results in samples SB08_0-1, SB08_1.5-2.5, SB08_21-22,

SB09_0.5-1.5, SB09_3-4, SB09_22-23, and SBDUP03_100518 are qualified as "J" based on potential low bias.

The field duplicate SBDUP03_100518 and parent sample SB09_22-23 exhibited an absolute difference above the reporting limit for cobalt, total (1.83 mg/kg), nickel, total (3.22 mg/kg), and potassium, total (311 mg/kg). The associated results in samples SBDUP03_100518 and SB09_22-23 are qualified as "J" based on potential indeterminate bias.

Cyanide by SW-846 Method 9012B:

The LCS for batch WG1165117 exhibited a percent recovery below the LCL for cyanide, total (78%). The associated results in samples SB08_21-22, SB09_0.5-1.5, SB09_3-4, SB09_22-23, and SBDUP03_100518 are qualified as "UJ" based on potential low bias.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

L1839010:

VOCs by SW-846 Method 8260C:

The MB for batch WG1163368 exhibited a detection of carbon disulfide (0.072 µg/L), methylene chloride (0.177 µg/L), and hexachlorobutadiene (0.117 µg/L). The associated results in samples SBFB01_092718 and SBTB01_092718 are non-detect. No qualification is necessary.

The matrix spike (MS) for batch WG1163719 exhibited a percent recovery below the LCL for 2-butanone (66%), n-butylbenzene (45%, 57%), hexachlorobutadiene (37%, 52%), and 1,2,4,5-tetramethylbenzene (52%, 64%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

SVOCs by SW-846 Method 8270D:

The surrogates in sample SB06_21.5-22.5 exhibited a percent recovery above the UCL for 2-fluorophenol (124%) and phenol-d6 (123%). The associated results in sample SB06_21.5-22.5 are non-detect. No qualification is necessary.

The surrogates in sample SB11_6.5-7.5 exhibited a percent recovery above the UCL for 2-fluorophenol (121%). The other two acid extractable surrogates were recovered within the acceptance limits. No qualification is necessary.

The LCS for batch WG1162406 exhibited a percent recovery above the UCL for 4-nitrophenol (118%) and phenol (91%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are non-detect. No qualification is necessary.

The MS for batch WG1162406 exhibited a percent recovery below the LCL for benzoic acid (0%). Benzoic acid is a poor performer and organic data are not qualified on the basis of MS recoveries alone.

The MS for batch WG1162406 exhibited a percent recovery above the UCL for phenol (93%). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are non-detect. No qualification is necessary.

PCBs by SW-846 Method 8082A:

The MS/MSD for batch WG1162411 exhibited a RPD above the control limit for Aroclor 1260 (52%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

Pesticides by SW-846 Method 8082A:

The MS/MSD for batch WG1162413 exhibited a RPD above the control limit for endosulfan sulfate (70%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

Metals by SW-846 Method 6010D:

The MB for batch WG1163857 exhibited a detection of calcium, total (1.98 mg/kg) and sodium, total (1.36 mg/kg). The associated results in samples SB06_1-2, SB06_21.5-22.5, SB06_29-30, SB07_0-2, SB07_3-5, SB07_21-23, SB11_0-1, SB11_6.5-7.5, SB11_22-23, SB12_0-2, SB12_2-4, SB12_22-23, and SBDUP01_092718 are greater than 10X the blank concentration. No qualification is necessary.

The MS/MSD for batch WG1163857 exhibited a RPD above the control limit for iron, total (30%). The associated results in sample SB11_6.5-7.5 are greater than 4X the spiked amount. No qualification is necessary.

The MS for batch WG1163857 exhibited a percent recovery above the UCL for aluminum, total (2020, 461%) and manganese, total (228%). The associated results in sample SB11_6.5-7.5 are greater than 4X the spiked amount. No qualification is necessary.

L1839310:

VOCs by SW-846 Method 8260C:

The LCS for batch WG1164392 exhibited a percent recovery above the UCL for acetone (141%). The associated results in sample SB05_22-23 are non-detect. No qualification is necessary.

The LCS for batch WG1164392 exhibited a percent recovery above the UCL for chloromethane (138, 138%), 2-butanone (131%), and acrylonitrile (136, 135%). The associated results in samples SB05_22-23, SB05_45-46, and SB05_64-65 are non-detect. No qualification is necessary.

The LCS for batch WG1164396 exhibited a percent recovery above the UCL for chloromethane (138%, 138%), acetone (141%), 2-butanone (131%), and acrylonitrile (136%, 135%). The associated results in sample SB05_0-2 are non-detect. No qualification is necessary.

L1839481:

VOCs by SW-846 Method 8260C:

The MB for batch WG1164762 exhibited a detection of methylene chloride (0.075 µg/L) and hexachlorobutadiene (0.242 µg/L). The associated results in samples SBTB03_100118 and SBFB02_100118 are non-detect. No qualification is necessary.

The MS/MSD for batch WG1164754 exhibited a RPD above the control limit for ethylbenzene (33%), 1,2-dichlorobenzene (32%), 1,3-dichlorobenzene (36%), 1,4-dichlorobenzene (36%), p/m-xylene (34%), o-xylene (33%), styrene (32%), bromobenzene (31%), n-butylbenzene (47%), sec-butylbenzene (43%), tert-butylbenzene (40%), o-chlorotoluene (37%), p-chlorotoluene (37%), hexachlorobutadiene (48%), isopropylbenzene (37%), p-isopropyltoluene (45%), n-propylbenzene (40%), 1,2,3-trichlorobenzene (33%), 1,2,4-trichlorobenzene (35%), 1,3,5-trimethylbenzene (39%), 1,2,4-trimethylbenzene (40%), and 1,2,4,5-tetramethylbenzene (42%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

The MS for batch WG1164754 exhibited a percent recovery below the LCL for chlorobenzene (68%) and vinyl acetate (64%, 65%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

SVOCs by SW-846 Method 8270D:

The LCS for batch WG1163707 exhibited a percent recovery above the UCL for biphenyl (107%, 106%), p-chloro-m-cresol (113%, 113%), 2-chlorophenol (104%, 109%), 4-nitrophenol (132%, 132%), pentachlorophenol (123%, 125%), and phenol (101%, 107%). The associated

results in samples SB04_0-1, SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are non-detect. No qualification is necessary.

The MS for batch WG1163707 exhibited a percent recovery above the UCL for biphenyl (110%, 110%), p-chloro-m-cresol (110%, 110%), 2-chlorophenol (110%), 4-nitrophenol (120%, 120%), pentachlorophenol (110%), and phenol (100%, 110%). The associated results in sample SB04_34-35 are non-detect. No qualification is necessary.

The MS for batch WG1163707 exhibited a percent recovery below the LCL for benzoic acid (0%). Benzoic acid is a poor performer and organic data are not qualified on the basis of MS recoveries alone.

Metals by SW-846 Method 6010D:

The MB for batch WG1164763 exhibited a detection of selenium, total (0.004 mg/L). The associated results in sample SBFB02_100118 are non-detect. No qualification is necessary.

The MS for batch WG1164838 exhibited a percent recovery above the UCL for aluminum, total (1730%, 1790%), calcium, total (828%, 682%), iron, total (4470%, 4700%), and magnesium, total (325%, 286%). The associated results in sample SB04_34-35 are greater than 4X the spiked amount. No qualification is necessary.

Hexavalent Chromium by SW-846 Method 7196A:

The MS/MSD for batch WG1163367 exhibited a RPD above the control limit for chromium, hexavalent (29%). The associated results in samples SB04_23.5-24.5, SB04_34-35, and SBDUP02_100118 are non-detect. No qualification is necessary.

L1839661:

VOCs by SW-846 Method 8260C:

The MB for batch WG1165571 exhibited a detection of bromomethane (0.927 µg/L), carbon disulfide (0.163 µg/L), hexachlorobutadiene (0.572 µg/L), and naphthalene (0.077 µg/L). The associated results in sample SBTB04_100218 are non-detect. No qualification is necessary.

Metals by SW-846 Method 6010D:

The MB for batch WG1165519 exhibited a detection of chromium, total (0.044 mg/kg) and manganese, total (0.08 mg/kg). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5, SB03_25-26, SB03_32-33, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are greater than 10X the blank concentration. No qualification is necessary.

The MB for batch WG1165519 exhibited a detection of sodium, total (9.33 mg/kg). The associated results in samples SB03_0.5-1.5, SB03_22.5-23.5, SB03_25-26, SB13_0-1, SB13_6.5-7.5, and SB13_28-29 are greater than 10X the blank concentration. No qualification is necessary.

L1839825:

VOCs by SW-846 Method 8260C:

The LCS for batch WG1165958 exhibited a percent recovery above the UCL for carbon tetrachloride (140, 140%), dichlorodifluoromethane (180, 170%), and 1,2,4-trimethylbenzene (160, 160%). The associated results in sample SBTB05_100318 are non-detect. No qualification is necessary.

Metals by SW-846 Method 6010D:

The MB for batch WG1166083 exhibited a detection of sodium, total (11.8 mg/kg). The associated results in sample SB13_68-69 are greater than 10X the blank concentration. No qualification is necessary.

L1840256:

VOCs by SW-846 Method 8260C:

The LCS for batch WG1165958 exhibited a percent recovery above the UCL for carbon tetrachloride (140%, 140%), dichlorodifluoromethane (180%, 170%), and 1,2,4-trimethylbenzene (160%, 160%). The associated results in sample SBTB06_100418 are non-detect. No qualification is necessary.

The LCS for batch WG1165223 exhibited a percent recovery above the UCL for phenol (93, 98%). The associated results in samples SB01_0.5-1.5, SB01_6.5-7.5, SB01_26-27, SB02_0.5-1.5, SB02_3-4, SB02_26-27, SB10_1-2, SB10_6-7, and SB10_24-25 are non-detect. No qualification is necessary.

Metals by SW-846 Method 6010D:

The MB for batch WG1165954 exhibited a detection of iron, total (0.107 mg/kg). The associated results in samples SB01_0.5-1.5, SB01_6.5-7.5, and SB01_26-27 are greater than 10X the blank concentration. No qualification is necessary.

The MS for batch WG1166095 exhibited a percent recovery below the LCL for iron, total (0%). The associated results in sample SB02_0.5-1.5 are greater than 4X the spiked amount. No qualification is necessary.

The MS for batch WG1166095 exhibited a percent recovery above the UCL for aluminum, total (369%) and manganese, total (156%). The associated results in sample SB02_0.5-1.5 are greater than 4X the spiked amount. No qualification is necessary.

L1840500:

VOCs by SW-846 Method 8260C:

The MB for batch WG1166658 exhibited a detection of chloromethane (0.142 µg/L) and hexachlorobutadiene (0.189 µg/L). The associated results in samples SBFB03_100518 and SBTB07_100518 are non-detect. No qualification is necessary.

The MS/MSD for batch WG1166796 exhibited a RPD above the control limit for 1,1,2-trichloroethane (94%), bromodichloromethane (33%), 1,1-dichloroethene (31%), trichloroethene (48%), vinyl acetate (149%), n-butylbenzene (37%), sec-butylbenzene (32%), 1,2-dibromo-3-chloropropane (99%), hexachlorobutadiene (50%), p-isopropyltoluene (32%), and p-diethylbenzene (35%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

The MS for batch WG1166796 exhibited a percent recovery below the LCL for 1,1,2,2-tetrachloroethane (0%), 1,2,4-trichlorobenzene (67%), and 1,2,4,5-tetramethylbenzene (68%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

SVOCs by SW-846 Method 8270D:

The MS for batch WG1165794 exhibited a percent recovery below the LCL for hexachlorocyclopentadiene (0, 0%), 2,4,6-trichlorophenol (16, 13%), 2-nitrophenol (26%), 4-nitrophenol (0, 0%), 2,4-dinitrophenol (0, 0%), 4,6-dinitro-o-cresol (0, 0%), pentachlorophenol (9, 8%), and benzoic acid (0, 0%). Organic data are not qualified on the basis of MS/SD recoveries or RPDs alone.

Pesticides by SW-846 Method 8081B:

The MB for batch WG1166627 exhibited a detection of 4,4'-DDT (0.703 µg/L). The associated results in sample SBFB03_100518 are non-detect. No qualification is necessary.

Metals by SW-846 Method 6010D:

The MB for batch WG1166613 exhibited a detection of antimony, total (0.160 mg/kg). The associated results in samples SB08_1.5-2.5, SB08_21-22, SB09_0.5-1.5, SB09_3-4, SB09_22-23, and SBDUP03_100518 are non-detect or greater than 10X the blank concentration. No qualification is necessary.

The MS for batch WG1166613 exhibited a percent recovery below the LCL for manganese, total (47%, 31%). The associated results in sample SB08_21-22 are greater than 4X the spiked amount. No qualification is necessary.

The MS for batch WG1166613 exhibited a percent recovery above the UCL for aluminum, total (244%, 240%) and iron, total (288%, 179%). The associated results in sample SB08_21-22 are greater than 4X the spiked amount. No qualification is necessary.

Mercury by SW-846 Method 7471B:

The MB for batch WG1166854 exhibited a detection of mercury, total (0.028 mg/kg). The associated results in sample SBFB03_100518 are non-detect. No qualification is necessary.

The MS for batch WG1166854 exhibited a percent recovery above the UCL for mercury, total (145, 145%). The associated results in sample SBFB03_100518 are non-detect. No qualification is necessary.

COMMENTS:

Field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50% for soil. The following analytes did not meet the precision criteria:

- SBDUP01_092718 and SB11_6.5-7.5: acetone, total lead, phenanthrene, and tetrachloroethene
- SBDUP02_100118 and SB04_23.5-24.5: total aluminum, total barium, total cobalt, total copper, total iron, total nickel, total vanadium, trivalent chromium, total chromium, and total potassium
- SBDUP03_100518 and SB09_22-23: total cobalt, total nickel, total potassium, and total xylene

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:

Emily Strake, CEP
Senior Project Chemist

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

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To: Nicole Kung, Langan Senior Staff Engineer

From: Emily Strake, Langan Senior Project Chemist

Date: November 9, 2018

Re: Data Usability Summary Report
For 37-11 30th Street
Samples Collected in October 2018
Langan Project No.: 170512301

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of samples collected in October 2018 by Langan Engineering and Environmental Services ("Langan") at the 37-11 30th Street site ("the site"). The samples were analyzed by Alpha Analytical Laboratories, Inc. (NYSDOH NELAC registration # 11148) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), per- and polyfluoroalkyl substances (PFAS), herbicides, polychlorinated biphenyls (PCBs), pesticides, metals, mercury (Hg), cyanide (CN), and hexavalent chromium (CrVI), and trivalent chromium (CrIII) by the methods specified below.

- VOCs by SW-846 Method 8260C
- SVOCs by SW-846 Method 8270D and 8270C-SIM
- PFAS by USEPA Method 537M
- Herbicides by SW-846 Method 8151A
- PCBs by SW-846 Method 8082A
- Pesticides by SW-846 Method 8081B
- Metals by SW-846 Method 6020B
- Mercury by SW-846 Method 7470A
- Cyanide by SW-846 Method 9012B
- Hexavalent Chromium by SW-846 Method 7196A
- Trivalent Chromium (calculated)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

TABLE 1: SAMPLE SUMMARY

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1841798	L1841798-01	MW10_101518	10/15/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1841798	L1841798-02	MW02_101518	10/15/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1841798	L1841798-03	MW13B_101518	10/15/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1841798	L1841798-04	TB01_101518	10/15/2018	VOCs
L1842082	L1842082-01	MW06_101618	10/16/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842082	L1842082-02	MW03_101618	10/16/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842082	L1842082-03	MW07_101618	10/16/2018	PFAS
L1842082	L1842082-04	GWDUP01_101618	10/16/2018	PFAS
L1842082	L1842082-05	GWFB01_101618	10/16/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, PFAS, CN
L1842082	L1842082-06	TB02_101618	10/16/2018	VOCs
L1842363	L1842363-01	MW07_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842363	L1842363-02	GWDUP01_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842363	L1842363-03	MW05A_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, PFAS, CN
L1842363	L1842363-04	MW01_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, PFAS, CN
L1842363	L1842363-05	MW13A_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
L1842363	L1842363-06	MW05B_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842363	L1842363-07	MW04_101718	10/17/2018	VOCs, SVOCs, PCBs, Metals, Hg, Pesticides, Herbicides, CrIII, CrVI, CN
L1842363	L1842363-08	GWFB02_101718	10/17/2018	SVOCs
L1842363	L1842363-09	TB03_101718	10/17/2018	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34A, "Trace Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-33A, "Low/Medium Volatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-35A, "Semivolatile Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-17, "Validating Chlorinated Herbicides" (December 2010, Revision 3.1), USEPA Region II SOP #HW-37A, "Polychlorinated Biphenyl (PCB) Aroclor Data Validation" (June 2015, Revision 0), USEPA Region II SOP #HW-36A, "Pesticide Data Validation" (October 2016, Revision 1), USEPA Region II SOP #HW-3b, "ICP-MS Data Validation" (September 2016, Revision 1), USEPA Region II SOP #HW-3c, "Mercury and Cyanide Data Validation" (September 2016, Revision 1), the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017), USEPA "National Functional Guidelines for Inorganic Superfund Methods Data Review" (EPA-540-R-2017-001, January 2017) and the specifics of the methods employed.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

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

J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.

U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW02_101518	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW02_101518	8260C	96-18-4	1,2,3-Trichloropropane	UJ
MW02_101518	8260C	123-91-1	1,4-Dioxane	UJ
MW02_101518	8270D	105-67-9	2,4-Dimethylphenol	UJ
MW02_101518	8270DSIM	208-96-8	Acenaphthylene	UJ
MW02_101518	8260C	75-00-3	Chloroethane	UJ
MW02_101518	8260C	60-29-7	Ethyl Ether	UJ
MW02_101518	8081B	72-20-8	Endrin	UJ
MW02_101518	8260C	87-68-3	Hexachlorobutadiene	UJ
MW02_101518	7470A	7439-97-6	Mercury	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW02_101518	8081B	72-43-5	Methoxychlor	UJ
MW02_101518	8081B	50-29-3	P,P'-DDT	UJ
MW02_101518	8260C	135-98-8	Sec-Butylbenzene	UJ
MW10_101518	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW10_101518	8260C	96-18-4	1,2,3-Trichloropropane	UJ
MW10_101518	8260C	123-91-1	1,4-Dioxane	UJ
MW10_101518	8270D	105-67-9	2,4-Dimethylphenol	UJ
MW10_101518	8270DSIM	208-96-8	Acenaphthylene	UJ
MW10_101518	8260C	75-00-3	Chloroethane	UJ
MW10_101518	8081B	5103-71-9	cis-Chlordane	J
MW10_101518	6020B	7440-48-4	Cobalt, Dissolved	J
MW10_101518	8260C	60-29-7	Ethyl Ether	UJ
MW10_101518	8081B	72-20-8	Endrin	UJ
MW10_101518	8260C	87-68-3	Hexachlorobutadiene	UJ
MW10_101518	7470A	7439-97-6	Mercury	UJ
MW10_101518	8081B	72-43-5	Methoxychlor	UJ
MW10_101518	8081B	50-29-3	P,P'-DDT	J
MW10_101518	8260C	135-98-8	Sec-Butylbenzene	UJ
MW13B_101518	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW13B_101518	8260C	96-18-4	1,2,3-Trichloropropane	UJ
MW13B_101518	8260C	123-91-1	1,4-Dioxane	UJ
MW13B_101518	8270D	105-67-9	2,4-Dimethylphenol	UJ
MW13B_101518	8270DSIM	208-96-8	Acenaphthylene	UJ
MW13B_101518	6020B	7429-90-5	Aluminum, Total	J
MW13B_101518	8260C	75-00-3	Chloroethane	UJ
MW13B_101518	8260C	60-29-7	Ethyl Ether	UJ
MW13B_101518	8081B	72-20-8	Endrin	UJ
MW13B_101518	8260C	87-68-3	Hexachlorobutadiene	UJ
MW13B_101518	7470A	7439-97-6	Mercury	UJ
MW13B_101518	8081B	72-43-5	Methoxychlor	UJ
MW13B_101518	8081B	50-29-3	P,P'-DDT	UJ
MW13B_101518	8260C	135-98-8	Sec-Butylbenzene	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
TB01_101518	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
TB01_101518	8260C	96-18-4	1,2,3-Trichloropropane	UJ
TB01_101518	8260C	123-91-1	1,4-Dioxane	UJ
TB01_101518	8260C	75-00-3	Chloroethane	UJ
TB01_101518	8260C	60-29-7	Ethyl Ether	UJ
TB01_101518	8260C	87-68-3	Hexachlorobutadiene	UJ
TB01_101518	8260C	135-98-8	Sec-Butylbenzene	UJ
GWDUP01_101618	537	2991-50-6	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	UJ
GWDUP01_101618	537	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	J
GWDUP01_101618	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	U (6.90)
GWDUP01_101618	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	U (1.86)
GWFB01_101618	8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
GWFB01_101618	8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
GWFB01_101618	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
GWFB01_101618	8260C	123-91-1	1,4-Dioxane	UJ
GWFB01_101618	8260C	591-78-6	2-Hexanone	UJ
GWFB01_101618	8260C	107-13-1	Acrylonitrile	UJ
GWFB01_101618	8260C	75-25-2	Bromoform	UJ
GWFB01_101618	8260C	74-83-9	Bromomethane	UJ
GWFB01_101618	8260C	74-95-3	Dibromomethane	UJ
GWFB01_101618	8260C	75-71-8	Dichlorodifluoromethane	UJ
GWFB01_101618	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
GWFB01_101618	8260C	91-20-3	Naphthalene	UJ
GWFB01_101618	537	2991-50-6	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	UJ
GWFB01_101618	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	U (9.19)
GWFB01_101618	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
GWFB01_101618	8260C	108-05-4	Vinyl Acetate	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW03_101618	8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW03_101618	8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
MW03_101618	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW03_101618	8260C	123-91-1	1,4-Dioxane	UJ
MW03_101618	8260C	591-78-6	2-Hexanone	UJ
MW03_101618	8260C	107-13-1	Acrylonitrile	UJ
MW03_101618	8260C	75-25-2	Bromoform	UJ
MW03_101618	8260C	74-83-9	Bromomethane	UJ
MW03_101618	8260C	74-95-3	Dibromomethane	UJ
MW03_101618	8260C	75-71-8	Dichlorodifluoromethane	UJ
MW03_101618	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW03_101618	8260C	91-20-3	Naphthalene	UJ
MW03_101618	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW03_101618	8260C	108-05-4	Vinyl Acetate	UJ
MW06_101618	8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
MW06_101618	8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
MW06_101618	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW06_101618	8260C	123-91-1	1,4-Dioxane	UJ
MW06_101618	8260C	591-78-6	2-Hexanone	UJ
MW06_101618	8260C	107-13-1	Acrylonitrile	UJ
MW06_101618	8260C	75-25-2	Bromoform	UJ
MW06_101618	8260C	74-83-9	Bromomethane	UJ
MW06_101618	8260C	74-95-3	Dibromomethane	UJ
MW06_101618	8260C	75-71-8	Dichlorodifluoromethane	UJ
MW06_101618	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW06_101618	8260C	91-20-3	Naphthalene	UJ
MW06_101618	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW06_101618	8260C	108-05-4	Vinyl Acetate	UJ
MW07_101618	537	2991-50-6	N-Ethyl-N-((heptadecafluorooctyl)sulphonyl) glycine	UJ
MW07_101618	537	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW07_101618	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	U (121)
MW07_101618	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	U (1.78)
TB02_101618	8260C	87-61-6	1,2,3-Trichlorobenzene	UJ
TB02_101618	8260C	120-82-1	1,2,4-Trichlorobenzene	UJ
TB02_101618	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
TB02_101618	8260C	123-91-1	1,4-Dioxane	UJ
TB02_101618	8260C	591-78-6	2-Hexanone	UJ
TB02_101618	8260C	107-13-1	Acrylonitrile	UJ
TB02_101618	8260C	75-25-2	Bromoform	UJ
TB02_101618	8260C	74-83-9	Bromomethane	UJ
TB02_101618	8260C	74-95-3	Dibromomethane	UJ
TB02_101618	8260C	75-71-8	Dichlorodifluoromethane	UJ
TB02_101618	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
TB02_101618	8260C	91-20-3	Naphthalene	UJ
TB02_101618	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
TB02_101618	8260C	108-05-4	Vinyl Acetate	UJ
GWDUP01_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
GWDUP01_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
GWDUP01_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
GWDUP01_101718	8260C	123-91-1	1,4-Dioxane	UJ
GWDUP01_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
GWDUP01_101718	8260C	591-78-6	2-Hexanone	UJ
GWDUP01_101718	8260C	67-64-1	Acetone	J
GWDUP01_101718	8260C	107-13-1	Acrylonitrile	UJ
GWDUP01_101718	6020B	7440-38-2	Arsenic, Total	J
GWDUP01_101718	8260C	74-97-5	Bromochloromethane	UJ
GWDUP01_101718	8260C	74-83-9	Bromomethane	UJ
GWDUP01_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
GWDUP01_101718	8260C	75-00-3	Chloroethane	UJ
GWDUP01_101718	8260C	74-87-3	Chloromethane	UJ
GWDUP01_101718	8260C	60-29-7	Ethyl Ether	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
GWDUP01_101718	6020B	7439-89-6	Iron, Dissolved	U (0.0930)
GWDUP01_101718	6020B	7439-92-1	Lead, Total	J
GWDUP01_101718	8260C	78-93-3	2-Butanone	UJ
GWDUP01_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
GWDUP01_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
GWDUP01_101718	6020B	7440-28-0	Thallium, Total	UJ
GWDUP01_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
GWDUP01_101718	6020B	7440-66-6	Zinc, Total	J
MW01_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW01_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW01_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW01_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW01_101718	537	2355-31-9	2-(N-methyl perfluorooctanesulfonamido) acetic acid	UJ
MW01_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW01_101718	8260C	591-78-6	2-Hexanone	UJ
MW01_101718	8260C	67-64-1	Acetone	J
MW01_101718	8260C	107-13-1	Acrylonitrile	UJ
MW01_101718	6020B	7440-38-2	Arsenic, Total	J
MW01_101718	8260C	74-97-5	Bromochloromethane	UJ
MW01_101718	8260C	74-83-9	Bromomethane	UJ
MW01_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
MW01_101718	8260C	75-00-3	Chloroethane	UJ
MW01_101718	8260C	74-87-3	Chloromethane	UJ
MW01_101718	8260C	60-29-7	Ethyl Ether	UJ
MW01_101718	6020B	7439-89-6	Iron, Dissolved	U (0.0750)
MW01_101718	6020B	7439-92-1	Lead, Total	J
MW01_101718	8260C	78-93-3	2-Butanone	UJ
MW01_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW01_101718	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	J
MW01_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW01_101718	6020B	7440-28-0	Thallium, Total	UJ
MW01_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW01_101718	6020B	7440-66-6	Zinc, Total	J
MW04_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW04_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW04_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW04_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW04_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW04_101718	8260C	591-78-6	2-Hexanone	UJ
MW04_101718	8260C	67-64-1	Acetone	J
MW04_101718	8260C	107-13-1	Acrylonitrile	UJ
MW04_101718	6020B	7440-38-2	Arsenic, Total	J
MW04_101718	8260C	74-97-5	Bromochloromethane	UJ
MW04_101718	8260C	74-83-9	Bromomethane	UJ
MW04_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
MW04_101718	8260C	75-00-3	Chloroethane	UJ
MW04_101718	8260C	74-87-3	Chloromethane	UJ
MW04_101718	8260C	60-29-7	Ethyl Ether	UJ
MW04_101718	6020B	7439-89-6	Iron, Total	U (0.286)
MW04_101718	6020B	7439-92-1	Lead, Total	UJ
MW04_101718	8260C	78-93-3	2-Butanone	UJ
MW04_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW04_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW04_101718	6020B	7440-28-0	Thallium, Total	UJ
MW04_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW04_101718	6020B	7440-66-6	Zinc, Total	UJ
MW05A_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW05A_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05A_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW05A_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW05A_101718	537	2355-31-9	2-(N-methyl perfluorooctanesulfonamido) acetic acid	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW05A_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW05A_101718	8260C	591-78-6	2-Hexanone	UJ
MW05A_101718	8260C	67-64-1	Acetone	J
MW05A_101718	8260C	107-13-1	Acrylonitrile	UJ
MW05A_101718	6020B	7440-38-2	Arsenic, Total	J
MW05A_101718	8260C	74-97-5	Bromochloromethane	UJ
MW05A_101718	8260C	74-83-9	Bromomethane	UJ
MW05A_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
MW05A_101718	8260C	75-00-3	Chloroethane	UJ
MW05A_101718	8260C	74-87-3	Chloromethane	UJ
MW05A_101718	8260C	60-29-7	Ethyl Ether	UJ
MW05A_101718	6020B	7439-89-6	Iron, Dissolved	U (0.159)
MW05A_101718	6020B	7439-92-1	Lead, Total	J
MW05A_101718	8260C	78-93-3	2-Butanone	UJ
MW05A_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW05A_101718	537	27619-97-2	Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	J
MW05A_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	J
MW05A_101718	6020B	7440-28-0	Thallium, Total	J
MW05A_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW05A_101718	6020B	7440-66-6	Zinc, Total	J
MW05B_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW05B_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW05B_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW05B_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW05B_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW05B_101718	8260C	591-78-6	2-Hexanone	UJ
MW05B_101718	8260C	67-64-1	Acetone	J
MW05B_101718	8260C	107-13-1	Acrylonitrile	UJ
MW05B_101718	6020B	7440-38-2	Arsenic, Total	J
MW05B_101718	8260C	74-97-5	Bromochloromethane	UJ
MW05B_101718	8260C	74-83-9	Bromomethane	UJ
MW05B_101718	8260C	56-23-5	Carbon Tetrachloride	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW05B_101718	8260C	75-00-3	Chloroethane	UJ
MW05B_101718	8260C	74-87-3	Chloromethane	UJ
MW05B_101718	8260C	60-29-7	Ethyl Ether	UJ
MW05B_101718	6020B	7439-92-1	Lead, Total	J
MW05B_101718	8260C	78-93-3	2-Butanone	UJ
MW05B_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW05B_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW05B_101718	6020B	7440-28-0	Thallium, Total	J
MW05B_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW05B_101718	6020B	7440-66-6	Zinc, Total	J
MW07_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW07_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW07_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW07_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW07_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW07_101718	8260C	591-78-6	2-Hexanone	UJ
MW07_101718	8260C	67-64-1	Acetone	J
MW07_101718	8260C	107-13-1	Acrylonitrile	UJ
MW07_101718	6020B	7440-38-2	Arsenic, Total	J
MW07_101718	8270D	65-85-0	Benzoic Acid	UJ
MW07_101718	8260C	74-97-5	Bromochloromethane	UJ
MW07_101718	8260C	74-83-9	Bromomethane	UJ
MW07_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
MW07_101718	8260C	75-00-3	Chloroethane	UJ
MW07_101718	8260C	74-87-3	Chloromethane	UJ
MW07_101718	8260C	60-29-7	Ethyl Ether	UJ
MW07_101718	8270D	77-47-4	Hexachlorocyclopentadiene	UJ
MW07_101718	6020B	7439-89-6	Iron, Dissolved	U (0.0750)
MW07_101718	6020B	7439-92-1	Lead, Total	J
MW07_101718	8260C	78-93-3	2-Butanone	UJ
MW07_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW07_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
MW07_101718	6020B	7440-28-0	Thallium, Total	J
MW07_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW07_101718	6020B	7440-66-6	Zinc, Total	J
MW13A_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
MW13A_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
MW13A_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
MW13A_101718	8260C	123-91-1	1,4-Dioxane	UJ
MW13A_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
MW13A_101718	8260C	591-78-6	2-Hexanone	UJ
MW13A_101718	8260C	67-64-1	Acetone	J
MW13A_101718	8260C	107-13-1	Acrylonitrile	UJ
MW13A_101718	6020B	7440-38-2	Arsenic, Total	J
MW13A_101718	8260C	74-97-5	Bromochloromethane	UJ
MW13A_101718	8260C	74-83-9	Bromomethane	UJ
MW13A_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
MW13A_101718	8260C	75-00-3	Chloroethane	UJ
MW13A_101718	8260C	74-87-3	Chloromethane	J
MW13A_101718	8260C	60-29-7	Ethyl Ether	UJ
MW13A_101718	6020B	7439-92-1	Lead, Total	J
MW13A_101718	8260C	78-93-3	2-Butanone	UJ
MW13A_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
MW13A_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
MW13A_101718	6020B	7440-28-0	Thallium, Total	UJ
MW13A_101718	8260C	75-69-4	Trichlorofluoromethane	UJ
MW13A_101718	6020B	7440-66-6	Zinc, Total	UJ
TB03_101718	8260C	71-55-6	1,1,1-Trichloroethane (TCA)	UJ
TB03_101718	8260C	79-34-5	1,1,2,2-Tetrachloroethane	UJ
TB03_101718	8260C	96-12-8	1,2-Dibromo-3-Chloropropane	UJ
TB03_101718	8260C	123-91-1	1,4-Dioxane	UJ
TB03_101718	8260C	594-20-7	2,2-Dichloropropane	UJ
TB03_101718	8260C	591-78-6	2-Hexanone	UJ
TB03_101718	8260C	67-64-1	Acetone	J

Client Sample ID	*Analysis*	*CAS #*	*Analyte*	*Validator Qualifier*
TB03_101718	8260C	107-13-1	Acrylonitrile	UJ
TB03_101718	8260C	74-97-5	Bromochloromethane	UJ
TB03_101718	8260C	74-83-9	Bromomethane	UJ
TB03_101718	8260C	56-23-5	Carbon Tetrachloride	UJ
TB03_101718	8260C	75-00-3	Chloroethane	UJ
TB03_101718	8260C	74-87-3	Chloromethane	UJ
TB03_101718	8260C	60-29-7	Ethyl Ether	UJ
TB03_101718	8260C	78-93-3	2-Butanone	UJ
TB03_101718	8260C	108-10-1	4-Methyl-2-Pentanone	UJ
TB03_101718	8260C	1634-04-4	Tert-Butyl Methyl Ether	UJ
TB03_101718	8260C	75-69-4	Trichlorofluoromethane	UJ

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

L1841798:

VOCs by SW-846 Method 8260C:

The laboratory control sample and duplicate (LCS/LCSD) for batch WG1169741 exhibited a relative percent difference (RPD) above the control limit for 1,4-dioxane (21%). The associated results in samples MW10_101518, MW02_101518, MW13B_101518, and TB01_101518 are qualified as "UJ" based on potential indeterminate bias.

The initial calibration verification (ICV) for batch WG1169741 on instrument VOA108 exhibited a percent difference (%D) above the control limit for 1,1,2,2-tetrachloroethane (-27.9%), 1,2,3-trichloropropane (-21.6%), Ethyl Ether (-20.7%), and sec-butylbenzene (-26.7%). The associated results in samples MW10_101518, MW02_101518, MW13B_101518, and TB01_101518 are qualified as "UJ" based on potential indeterminate bias.

The continuing calibration verification (CCV) for batch WG1169741 on instrument VOA108 exhibited a percent difference (%D) above the control limit for chloroethane (-22.7%) and hexachlorobutadiene (-22.2%). The associated results in samples MW10_101518, MW02_101518, MW13B_101518, and TB01_101518 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The LCS/LCSD for batch WG1170296 exhibited a RPD above the control limit for 2,4-dimethylphenol (46%). The associated results in samples MW10_101518, MW02_101518, and MW13B_101518 are qualified as "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270C-SIM:

The CCV for batch WG1170297 on instrument SV118 exhibited a %D above the control limit for acenaphthylene (-25.7%). The associated results in samples MW10_101518, MW02_101518, and MW13B_101518 are qualified as "UJ" based on potential indeterminate bias.

Pesticides by SW-846 Method 8081B:

The LCS/LCSD for batch WG1169664 exhibited a RPD above the control limit for endrin (21%), 4,4'-DDT (27%), and methoxychlor (24%). The associated results in samples MW10_101518, MW02_101518, and MW13B_101518 are qualified as "J" and "UJ" based on potential indeterminate bias.

The results for sample MW10_101518 exhibited dual column imprecision for cis-Chlordane. The result is qualified as "J" based on potential indeterminate bias.

Metals by SW-846 Method 6020B:

The matrix spike (MS) for batch WG1169277 exhibited a percent recovery below the lower control limit (LCL) for mercury, dissolved (71%). The associated results in samples MW10_101518, MW02_101518, and MW13B_101518 are qualified as "UJ" based on potential low bias.

The lab duplicate and parent sample MW13B_101518 exhibited a RPD above the control limit for aluminum, total (27%). The associated results in sample MW13B_101518 are qualified as "J" based on potential indeterminate bias.

The lab duplicate and parent sample MW10_101518 exhibited a RPD above the control limit for cobalt, dissolved (22%). The associated results in sample MW10_101518 are qualified as "J" based on potential indeterminate bias.

L1842082:

VOCs by SW-846 Method 8260C:

The LCS for batch WG1170946 exhibited a percent recovery below the lower control limit (LCL) for naphthalene (67%, 63%) and 1,2,3-trichlorobenzene (64%, 62%). The associated results in samples MW06_101618, MW03_101618, GWFB01_101618, and TB02_101618 are qualified as "UJ" based on potential low bias.

The initial calibration (ICAL) for batch WG1170946 on instrument VOA101 exhibited a response factor (RF) below the control limit for 1,4-dioxane (0.0010), acrylonitrile (0.0410), and 4-methyl-2-pentanone (0.0610). The associated results in samples MW06_101618, MW03_101618, GWFB01_101618, and TB02_101618 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1170946 on instrument VOA101 exhibited a %D above the control limit for bromomethane (-47%) and dichlorodifluoromethane (-39.1%). The associated results in samples MW06_101618, MW03_101618, GWFB01_101618, and TB02_101618 are qualified as "UJ" based on potential indeterminate bias.

The ICV for batch WG1170946 on instrument VOA101 exhibited a response factor (RF) below the control limit for 2-hexanone (0.0980). The associated results in samples MW06_101618, MW03_101618, GWFB01_101618, and TB02_101618 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1170946 on instrument VOA101 exhibited a %D above the control limit for 1,2,4-trichlorobenzene (23.4%), 1,2-dibromo-3-chloropropane (30.5%), bromoform (24.9%), dibromomethane (21.1%), tert-butyl methyl ether (21.5%), and vinyl acetate (21.6%). The associated results in samples MW06_101618, MW03_101618, GWFB01_101618, and TB02_101618 are qualified as "UJ" based on potential indeterminate bias.

PFAS by USEPA Method 537M:

The method blank (MB) for batch WG1170058 exhibited a detection of sodium 1h,1h,2h,2h-perfluorooctane sulfonate (6:2) (120 ng/L). The associated results in samples MW07_101618, GWDUP01_101618, and GWFB01_101618 are qualified as "U" based on potential blank contamination.

The field blank (FB) GWFB01_101618 exhibited a detection of sodium 1h,1h,2h,2h-perfluorooctane sulfonate (6:2) (5.3 ng/L). The associated results in samples MW07_101618 and GWDUP01_101618 are qualified as "U" based on potential blank contamination.

The LCS/LCSD for batch WG1170058 exhibited a RPD above the control limit for n-ethyl-n-((heptadecafluorooctyl)sulphonyl) glycine (34%). The associated results in samples MW07_101618, GWDUP01_101618, and GWFB01_101618 are qualified as "UJ" based on potential indeterminate bias.

The field duplicate GWDUP01_101618 and parent sample MW07_101618 exhibited a RPD above the control limit for perfluorohexanesulfonic acid (PFHxS) (35.9%). The associated results in samples MW07_101618 and GWDUP01_101618 are qualified as "J" based on potential indeterminate bias.

L1842363:

VOCs by SW-846 Method 8260C:

The ICAL for batch WG1170923 on instrument VOA105 exhibited a response factor (RF) below the control limit for 1,2-dibromo-3-chloropropane (0.0390), 1,4-Dioxane (0.0010), acetone (0.0340), acrylonitrile (0.0340), bromomethane (0.0830), and 2-Butanone (0.030). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are qualified as "J" and "UJ" based on potential indeterminate bias.

The ICV for batch WG1170923 on instrument VOA105 exhibited a response factor (RF) below the control limit for chloroethane (0.0990). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are qualified as "UJ" based on potential indeterminate bias.

The CV for batch WG1170923 on instrument VOA105 exhibited a %D above the control limit for 2-hexanone (20.6%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1170923 on instrument VOA105 exhibited a RF below the control limit for 1,1,2,2-tetrachloroethane (0.2970). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are qualified as "UJ" based on potential indeterminate bias.

The CCV for batch WG1170923 on instrument VOA105 exhibited a %D above the control limit for 1,1,1-trichloroethane (TCA) (-24.1%), 2,2-dichloropropane (-33.8%), bromochloromethane (-23.6%), carbon tetrachloride (-33.2%), chloromethane (20.9%), Ethyl Ether (-46.8%), 4-Methyl-2-Pentanone (27.8%), tert-butyl methyl ether (-24.6%), and trichlorofluoromethane (-

47.7%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are qualified as "J" and "UJ" based on potential indeterminate bias.

SVOCs by SW-846 Method 8270D:

The CCV for batch WG1171220 on instrument SV107 exhibited a %D above the control limit for benzoic acid (-30.8%) and hexachlorocyclopentadiene (26.2%). The associated results in sample MW07_101718 are qualified as "UJ" based on potential indeterminate bias.

PFAS by USEPA Method 537M:

The CCV for batch WG1172308 on instrument LCMS1 exhibited a %D above the control limit for 2-(n-methyl perfluorooctanesulfonamido) acetic acid (41%) and sodium 1h,1h,2h,2h-perfluorooctane sulfonate (6:2) (153.6%). The associated results in samples MW05A_101718 and MW01_101718 are qualified as "J" and "UJ" based on potential indeterminate bias.

Metals by SW-846 Method 6020B:

The MS for batch WG1171330 exhibited a percent recovery below the lower control limit (LCL) for arsenic, total (71%), lead, total (73%), and thallium, total (70%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, and MW04_101718 are qualified as "J" and "UJ" based on potential low bias.

The matrix spike and duplicate (MS/MSD) for batch WG1171330 exhibited a relative percent difference (RPD) above the control limit for zinc, total (24%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, and MW04_101718 are qualified as "J" and "UJ" based on potential indeterminate bias.

The MB for batch WG1171356 exhibited a detection of iron, dissolved (67 ug/L). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, and MW01_101718 are qualified as "U" based on potential blank contamination.

The MB for batch WG1171330 exhibited a detection of iron, total (50.3 ug/L). The associated results in sample MW04_101718 are qualified as "U" based on potential blank contamination.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

L1841798:

SVOCs by SW-846 Method 8270D:

The LCS for batch WG1170296 exhibited a percent recovery above the upper control limit (UCL) for 4-nitrophenol (85%). The associated results in samples MW10_101518, MW02_101518, and MW13B_101518 are non-detect. No qualification is necessary.

L1842082:

PFAS by USEPA Method 537M:

The MS for batch WG1170058 exhibited a percent recovery below the lower control limit (LCL) for sodium 1h,1h,2h,2h-perfluorooctane sulfonate (6:2) (0% 0%). Organic data are not qualified on the basis of MS/MSD recoveries alone.

The MS/MSD for batch WG1170058 exhibited a RPD above the control limit for n-ethyl-n-((heptadecafluorooctyl)sulphonyl) glycine (45%). Organic data are not qualified on the basis of MS/MSD RPD alone.

Metals by SW-846 Method 6020B:

The FB GWFB01_101618 exhibited a detection of barium, total (0.00089 mg/L) and sodium, dissolved (0.1 mg/L). The associated results in samples MW06_101618 and MW03_101618 are greater than 10X the blank concentration. No qualification is necessary.

L1842363:

VOCs by SW-846 Method 8260C:

The LCS for batch WG1170923 exhibited a percent recovery above the UCL for chloroethane (140%, 140%) and ethyl ether (150%, 150%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, MW04_101718, and TB03_101718 are non-detect. No qualification is necessary.

The MS for batch WG1170923 exhibited a percent recovery above the UCL for carbon tetrachloride (160%, 150%), trichlorofluoromethane (190%, 180%), 1,2-dichloroethane (140%,

140%), 1,1,1-trichloroethane (140%, 140%), bromomethane (140%, 140%), chloroethane (160%, 160%), bromochloromethane (140%), and ethyl ether (160%, 160%). Organic data are not qualified on the basis of MS recoveries alone.

The MS for batch WG1170923 exhibited a percent recovery below the LCL for 2-hexanone (53%) and trans-1,4-dichloro-2-butene (63%, 69%). Organic data are not qualified on the basis of MS recoveries alone.

The MS/MSD for batch WG1170923 exhibited a RPD above the control limit for naphthalene (21%) and 1,4-dioxane (29%). Organic data are not qualified on the basis of MS/MSD RPDs alone.

SVOCs by SW-846 Method 8270D:

The LCS for batch WG1170566 exhibited a percent recovery above the upper control limit (UCL) for 4-nitrophenol (82%, 85%). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, MW05B_101718, and MW04_101718 are non-detect. No qualification is necessary.

The matrix spike (MS) for batch WG1170566 exhibited a percent recovery above the upper control limit (UCL) for 4-nitrophenol (94%, 88%). Organic data are not qualified on the basis of MS recoveries alone.

Pesticides by SW-846 Method 8081B:

The MS/MSD for batch WG1170543 exhibited a RPD above the control limit for delta-bhc (38%). Organic data are not qualified on the basis of MS/MSD RPDs alone.

Metals by SW-846 Method 6020B:

The MS for batch WG1171356 exhibited a percent recovery above the upper control limit (UCL) for calcium, dissolved (129%). The associated results in sample MW07_101718 are greater than 4X the spiked amount. No qualification is necessary.

The MB for batch WG1171330 exhibited a detection of iron, total (50.3 ug/L). The associated results in samples MW07_101718, GWDUP01_101718, MW05A_101718, MW01_101718, MW13A_101718, and MW05B_101718 are greater than 10X the blank concentration. No qualifier is necessary.

COMMENTS:

Field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less

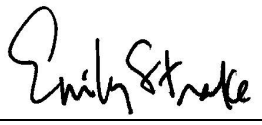
than ±1X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 30% for groundwater. The following analytes did not meet the precision criteria:

- GWDUP01_101618 and MW07_101618: Perfluorohexanesulfonic acid (PFHxS)

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist

Nicole Kung

From: dec.sm.NYENVDATA <NYENVDATA@dec.ny.gov>
Sent: Monday, December 31, 2018 11:01 AM
To: Dana Monz
Cc: Emily Snead; Nicole Kung; Ahmed, Hasan R (DEC)
Subject: RE: Data Submittal for Facility C241211

Dana,

Thank you for your EDD submission. NYSDEC has successfully uploaded the data from the EDDs "20181116 1426.C241211.NYSDEC_MERGE" and "20181116 1429.C241211.NYSDEC_MERGE" to 37-11 30th Street in the NYSDEC database and the data is available for use within the system.

Aaron
NYSDEC EIMS Team

From: Dana Monz [mailto:dmonz@langan.com]
Sent: Friday, November 16, 2018 2:35 PM
To: dec.sm.NYENVDATA <NYENVDATA@dec.ny.gov>
Cc: Emily Snead <esnead@langan.com>; Nicole Kung <nkung@langan.com>
Subject: Data Submittal for Facility C241211

Good afternoon,

Please find attached the data submittal for Facility C241211. There are two submittals, the first one contains both soil and groundwater data, and the second contains air data. Please upload the soil and groundwater one first (20181116 1426.C241211.NYSDEC_MERGE). Let me know if you have any questions or trouble accessing the attachments.

Best,
Dana

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APPENDIX H

LABORATORY ANALYTICAL REPORTS

SEPARATE ATTACHMENT