REMEDIAL ACTION WORK PLAN

for

28-90 REVIEW AVENUE
Queens, New York
NYSDEC BCP Site No. C241236

Prepared For:

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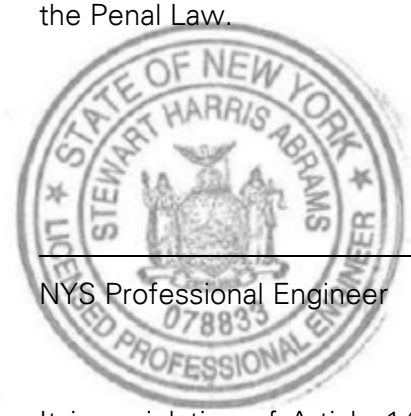
29 June 2022
Langan Project No. 100652601

LANGAN

CERTIFICATION

I, Stewart Abrams, certify that I am currently a Professional Engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan (RAWP) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

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



NYS Professional Engineer	Date	Signature
	6/29/2022	

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

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AST	Aboveground Storage Tank
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Ground Surface
BOA	Brownfield Opportunity Area
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylene
C/D	Construction/Demolition
CAMP	Community Air Monitoring Program
CCR	Construction Completion Report
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CQAP	Construction Quality Assurance Plan
COC	Contaminants of Concern
COD	Chemical Oxygen Demand
CPP	Citizen Participation Plan
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DMM	Division of Materials Management
DO	Dissolved Oxygen
DOT	Department of Transportation
EC	Engineering Control
el	Elevation
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
eV	Electron Volt
FEMA	Federal Emergency Management Agency
FER	Final Engineering Report
FWRIA	Fish and Wildlife Resources Impact Analysis

Acronym	Definition
GPR	Ground Penetrating Radar
IC	Institutional Control
IRMWP	Interim Remedial Measures Work Plan
ISCO	In-Situ Chemical Oxidation
µg/L	Microgram Per Liter
µg/m^3	Microgram Per Cubic Meter
mg/kg	Milligram Per Kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MTBE	Methyl tert Butyl Ether
NAVD88	North American Vertical Datum of 1988
NYCRR	New York Codes, Rules and Regulations
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCOER	New York City Office of Environmental Remediation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORP	Oxidation-Reduction Potential
OSHA	United States Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PG	Protection of Groundwater
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
RE	Remediation Engineer
REC	Recognized Environmental Condition

Acronym	Definition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RURR	Restricted Use – Restricted Residential
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SMDS	Sub-Membrane Depressurization System
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation
SRIR	Supplemental Remedial Investigation Report
STARS	Spills Technology and Remediation Series
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
TOGS	Technical and Operational Guidance Series
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) was prepared on behalf of 28-90 Review Avenue Owner, LLC (Owner), for the proposed development located at 28-90 Review Avenue (Block 294, Lot 106) in the Long Island City neighborhood of Queens, New York (the Site). The Owner has enrolled in the New York State Brownfield Cleanup Program (BCP) as a Volunteer and will implement this RAWP pursuant to the Brownfield Cleanup Agreement (BCA) executed on 2 October 2019 with the New York State Department of Environmental Conservation (NYSDEC).

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI) and pilot testing work completed by Langan, provides evaluations of Track 1 and Track 4 remedies and associated costs, and recommends the preferred remedy. The remedy was selected consistent with the procedures defined in DER-10 and complies with applicable standards, criteria, and guidance, as well as with applicable federal, state and local laws, regulations and requirements.

Site Description/Physical Setting/Site History

The Site is located in the Long Island City neighborhood of Queens, New York and is identified as Block 294 Lot 106. The Site is an approximately 192,792-square-foot parcel most recently developed with two single-story warehouse structures operated as automotive repair and maintenance facilities, which have been demolished. The remainder of the Site is comprised of asphalt-paved and asphalt milling-covered parking areas utilized by month-to-month tenants for vehicle storage. Vehicle storage ranges from passenger cars to tractor trailers. The Site is bound to the north by an asphalt-paved parking lot, to the east by 29th Street followed by an asphalt-paved parking lot associated with a 4-story storage facility, to the south by at-grade railroad tracks associated with the Metropolitan Transportation Authority Long Island Rail Road (MTA LIRR) lines, and to the west by the Dutch Kills Creek. A Site location map and Site Plan/AOC and Sample Location Plan are provided as Figures 1 and 2, respectively. A Site survey is provided as Appendix A.

According to the Boundary and Topographic Survey prepared by Langan (signed 8 March 2019), Site elevations vary between approximately +5.49 feet and +10.46 feet North American Vertical Datum of 1988 (NAVD 88).

According to the Phase I Environmental Site Assessment (ESA) completed by Langan in August 2019, the Site was historically operated as an oil storage facility by Texaco from 1928 through 1970. That facility operated six 250,000-gallon aboveground storage tanks (ASTs) for storage of various petroleum products, in addition to various smaller above and underground petroleum storage tanks, an automotive garage, a gasoline filling station, and a trucking terminal that operated on the site from 1979 through present. Multiple investigations have been completed at the Site to evaluate subsurface impacts as a result of the historical Site operations which has resulted in six NYSDEC Spill cases being reported between 1990 and 2018, five of which are closed.

Summary of the Remedial Investigation Findings

The findings summarized herein are based on qualitative data (field observations and instrument readings) and laboratory analytical soil, groundwater, and soil vapor sample results collected during the 2018 Remedial Investigation (2018 RI) performed prior to the Site's acceptance into the BCP and the 2020 Supplemental Remedial Investigation (2020 SRI) performed during the BCP.

1. Stratigraphy: A historic fill layer as deep as 25 feet is underlain by former marsh deposits (encountered as a gray clay) followed by sand, silt, and clay. Bedrock was not encountered in any of the soil borings advanced during the 2018 RI or the 2020 SRI; however, the top of mica schist bedrock is present between 58 and 72 feet bgs based on geotechnical investigations completed at the Site.
2. Hydrogeology: Groundwater was encountered at depths ranging from approximately 4.02 to 8.85 feet bgs corresponding to elevations ranging between el -0.87 and el +2.98 NAV88. Groundwater flow direction is towards the west.
3. NAPL Impacts: LNAPL and DNAPL impacts associated with former aboveground storage tanks are present across an approximately 38,000 SF area located in the central and southwestern portion of the Site as observed in 22 soil boring and 6 monitoring wells. Monitoring wells within the area of observed LNAPL and DNAPL impacts were constructed to facilitate the collection of NAPL and have been monitored on a monthly basis. Findings of the monthly NAPL monitoring are presented in Section 2.1.3.
4. Historic Fill Quality: Up to 25 feet of fill material was identified below the existing surface cover. Contaminants related to historic fill material include SVOCs, metals, PCBs and pesticides, which were detected at concentrations above Unrestricted Use SCOs,

Commercial RUSCOs, Industrial RUSCOs, and/or Protection of Groundwater SCOs within this layer. VOCs exceeding the Unrestricted Use SCOs and/or Protection of Groundwater SCOs are attributed to historical Site operations. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were also detected in fill above the NYSDEC Unrestricted Use SCOs.

5. Groundwater Quality: Groundwater analytical results exceeding the SGVs for SVOCs and metals were detected throughout the site, and petroleum-related VOC exceedances of the SGVs were detected in the eastern portion of the Site. Groundwater analytical results exceeding the SGVs for metals are attributed to fill material of unknown origin and naturally occurring background concentrations and elevated turbidity during sample collection. Groundwater analytical results exceeding the SGVs for SVOCs are attributed to fill material of unknown origin or historical Site operations. Groundwater analytical results exceeding the SGVs for petroleum-related VOCs are attributed to residual impacts from historical Site operations. Spill No. 9010146 was reported due to the presence of gasoline impacts in groundwater and administratively closed by NYSDEC following remediation on 8 November 1991 with remaining benzene concentrations up to 135 µg/L. PFOS, PFOA, and perfluorohexanesulfonic acid (PFHxS) were also detected in groundwater above the SGVs.
6. Soil Vapor Quality: Results of the soil vapor evaluation completed as part of the RI identified concentrations of vinyl chloride, carbon tetrachloride, and PCE that would require monitoring and/or mitigation per the NYSDOH guidance values. These compounds were not detected at concentrations exceeding NYSDEC threshold values in soil or groundwater samples collected from the corresponding soil borings and monitoring wells. As such, CVOCs in soil vapor are likely attributable to an unknown offsite source. Petroleum-related VOCs were also detected which are attributed to the presence of gasoline-related impacts in soil and groundwater.

Qualitative Human Health Exposure Assessment

Based on the conceptual Site model (CSM) and review of environmental data, complete on-Site exposure pathways appear to be present in the absence of protective measures and remediation. The complete pathways indicate there is a risk of exposure to humans from Site contaminants via exposure to soil, groundwater, and soil vapor for current and construction conditions unless certain Site access restrictions, which have already been put in place, are implemented.

1. Under current conditions, there is a marginal risk for exposure on-Site and off-site. The primary on-Site exposure pathways are for dermal contact, ingestion and inhalation of soil or soil vapor by tenant employees, personnel completing site investigations, and other authorized personnel. Exposure to NAPL and groundwater is limited to those completing investigation activities. The exposure risks can be avoided or minimized by limiting Site access and implementing the appropriate health and safety and vapor and dust suppression measures outlined in a Site-specific HASP and CAMP during ground-intrusive activities
2. In the absence of protective measures, there is a moderate risk of on-Site exposure during the construction and remediation activities. The primary exposure pathways are:
    a. Dermal contact, ingestion and inhalation of contaminated soil, groundwater, NAPL, or soil vapor by Site visitors and construction and remediation 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 exposure pathways can be avoided or minimized by performing community air monitoring, by implementing soil management measures, by following the appropriate health and safety plans, implementing vapor and dust suppression techniques, and using Site security to control access.
3. A complete exposure pathway is possible for the migration of Site contaminants to off-Site human receptors during the remedial construction phase. During this phase, Site access will be limited to authorized visitors and workers and protective measures will be used during construction to prevent completion of this pathway, including following a Site-specific HASP and implementation of a CAMP and SMMP.
4. The existence of a complete on-Site exposure pathway for Site contaminants to human receptors during proposed future conditions is unlikely, as construction of a composite cover will be completed. Regional groundwater is not used as a potable water source in this part of New York City. Potential soil vapor intrusion concerns will be addressed by the implementation of the remedy at the site.
5. The documentation reviewed for the Sims Metal Recycling Facility revealed a known source for the LNAPL impacts at the Sims site (150,000 diesel fuel oil AST and impaired piping) and documented the declining thickness of the LNAPL measured moving away from that source to the west and east along the northern property

boundary. The fingerprint sample collected from the Sims Metal Recycling Facility in 2018 does not match the results of the fingerprint sample collected from the Site in 2009. As such, the LNAPL impacts at the Sims facility are attributed to historical releases of petroleum products stored on the Sims facility property and are unrelated to the Site. As noted above, NYSDEC has required further delineation of NAPL related to the Sims site to assess offsite migration from that facility.

Based on the findings of the vacuum enhanced extraction pilot test and monthly well gauging, NAPL at the Site consists of weathered heavy oil that is sorbed to saturated Site soils in the immediate vicinity and downgradient of the former Site ASTs, and it currently exists in an immobile condition such that any off-Site migration is unlikely under current conditions.

The existence of a complete exposure pathway for Site contaminants to off-Site human receptors is unlikely. NAPL impacts in saturated soil and groundwater are delineated on-Site to the north, west, and east, and NAPL at the Site is currently immobile and primarily sorbed to saturated Site soils. Furthermore, adjacent properties to the north and east are capped with asphalt-pavement and buildings. If contaminant migration has historically occurred off-Site to the south, the at-grade railroad tracks associated with the MTA LIRR located immediately adjacent to the south of the Site are located in an area of elevated topography preventing access to the subsurface. Access to the south of the Site is severely limited by the significant elevation change and heavy vegetation that exists between the Site and the rail lines such that access to perform any additional investigation to determine if the NAPL impacts observed on the southern boundary of the Site would be limited to drilling within the existing rail beds. As such, further evaluation of the potential presence of NAPL beneath the southern property is infeasible and would not alter the results of this qualitative evaluation.

Based on the above, there is limited potential for off-Site receptors to be exposed to NAPL should it have historically migrated off-Site, and the qualitative human health exposure assessment for off-Site receptors is completed.

Summary of the Remedy

The selected remedy will include the following elements:

- Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations.
- Implementation of in-situ soil stabilization and solidification within the extents of observed NAPL.
- Demolition and removal of three former AST foundations.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.
- Excavation, stockpiling, off-Site transport, and disposal of soil exhibiting petroleum impacts associated with Spill No. 1809113, soil in the vicinity of metals hotspots located in isolated locations on-Site, and any grossly contaminated soil source areas that may be encountered such as potentially around any encountered USTs. Excavation, stockpiling, off-Site transport, and disposal of excess non-hazardous contaminated fill as needed resulting from localized excavations for construction of proposed redevelopment structures.
- Appropriate off-Site disposal of material removed from the Site in accordance with federal, state and local rules and regulations for handling, transport, and disposal.
- Removal and decommissioning of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and disposal off-Site during Site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Collection and analysis of documentation soil samples to document soil quality remaining at the Site, to document the remediation of and support closure of Spill No. 1809113, and to document removal of hotspots impacted by lead.
- Reuse of Site soil meeting Commercial RUSCOs and Protection of Groundwater SCOs to raise Site grades.

- Importation of material meeting the Unrestricted Use SCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone for backfilling of remediated areas and of utility trenches.
- Importation of material meeting the Commercial RUSCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone to raise Site grade.
- Installation of a Site-wide engineered impermeable composite cover system (i.e., concrete building foundations and/or asphalt pavement).
- Placement of a demarcation barrier in residual soil areas not covered with impermeable surfaces and within utility trenches prior to backfilling with imported material.
- Importation of fill material meeting the Commercial RUSCOs or virgin, native crushed stone for construction of a one-foot clean fill cap in areas outside of impermeable cover.
- Completion of a survey to document the extents of the Site-wide composite cover system.
- Construction of an active SSDS below the proposed building slab in the areas of the building occupied by the lobby, stairwells and mechanical spaces, including installation of a vapor barrier membrane, a network of sub-slab piping, and vertical risers.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved SMP to ensure long-term management of engineering and institutional controls, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the Site continue to maintain these controls as required and to restrict the Site to industrial and commercial uses.

The preferred Track 4 remedial action has been selected based on the results of the Remedial Investigation and the results of the Pilot Test subsequently completed for the Site. Remedial activities will be performed in accordance with this RAWP, and the Department-issued Decision Document. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and explained in the Final Engineering Report (FER).

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was prepared on behalf of the Owner for the approximate 192,792-square foot property located at 28-90 Review Avenue (Block 294, Lot 106) in the Long Island City neighborhood of Queens, New York (the Site). The Owner is participating in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as a Volunteer as defined in ECL 27-1405 (1)(b) and as identified in the executed Brownfield Cleanup Agreement dated 2 October 2019. The Site is identified in the BCP as Site No. C241236.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation work completed by Langan in 2018 and documented in an April 2019 Remedial Investigation Report (2018 RI) and the Supplemental Remedial Investigation completed by Langan in 2020 and documented in the June 2022 Supplemental Remedial Investigation Report (2022 SRIR). The selected remedy is consistent with the procedures defined in DER-10/Technical Guidance for Site Investigation and Remediation and complies with applicable standards, criteria, and guidance, and with applicable federal, state and local laws, regulations and requirements.

1.1 Site Location and Description

The Site is located in the Long Island City neighborhood of Queens, New York and is identified as Block 294 Lot 106. The Site is an approximately 192,792-square-foot parcel most recently developed with two single-story warehouse structures operated as automotive repair and maintenance facilities, which have been demolished. The remainder of the Site is comprised of asphalt-paved and asphalt milling-covered parking areas utilized by month-to-month tenants for vehicle storage. Vehicle storage ranges from passenger cars to tractor trailers. The Site is bound to the north by an asphalt-paved parking lot, to the east by 29th Street followed by an asphalt-paved parking lot associated with a 4-story storage facility, to the south by at-grade railroad tracks associated with the Metropolitan Transportation Authority Long Island Rail Road (MTA LIRR) lines, and to the west by the Dutch Kills Creek. A Site location map and Site Plan/AOC and Sample Location Plan are provided as Figures 1 and 2, respectively. A Site survey is provided as Appendix A.

According to the Boundary and Topographic Survey prepared by Langan signed 8 March 2019, Site elevations vary between approximately +5.49 feet and +10.46 feet North American Vertical Datum of 1988 (NAVD 88).

1.2 Redevelopment Plan

The future use of the Site is the construction of a building that is suitable for light industrial, warehouse, and commercial uses. Schematic design plans developed to date consist of a five-story warehouse and light industrial building with accessory parking ramps and decks accessing floors two through four. The ground level will consist of approximately 152,110 square feet (SF) of at-grade open air parking and ground vehicle circulation space, 15,085 SF of truck ramps, 1,450 SF of building lobby spaces, 2,755 SF by egress spaces (i.e.; stairs and elevators) and approximately 9,820 SF occupied by mechanical spaces. Enclosed warehouse/light industrial space and associated drive ramps and structured parking areas will be located on levels two through five and the rooftop of the building will be used for fleet parking and a large solar array. The ground level occupies approximately 94% of the Site and will consist of concrete- and asphalt-paved impervious surfaces. Construction of the proposed building will require on-Site soil reuse and importing fill material in accordance with the requirements of this RAWP to meet proposed site grades. The schematic plans are included as Appendix B.

1.3 Description of Surrounding Property

According to records maintained online by New York City Open Accessible Space Information System (NYCOASIS) and aerial/street-view observations provided by Google Maps, surrounding properties include multi-story industrial/manufacturing buildings, parking lots, and the Metropolitan Transit Authority (MTA) Long Island Rail Road (LIRR). The following is a summary of adjacent property usage:

Direction	Adjacent Properties			Surrounding Properties
	Block No.	Lot No.	Description	
North	294	120	Asphalt-paved parking (28-20 Borden Avenue)	Borden Avenue followed by industrial/ manufacturing buildings
East	294	150	29th Street followed by an asphalt-paved parking lot associated with a 4-story self-storage facility (29-00 Review Avenue)	Industrial/ manufacturing buildings
South	294	1	Metropolitan Transportation Authority Long Island Rail Road	Industrial Facilities followed by Newtown Creek
West	Dutch Kills Creek			MTA LIRR lines and industrial/ manufacturing buildings

Public infrastructure (storm drains, sewers, and underground utility lines) exists within the streets surrounding the Site. The only sensitive receptor (as defined in DER-10) located within a half mile of the Site is the Robert F. Wagner, Jr. Secondary School for Arts and Technology (approximately 2,000-feet northeast of the Site).

1.4 Site History

1.4.1 Past Uses and Ownership

According to the Phase I Environmental Site Assessment (ESA) completed by Langan in August 2019, the Site was historically operated as a major oil storage facility by Texaco from 1928 through 1970. That facility operated six 250,000-gallon aboveground storage tanks (ASTs) for storage of various petroleum products, in addition to various smaller above and underground petroleum storage tanks, an automotive garage, a gasoline filling station, and a trucking terminal that operated on the Site from 1979 through present. Multiple investigations have been completed at the Site to evaluate subsurface impacts as a result of the historical Site operations which has resulted in six NYSDEC Spill cases being reported between 1990 and 2018, five of which are closed.

1.4.2 Previous Environmental Reports

The following environmental assessment and investigation reports have been prepared for the Site. Previous environmental correspondence, environmental site assessment reports, and environmental investigation reports were reviewed as part of the investigation scope development for the 2018 RI. These documents are listed below and are summarized in detail in Section 3.3 of the April 2019 RIR and were provided as Appendix A of the April 2019 RIR which was included as an attachment to the June 2019 BCP Application.

- Subsurface Investigation, prepared by Tyree Brothers Environmental Services, Inc. (Tyree), dated May 1990
- Monitoring Well Installation and Tank Tightness Testing Summary Letter, prepared by Tyree, dated 1 October 1990
- Various correspondence between Tyree and NYSDEC, dated May 1990 through November 1991
- Remote Sensing Survey Ground Penetrating Radar Investigation, prepared by Impact Environmental (Impact), dated 28 July 1999
- Tank Closure Affidavit, prepared by The Franklin Company, dated 11 May 1999
- Tank Closure Affidavit, prepared by Alvin Petroleum Systems, Inc., dated 5 August 1999
- Phase I ESA, prepared by Tyree, dated September 2001
- Subsurface Investigation, prepared by Impact, dated 2 October 2008
- Investigation Summary Report, prepared by Impact, dated 24 June 2009
- Quarterly Monitoring Report, prepared by Impact, dated 12 March 2010
- Quarterly Monitoring Report, prepared by Impact, dated 11 June 2010
- Quarterly Monitoring Report, prepared by Impact, dated 10 September 2010
- Groundwater Monitoring Well Decommissioning Letter, prepared by Impact, dated 9 August 2011
- Summary of Remediation Completed, prepared by Impact, dated 16 January 2012
- Remedial Investigation Report, Langan, dated 24 April 2019
- Supplemental Remedial Investigation Work Plan, Langan, dated 21 April 2020
- Vacuum Enhanced Extraction Pilot Test Work Plan, Langan, dated 12 October 2020
- Supplemental Remedial Investigation Report, Langan, dated 24 June 2022

Summaries of environmental findings of these reports are provided below:

Spill No. 9010146 – Tyree Brothers Environmental Services, Inc. (1990-1991)

Investigation was completed in the eastern portion of the Site to evaluate subsurface impacts associated with three active 4,000-gallon diesel (formerly gasoline) USTs, and on the southern portion of the Site to evaluate in the area of the former 275,000-gallon Texaco Terminal ASTs. Monitoring well locations noted below are shown on Figure 2.

Soil analytical results detected benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) and recoverable petroleum hydrocarbons. The observation of LNAPL in one of the monitoring wells was reported to NYSDEC and Spill No.9010146 was assigned in December 1990. Monitoring well gauging records revealed that up to 0.875-inches and up to 12-inches of LNAPL were detected in W-3 and W-1, respectively. Approximately 8 gallons of free-phase product was removed from the wells via bailing, and NYSDEC administratively closed Spill No. 9010146 in November 1991 based on ongoing NAPL recovery, review of monitoring well gauging results that showed a declining trend in LNAPL thickness, and results of quarterly groundwater monitoring (which were not provided to Langan for review). The final round of groundwater sampling prior to spill closure documented the presence of benzene concentrations between 3.3 and 135 micrograms per liter (µg/L) in monitoring wells W-2 through W-4. An affidavit prepared by The Franklin Company dated 11 May 1999 documented the closure-in-place of three 4,000-gallon diesel USTs by filling to capacity with an unspecified inert material.

Spill No. 0807459 – Impact Environmental (1999-2012)

Impact Environmental completed a geophysical investigation in 1999 to locate potential undocumented USTs. The investigation located subsurface metallic anomalies consistent with potential USTs in the northeast portion of the Site. An affidavit prepared by Alvin Petroleum Systems, Inc. dated 5 August 1999 documented the closure-in-place of two 550-gallon USTs via filling to capacity with concrete. It is unclear if these USTs are related to those identified by the geophysical survey completed by Impact.

Additional subsurface investigation, quarterly groundwater monitoring and LNAPL recovery was completed at the Site by Impact between 2008 and 2012. The 2008 Subsurface Investigation included installation of six soil borings and six one-inch diameter groundwater monitoring wells. Observations of LNAPL in all groundwater monitoring wells installed and the detection of gasoline related VOCs in groundwater samples was reported to NYSDEC, and Spill No. 0807459 was assigned in October 2008. Soil sample analytical results were compared to the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Objectives (RSCOs). VOCs were not detected in any of the soil samples collected at

concentrations exceeding the TAGM 4046 RSCOs, and low levels of SVOCs were detected in all soil samples at concentrations above the TAGM 4046 RSCOs.

Low levels of gasoline-related VOCs were detected in groundwater at concentrations marginally exceeding the NYSDEC Ambient Water Quality Standards and Guidance Value (SGVs), and measurable LNAPL was detected in all groundwater monitoring wells ranging in thickness from 0.9 feet to 1.4 feet. Installation of six additional soil borings and six four-inch diameter monitoring wells was completed at the Site in 2009 in accordance with the NYSDEC-approved Remedial Investigation Work Plan (RIWP) dated 14 November 2008 to determine the extent of petroleum impacts and groundwater flow direction. Elevated PID field screening results were identified in all soil borings completed, and strong petroleum odors and dark staining were also observed. Soil samples collected from between 5 and 12 feet below grade revealed limited detections of VOCs and SVOCs above TAGM 4046 RSCOs. All twelve monitoring wells were gauged, and LNAPL was not detected in any of the wells, with the exception of one monitoring well which contained 0.01 foot of NAPL. Groundwater detected gasoline-related VOCs at concentrations exceeding the SGVs. Petroleum fingerprint analysis revealed that groundwater impacts were consistent with a combination of heavy fuel oil and gasoline. Based on the findings of the supplemental investigation, Monitored Natural Attenuation (MNA) was proposed.

Quarterly groundwater monitoring was performed between 2010 and 2011, including LNAPL removal via a sump skimmer in one monitoring well and via bailing at other locations where NAPL was observed. Based on the quarterly monitoring reports submitted, NYSDEC administratively closed Spill No. 0807459 on 27 September 2010 and the onsite wells were decommissioned.

Remedial Investigation Report (April 2019)

Langan completed a remedial investigation (RI) in November 2018 in accordance with the Remedial Investigation Work Plan (RIWP) dated September 2018 and submitted to the New York City Office of Environmental Remediation (NYCOER) for acceptance into the NYC Voluntary Cleanup Program (VCP). Based on field observations and analytical results of soil, groundwater, and soil vapor samples collected, Spill No. 1809113 was reported to NYSDEC on 29 November 2018. The scope of work and a detailed discussion of subsurface impacts identified in soil, groundwater, and soil vapor are presented in the April 2019 RIR, which was submitted with the BCP application in May 2019 and are included in the discussion of the RI activities and results in Section 2.0.

Supplemental Remedial Investigation Work Plan (April 2020)

A Supplemental Remedial Investigation Work Plan (SRIWP) dated 21 April 2020 was prepared by Langan for 28-90 Review Avenue Owner, LLC. The SRIWP was prepared to investigate and characterize "the nature and extent of the contamination at and/or emanating from the brownfield site," per ECL Article 27, Title 14 (Brownfield Cleanup Program) and to supplement the investigation activities and results documented in the April 2019 RIR.

The scope of work for the SRI presented in the SRIWP consisted of:

- A full geophysical survey throughout the areas of the Site that were determined to be inaccessible during the geophysical surveys previously completed in June and July 2017;
- Advancement of 30 soil borings and collection of soil samples (including two duplicate samples) for further investigation and delineation of impacts in AOC-1 and AOC-4 and to horizontally and vertically delineate PCB impacts detected during the RI;
- Installation of soil borings and the collection of soil samples for the purposes of conducting a remedial treatability study;
- Installation of 11 permanent monitoring wells and collection of groundwater samples (including one duplicate sample);
- Installation of permanent monitoring wells where NAPL was observed during the NAPL delineation investigation;
- Performing slug testing at up to 8 monitoring wells to evaluate hydraulic conductivity for remedial option assessment;
- Survey and gauging of all Site monitoring wells to evaluate for the presence of NAPL and to determine groundwater elevation and flow direction;
- Installation of three soil vapor sampling points and collection of soil vapor samples (including one duplicate sample) and one ambient sample; and
- Monthly gauging at all Site monitoring wells.

Vacuum Enhanced Extraction Pilot Test Work Plan (Langan)

A Vacuum Enhanced Extraction (VEE) Pilot Test Work Plan dated 12 October 2020 was prepared by Langan for 28-90 Review Avenue Owner, LLC and submitted to NYSDEC. The VEE Pilot Test Work Plan was developed to assess the potential mobility of NAPL and determine the feasibility and effectiveness of the VEE technology for treatment of NAPL impacts present in saturated soil and groundwater. Based on the results of the VEE pilot testing, it was determined that the NAPL

present onsite is immobile and consists of viscous degraded fuel oil, which is significantly, sorbed to saturated Site soils. The pilot test data identified minimal evidence of NAPL in the groundwater monitored and/or extracted during the pilot test activities and the given the limited mobility of the NAPL, an active extraction remedial collection strategy was determined to not be feasible. A passive recovery system was determined to be a potential remedy based on the immobile and entrained nature of the NAPL. A summary of the pilot test activities is included in Section 2.1.2.

Draft Supplemental Remedial Investigation Report (Langan)

A Remedial Investigation Report dated 24 June 2022 was prepared by Langan for the Owner to document the Remedial Investigation completed in accordance with the SRIWP. The results of the 2020 SRI are included in the discussion of the SRI activities and results in Section 2.0.

2.0 DESCRIPTION OF INVESTIGATION FINDINGS

The RI was completed in accordance with the Remedial Investigation Work Plan (RIWP) dated 23 October 2018 and the SRI was completed in accordance with the Supplemental Remedial Investigation Work Plan (SRIWP) approved by the NYSDEC on 11 June 2020, and Title 6 of the 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 the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006, with updates. The SRI field work was completed to determine the nature and extent of contamination in soil, groundwater, and soil vapor and supplement the findings of the 2018 RI. The June 2022 SRIR summarizes the SRI work completed to characterize the nature and extent of contamination at the Site.

The findings of the 2018 RI and 2020 SRI are summarized in the following sections.

2.1 Field Investigation

Investigations completed at the Site include a 2018 RI, a 2020 SRI, a 2020 vacuum enhanced recovery pilot test, and NAPL monitoring and recovery in 2020 and 2021.

2.1.1 Remedial Investigation and Supplemental Remedial Investigation

The investigation completed during the 2018 RI consisted of the following:

- Completion of a partial geophysical investigation in accessible areas of the Site to identify potential USTs, underground structures, and utilities;

- Completion of 25 soil borings to between 12 and 16 feet below grade and collection of 43 soil samples (including two duplicate samples) to assess soil conditions;
- Installation of 14 permanent monitoring wells and collection of 15 groundwater samples (including one duplicate sample) to assess Site groundwater conditions; and

  Installation of 12 soil vapor points and collection of 10 soil vapor samples (including one duplicate sample) in order to assess Site soil vapor conditions.

The investigation completed during the 2020 SRI consisted of the following:

- A geophysical survey throughout the areas of the Site that were inaccessible during the 2018 RI geophysical survey, including building interiors, to identify if any subsurface anomalies exist and to assess for the presence of subsurface structures, piping, and underground storage tanks which may contribute to the presence or migration of contamination;
- Advancement of 47 soil borings (LSB-26 through LSB-72) and collection of 50 soil samples (including four duplicate samples);
- Installation of 16 permanent monitoring wells (LMW-15 through LMW-30) and collection of 12 groundwater samples (including one duplicate sample);
- Survey and gauging of monitoring wells to evaluate groundwater elevation and flow direction;
- Slug testing in eight monitoring wells following groundwater sampling to evaluate hydraulic conductivity at the Site for remedial option assessment; and
- Installation of three soil vapor sampling points (LSV-13 through LSV-15) and collection of four soil vapor samples (including one duplicate sample) and one ambient air sample.

2.1.2 Summary of Vacuum Enhanced Extraction Pilot Test

Per the NYSDEC approved Vacuum Enhanced Extraction Pilot Test Work Plan prepared by Langan dated 12 October 2020 and subsequent comments provided by NYSDEC via email on 22 October 2020, Langan performed vacuum enhanced extraction (VEE) pilot test activities on 17 and 18 November 2020 and 15 December 2020. A copy of the NYSDEC correspondence approving the work plan is provided in Appendix J. The VEE Pilot Test Work Plan describes the scope of work to determine the feasibility and effectiveness of the VEE technology for treatment of NAPL impacts present in saturated soil and groundwater.

Based on observations made during the 2018 RI and 2020 SRI, three discrete areas representative of the overall site and evidence of NAPL impacts were identified to be tested. Three area-specific pilot test extraction wells and one permanent monitoring well (LMW-31) were installed and subsequently developed on 5 and 6 November 2020. The location of VEE pilot test wells and monitoring wells are shown on Figure 2. The testing procedures consisted of area-specific step tests, in which the extraction vacuum and flow rate at the extraction point were increased in a stepwise manner and the resultant subsurface hydraulic (change in water table) and pneumatic (change in vacuum) influence induced within the test area were monitored continuously via nearby existing monitoring wells. Through the use of an adjustable drop tube, the interval of extraction and volume of groundwater extracted could be more finely controlled during testing. VEE pilot testing activities were conducted at pilot test wells VEE-01, VEE-02, and VEE-03. The area-specific monitoring wells used during testing and observed testing results are discussed in the area-specific testing summaries below and all well construction logs are included in Appendix C.

Prior to completing any testing, groundwater and NAPL gauging was completed at each of the extraction points and the associated surrounding monitoring wells. Following the completion of background well gauging, Langan began active multi-phase extraction (MPE) testing at each extraction point. The active MPE testing was intended to assist in the estimation of the hydraulic conductivity, or the rate of flow of water through the soil, of the area-specific target treatment zone soils and identify the potential for NAPL mobility and recovery. Following the completion of the active MPE testing, Langan performed soil vapor extraction (SVE) point permeability testing, in which no groundwater was recovered and only subsurface vapors were extracted from the vadose zone. The SVE point permeability testing was intended to aid in the estimation of the air intrinsic permeability, or the ease in which air will move through the soil, of the area-specific target treatment zone soils. Following the testing, an additional round of groundwater and NAPL gauging was completed at each of the extraction points and the associated surrounding monitoring wells. Data collected during pilot testing activities of VEE-01, VEE-02, and VEE-03 are summarized in Tables 4A, 4B, and 4C, respectively.

VEE-01

Testing of VEE-01 was conducted on 17 November 2020 and monitoring wells LMW-24, LMW-25, LMW-26, and LMW-27, as well as VEE-02, were used for monitoring during testing. No free product was detected during the initial background well gauging. During SVE testing, only minor vacuum influence was observed at the surrounding wells; however, it is worth noting

that only approximately one foot of unsaturated screen existed in many of the wells used in the testing, reducing the potential vacuum influence which could be induced.

During MPE testing, the groundwater level at VEE-01 was observed to recharge quickly, with groundwater levels dropping less than a foot during the initial surge and then reaching a steady state, with an approximate maximum extraction rate of one gallon per minute (gpm). Approximately 200 gallons of groundwater were extracted during the MPE testing. No product was detected in the groundwater removed from any of the extraction wells; however, a faint sheen was observed on some of the extracted groundwater when staged in 55-gallon drums for offsite disposal.

No free product was detected by the interface probe during gauging after testing was completed. However, some evidence of NAPL was observed in VEE-01 and VEE-02 when investigated further with a downhole bailer; NAPL was not observed in the bailed water, but smears of a product were observed on the exterior of the bailers at each extraction well.

VEE-02

Testing of VEE-02 was conducted on 18 November 2020 and monitoring wells LMW-24, LMW-25, LMW-26, and LMW-27, as well as VEE-01, were used for monitoring during testing. No free product was detected during the initial background well gauging. During SVE testing, only minor vacuum influence was observed at the surrounding wells; however, similar to the testing at VEE-01, only approximately one foot of unsaturated screen existed in many of the wells associated in the testing, reducing the potential vacuum influence which could be induced.

During MPE testing, the groundwater level at VEE-02 was observed to recharge quickly, with groundwater levels dropping less than a foot during the initial surge and then reaching a steady state, with an approximate maximum extraction rate of one gpm. Approximately 120 gallons of groundwater were extracted during the MPE testing. No product was detected in the groundwater removed from any of the extraction wells; however, a faint sheen was observed on some of the extracted groundwater when staged in 55-gallon drums for offsite disposal.

No free product was detected by the interface probe during gauging after testing was completed.

VEE-03

Testing of VEE-03 was conducted on 15 December 2020, and monitoring wells LMW-23 LMW-29, and LMW-31 were used for monitoring during testing. No free product was detected during the initial background well gauging. SVE testing revealed minor vacuum influence at the surrounding wells due to the fact that the majority of the screen of each monitoring well was saturated.

During MPE testing, groundwater levels at VEE-03 were observed to recharge quickly, with groundwater levels dropping less than a foot during the initial surge and then reaching a steady state, with an approximate maximum extraction rate of one gpm. Approximately 100 gallons of groundwater were removed during the MPE testing. No product was detected in the groundwater extracted from any of the extraction wells; however, a faint sheen was observed in some of the extracted groundwater when staged in 55-gallon drums for offsite disposal.

No free product was detected by the interface probe during gauging after testing was completed.

Due to the lack of NAPL observed and/or extracted during the performance of the VEE pilot testing in each of the representative test areas, it was determined that the NAPL present on Site is immobile and primarily sorbed to saturated Site soils. Given the limited mobility of the NAPL, an active extraction remedial collection strategy was determined to not be feasible. A passive recovery system was determined to be a potential remedy based on the immobile and entrained nature of the NAPL.

2.1.3 NAPL Monitoring

Per the NYSDEC approved SRIWP prepared by Langan dated 21 April 2020, Langan performed monthly NAPL gauging between September 2020 and May 2021. Based on NAPL observations made during the 2020 SRI, Langan installed absorbent socks in monitoring wells LMW-21, LMW-24, LMW-25, LMW-29, and LMW-30 on 7 August 2020. During each monthly gauging event, all accessible permanent monitoring wells are gauged and the absorbent socks are inspected and replaced. The saturated absorbent socks that are removed from the monitoring wells are placed in a drum staged onsite for future offsite disposal. Langan conducted the first monthly NAPL gauging and sock replacement event on 3 September 2020. Based on gauging observations, an absorbent sock was placed in LMW-26. During the monthly gauging events in October, November, and December, no new wells were observed to contain product. During the monthly gauging event on 21 January 2021, VEE Pilot Test well VEE-01 contained approximately 0.24-feet of LNAPL, and an absorbent sock was installed in the well. Approximately 2.04-gallons of product was recovered via absorbent socks between September 2020 and May 2021.

2.1.4 Summary of Field Investigation Findings

The findings summarized herein are based on field observations and instrumental readings and laboratory analytical results of soil, groundwater, and soil vapor samples collected during the 2018 RI and 2020 SRI, the pilot test in 2020, and the NAPL monitoring in 2020 and 2021. Cross-sectional diagrams showing inferred soil profiles are included as Figures 3A through 3G. Soil sample results are summarized on Figure 4, groundwater sample results are summarized on Figure 5, and soil vapor results are summarized on Figure 6. Findings and conclusions are as follows:

1. Stratigraphy: A historic fill layer as deep as 25 feet is underlain by former marsh deposits (encountered as a gray clay) followed by sand, silt, and clay. Bedrock was not encountered in any of the soil borings advanced during the 2018 RI or the 2020 SRI; however, the top of mica schist bedrock is present between 58 and 72 feet bgs based on geotechnical investigations completed at the Site.
2. Hydrogeology: Groundwater was encountered at depths ranging from approximately 4.02 to 8.85 feet bgs corresponding to elevations ranging between el -0.87 and el +2.98 NAV88. Groundwater flow direction is towards the west.
3. NAPL Impacts: LNAPL and DNAPL impacts associated with former aboveground storage tanks were observed in 22 soil boring and 6 monitoring wells. The NAPL impacts extend laterally across an approximately 38,000 square foot area and vertically between approximately 6 feet below existing ground surface and 15 to 20 feet below existing ground surface. NAPL impacts have not been observed to extend below the clay confining layer existing on-Site. The lateral extents of the delineated NAPL impacts are inclusive of three of the westernmost existing subsurface foundations associated with former ASTs. Monitoring wells within the area of observed LNAPL and DNAPL impacts were constructed to facilitate the collection of NAPL and have been monitored on a monthly basis between September 2020 and May 2021. Absorbent socks have been placed in monitoring wells LMW-21, LMW-24, LMW-25, LMW-29, LMW-26, LMW-30, and VEE-01 on 7 August 2020 and approximately 2.04-gallons of product have been recovered via absorbent socks during this timeframe.

4. Historic Fill Quality: Up to 25 feet of fill material was identified below the existing surface cover. Contaminants related to historic fill material include SVOCs, metals, PCBs and pesticides, which were detected at concentrations above Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, and/or Protection of Groundwater SCOs within this layer. VOCs exceeding the Unrestricted Use SCOs and/or Protection of Groundwater SCOs are attributed to historical Site operations. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were also detected in fill above the NYSDEC Unrestricted Use SCOs.

5. Groundwater Quality: Groundwater analytical results exceeding the SGVs for SVOCs and metals were detected throughout the Site, and petroleum-related VOC exceedances of the SGVs were detected in the eastern portion of the Site. Groundwater analytical results exceeding the SGVs for metals are attributed to fill material of unknown origin and naturally occurring background concentrations and elevated turbidity during sample collection. Groundwater analytical results exceeding the SGVs for SVOCs are attributed to fill material of unknown origin or historical Site operations. Groundwater analytical results exceeding the SGVs for petroleum-related VOCs are attributed to residual impacts from historical Site operations. Spill No. 9010146 was reported due to the presence of gasoline impacts in groundwater and administratively closed by NYSDEC following remediation on 8 November 1991 with remaining benzene concentrations up to 135 µg/L. PFOS, PFOA, and perfluorohexanesulfonic acid (PFHxS) were also detected in groundwater above the SGVs. Analytical results for groundwater samples collected from within the NAPL-impacted area of the Site reveal that the presence of NAPL has not resulted in greater impacts than those identified throughout the remainder of the Site where only historic fill or historical gasoline impacts were encountered.

6. Soil Vapor Quality: Results of the soil vapor evaluation completed as part of the RI identified concentrations of vinyl chloride, carbon tetrachloride, and PCE that would require monitoring and/or mitigation per the NYSDOH guidance values. These compounds were not detected at concentrations exceeding NYSDEC threshold values in soil or groundwater samples collected from the corresponding soil borings and monitoring wells. As such, CVOCs in soil vapor are likely attributable to an unknown offsite source. Petroleum-related VOCs were also detected which are attributed to the presence of gasoline-related impacts in soil and groundwater.

2.2 Geological Conditions

Provided below is a description of the geologic and hydrogeologic observations made during the 2018 RI and 2020 SRI. Subsurface profiles are included as Figures 3A through 3G. Soil boring logs, a groundwater contour map, and groundwater monitoring well construction logs were included in the 2022 SRIR.

2.2.1 Historic Fill Material

Historic fill was encountered during the investigations in all borings to depths ranging from 8 to 25 feet bgs. The fill generally consists of light brown to dark brown, fine- to coarse-grained sand with varying amounts of gravel, silt, brick clay, glass, miscellaneous debris and concrete.

2.2.2 Native Soil Layers

Historic fill is underlain by a clay layer that was encountered in all soil borings, with the exception of LSB-45 in the eastern portion of the Site where native gray fine- to medium-grained sand was observed between 20 and 30 feet bgs and LSB-4, LSB-5, LSB-21, LSB-42, LSB-59 through LSB-61, LSB-67, and LSB-71 in which fill was encountered to the termination depths of the borings. The bottom of the clay layer was not encountered in any soil borings advanced as part of the RI or SRI. However, according to the Geotechnical Investigations completed by Langan in 2017 and 2018, subsurface conditions consist of miscellaneous fill underlain by a 1.5- to 20-foot thick stratum of inferred former marsh deposit materials consisting of clay, silt, sand, and peat below the fill. An about 2- to 38-foot-thick stratum generally consisting of medium dense sand and silt, and medium to very stiff clay was encountered directly underlying the former marsh deposits in all geotechnical borings; the clay within this layer was typically observed to be between 1.5 and 10 feet thick . This layer was followed by an 8- to 30-foot thick layer of dense to very dense sand underlain by decomposed mica schist. The top of competent mica schist bedrock was encountered between 58- and 74-feet below grade; bedrock was not encountered during the environmental investigations.

2.2.3 Hydrogeology

Monitoring wells installed during the 2018 RI and the 2020 SRI revealed groundwater depths corresponding to el +2.98 (LMW-12) to el -0.87 (LMW-25) NAVD88. Groundwater flow direction is towards the west.

Langan reviewed United States Fish and Wildlife National Wetland Inventory (NWI) and New York State Freshwater Wetlands maps. Based on these documents, no mapped wetlands are listed on the subject property, although the Dutch Kills Creek is located adjacent to the west and Newtown Creek is approximately 375-feet south of the subject property.

2.3 Contaminant Conditions

2.3.1 Conceptual Site Model

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

2.3.1.1 Potential Sources of Contamination

Potential sources of contamination have been identified and include past uses of the Site and contaminated historic fill material. Historical on-Site use for gasoline filling, gasoline and heavy petroleum distillate ASTs, an automotive garage, and a trucking terminal are potential sources of VOCs in soil, groundwater, and soil vapor, potentially select SVOCs, PCBs, and metals in soil and groundwater, and NAPL in soil and groundwater in the central and southwestern portion of the Site. The Site-wide presence of historic fill has been established as a source of SVOCs, pesticides, and metals in soil. Detections of total metals are attributable to sediment entrainment of historic fill in the samples collected; detections of dissolved metals are attributed to naturally occurring background concentrations. Detection of CVOCs in soil vapor are attributed to an unknown offsite source; petroleum-related VOCs in soil vapor are attributed to historical Site operations.

2.3.1.2 Exposure Media

Impacted media include soil, groundwater, and soil vapor. Analytical data indicates that historic fill material contains VOCs, SVOCs, pesticides, PCBs, and metals at concentrations greater than the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, and/or the Protection of Groundwater SCOs. Per- and Polyfluoroalkyl Substances (PFAS) is present in groundwater at concentrations exceeding NYSDEC guidance thresholds. NAPL is present at the groundwater interface and in saturated soil in the central and southwestern portion of the Site, which is attributed to historical heavy petroleum distillate storage (AOC-4). Soil vapor at the Site is impacted with petroleum-related VOCs and the CVOCs carbon tetrachloride, vinyl chloride, and

PCE, each of which were detected at concentrations above the NYSDOH soil vapor intrusion guidance levels which would require monitoring or mitigation.

2.3.1.3 Receptor Populations

The Site currently consists of an asphalt-paved parking surface. The Site is enclosed by fencing, and access is restricted to employees of the onsite businesses, personnel completing site investigations related to Site redevelopment, and other authorized guests. During Site development and remediation, human receptors will be limited to construction and remediation workers, authorized guests, design team members visiting the Site; exposures to properties adjacent to the site as described below will be mitigated by the implementation of a health and safety and soil management measures discussed herein. Under future conditions, receptors will include those that would have access to the new development.

The Dutch Kills Creek is located adjacent to the Site to the west. The adjacent property to the north is an asphalt paved parking lot that services the FedEx Facility located north of the Queens Midtown Expressway. Potential receptor populations for this property is limited to the FedEx employees that use the lot. The adjacent property to the east is a self-storage facility that consists of a commercial building and associated paved parking areas. Potential receptor populations for this property are limited to the employees of the self-storage facility and users of the facility. Active at-grade MTA LIRR railroad tracks are located to the south of the subject property in an area of elevated topography. According to a survey prepared by Langan dated September 2019, the elevation of the rail tracks immediately adjacent to the south of the Site are approximately 6 to 7 feet above the adjacent Site grades. Potential receptor populations of this property is limited to employees of the LIRR. Adjacent to the south of the active LIRR rail tracks is the Sims Metal Recycling Center, which consists primarily of asphalt-pavement and buildings. Potential receptor populations of this property is limited to employees of Sims.

Potential exposure pathways for on-Site and off-Site receptors are discussed in detail below.

2.3.2 Description of Areas of Concern

Laboratory analytical results for soil samples were compared to the 6 NYCRR Subpart 375-6.8(a-b) Remedial Program Soil Cleanup Objectives for Unrestricted Use, Commercial Use, Industrial Use, and/or Protection of Groundwater SCOs identified in the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs dated June 2021. Groundwater analytical results were compared to SGVs and PFOS, PFOA and 1,4-dioxane were compared to NYSDEC Volume A (Title 10) Subpart 5-1.51 Public Water Systems Maximum Contaminant Levels (MCLs) dated August 2020. Other PFAS results were

compared to screening values provided in the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (June 2021). Soil vapor was compared to NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion Matrices A through C dated October 2006 and revised in May 2017. Soil, groundwater, and soil vapor laboratory analytical results are summarized in Tables 1A/B through 3, and Figures 4 through 6.

This section discusses the results of the 2018 RI and the 2020 SRI with respect to the Areas of Concern (AOCs) identified.

2.3.2.1 AOC-1: Former Gasoline Filling Area

Up to 12-inches of floating product was historically documenting during investigation and remediation activities performed by Tyree in 1991. NYSDEC Spill No. 9010146 was closed following weekly and biweekly NAPL recovery with the presence of BTEX remaining in groundwater at the Site. The final round of groundwater sampling prior to spill closure documented the presence of benzene concentrations between 3.3 and 135 micrograms per liter (µg/L).

A total of six soil borings (LSB-18 through LSB-20, LSB-26, LSB-27, and LSB-29) to depths ranging between 12 and 23 feet bgs, six groundwater monitoring wells (LMW-12 through LMW-17), and one soil vapor point (LSV-12) were installed to investigate subsurface conditions associated with the former gasoline filling area.

AOC-1 Findings Summary

Soil

Soil samples were collected from the surficial two-foot interval in soil borings LSB-18 through LSB-20, the two-foot interval above the observed groundwater interface in all six soil borings, and the two-foot interval above the confining layer in soil borings LSB-26, LSB-27, and LSB-29. An additional soil sample was collected from the depth interval where elevated PID readings and/or odor was observed in soil boring LSB-18 from 7 to 9 feet bgs. A summary of the soil analytical results for AOC-1 is as follows:

- Elevated PID readings and petroleum-like impacts, as evidenced by odors, were observed in all six soil borings with the highest reading (1,335 ppm) from the 8- to 8.5-foot depth interval in LSB-18.
- Gasoline-related VOCs including benzene, toluene, total xylenes and methyl ethyl ketone were detected above the Unrestricted Use SCOs and Protection of Groundwater SCOs

in fill samples collected from between 11 and 13 feet bgs at LSB-27 and acetone was detected above the Unrestricted Use SCOs and Protection of Groundwater SCOs in fill samples collected from between 2.5 and 10 feet bgs at LSB-18, LSB-20, LSB-26, and LSB-29.

- Ten SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene) were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, and/or Protection of Groundwater SCOs in samples collected from between 3 and 18 feet bgs in the historic fill layer in AOC-1.
- Nine metals, including arsenic, barium, trivalent chromium, copper, lead, mercury, nickel, silver, and/or zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in 11 of the fill samples collected from between 2.5 and 18 feet bgs. Arsenic, barium, copper, lead, and/or mercury were detected above the Commercial RUSCOs in 9 of the fill samples collected from between 2.5 and 18 feet bgs. Arsenic was detected above the Industrial RUSCO in four soil samples and mercury was detected above the Industrial RUSCO in two samples. No other metals were detected above the Industrial RUSCOs in this AOC.
- No pesticides, herbicides, or PCBs were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.
- Per- and polyfluoroalkyl substances (PFAS) compounds were detected in all soil samples collected for which they were analyzed. PFOS and PFOA were not detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.

Groundwater

Soil borings LSB-18 through LSB-20, LSB-26, LSB-27, and LSB-29 were completed as permanent monitoring wells LMW-12 through LMW-17, respectively. A summary of the groundwater analytical results for AOC-1 is summarized as follows:

- Petroleum-related VOCs including 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, toluene, and/or xylenes were detected above the SGVs in LMW-12, LMW-14, and LMW-16.

- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and/or indeno(1,2,3-c,d)pyrene were detected above the SGVs in LMW-14, LMW-15, LMW-16, and LMW-17.
- The pesticide chlordane was detected above the SGVs in LMW-13.
- Eight total and six dissolved metals, including antimony, arsenic, iron, lead, magnesium, manganese, selenium, and sodium were detected above the SGVs in all six groundwater samples.
- PFAS compounds were detected in all groundwater samples collected for which they were analyzed. PFOS and/or PFOA were detected above the SGV of 10 nanograms per liter (ng/L) in the samples collected from LMW-15, LMW-16, and LMW-17.
- The compound 1,4-dioxane was not detected above the NYSDEC Maximum Contaminant Level (MCL) in this AOC.

Soil Vapor

Soil vapor point LSV-12 could not be sampled due groundwater inundation of the soil vapor screen.

AOC-1 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 1,335 ppm and odors were observed in the fill material above the confining layer in soil borings located within the footprint of AOC-1 and in delineation borings LSB-26 and LSB-29 to the east and north of AOC-1, respectively. Elevated concentrations of petroleum-related VOCs above applicable NYSDEC thresholds detected in soil and groundwater are attributed to the historical site operations within this AOC as a gasoline filling area. The VOC acetone, a common laboratory artifact, was detected in soil above regulatory criteria although is likely not associated with historical Site uses.

Elevated concentrations of PAHs and metals in fill material and groundwater are likely attributable to fill material of unknown origin; however, these may also be attributable to historical releases associated with petroleum bulk storage operations. Detections of metals in groundwater are attributed to fill material of unknown origin (antimony, arsenic, and lead) or naturally occurring background concentrations.

2.3.2.2 AOC-2: Former Gasoline ASTs Area

Two 275,000-gallon gasoline ASTs are shown on Sanborn Fire Insurance Maps in the southeastern portion of the site from 1936 through 1970.

A total of three soil borings (LSB-15, LSB-17, and LSB-24) were advanced up to 16 feet bgs. One groundwater monitoring well (LMW-11) and one soil vapor point (LSV-10) were installed to investigate subsurface conditions associated with the former gasoline ASTs area. Soil boring LSB-24 was advanced to visually delineate the extent of NAPL impacts observed in soil in the southern portion of the Site and soil samples were not collected for laboratory analysis from this location.

Soil

Soil samples were collected from the surficial two-foot interval in soil borings LSB-15 and LSB-17, the two-foot interval above the inferred groundwater interface where odors and elevated PID readings were observed in soil boring LSB-15, and the two-foot interval above the confining layer in soil boring LSB-17. A summary of the soil analytical results for AOC-2 is as follows:

- Elevated PID readings and petroleum-like impacts, as evidenced by odors, were observed in all three soil borings with the highest reading (1,103 ppm) from the 9- to 10-foot depth interval in LSB-15. Petroleum-like impacts, as evidenced by staining, were also encountered within the 7- to 11-foot interval in LSB-24.
- The VOC n-propylbenzene was detected above the Unrestricted Use SCO and the Protection of Groundwater SCO from between 4 and 6 feet bgs in LSB-15 and the VOC methylene chloride was detected above the Unrestricted Use SCO from between 14 and 16 feet bgs in LSB-17.
- Six SVOCs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in three of the four samples collected from between 0.5 and 16 feet bgs in the historic fill layer in AOC-2. The SVOCs benzo(a)anthracene and dibenz(a,h)anthracene were also detected above the Commercial RUSCO in two of the four samples collected from between 0.5 and 16 feet bgs. The SVOC benzo(a)pyrene was detected above the Unrestricted Use SCO, Commercial RUSCO, and Industrial RUSCO in three of the four samples collected from between 0.5 and 16 feet bgs.
- Seven metals, including arsenic, barium, copper, lead, mercury, nickel, and/or zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in all

of the samples collected from within the historic fill in AOC-2. Lead was detected above the Commercial RUSCO in one soil sample. Arsenic was detected above both the Commercial RUSCO and Industrial RUSCO in two soil samples and mercury was detected above both the Commercial RUSCO and Industrial RUSCO in one sample. No other metals were detected above the Commercial RUSCOs or Industrial RUSCOs in this AOC.

- No pesticides or PCBs were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.

Groundwater

Soil boring LSB-15 was completed as permanent monitoring well LMW-11. A summary of the groundwater analytical results for AOC-2 is summarized as follows:

- The gasoline-related VOCs 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, BTEX, isopropylbenzene, n-butylbenzene, n-propylbenzene, and sec-butylbenzene, were detected above the SGVs in LMW-11.
- Total and dissolved iron, total and dissolved manganese, and total and dissolved sodium were detected above the SGVs at LMW-11.

Soil Vapor

Soil vapor point LSV-10 was installed in the area of the former gasoline ASTs. A summary of the soil vapor analytical results for AOC-2 is summarized as follows:

- NYSDOH Soil Vapor Intrusion Matrix compound vinyl chloride was identified above the monitoring and/or mitigation threshold of 6 µg/m3 in LSV-10.
- Petroleum-related VOCs 1,2,4-trimethylbenzene, ethylbenzene, xylenes, and toluene were detected in LSV-10.

AOC-2 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 1,103 ppm, odors, and staining were observed in the fill material in soil borings located within the footprint of AOC-2. Elevated concentrations of petroleum-related VOCs above applicable NYSDEC thresholds detected in soil and groundwater and the presence of petroleum-related VOCs in soil vapor are attributed to the historical Site operations within this AOC as a gasoline AST area.

Elevated concentrations of PAHs and metals in fill material are likely attributable to fill material of unknown origin; however, PAHs may also be attributable to historical releases associated with petroleum bulk storage operations. Detections of metals in groundwater are attributed to naturally occurring background concentrations.

2.3.2.3 AOC-3: Former Gasoline Truck Filling Area

A gasoline filling island is shown on Sanborn Fire Insurance Maps in the east-central portion of the Site from 1936 through 1970.

One soil boring (LSB-16) was advanced to a depth of 16 feet bgs and one soil vapor point (LSV-11) were installed to investigate subsurface conditions associated with the historical Site operations.

Soil

Soil samples were collected from the surficial two-foot interval and the two-foot interval above the inferred groundwater interface where staining, odors, elevated PID readings, and NAPL were observed in soil boring LSB-16. A summary of the soil analytical results for AOC-3 is as follows:

- Elevated PID readings up to 105.4 ppm, petroleum impacts as evidenced by odors and staining, and NAPL were observed in soil boring LSB-16.
- Benzene was detected above the Unrestricted Use and Protection of Groundwater SCOs in LSB-16 from 4 to 6 feet bgs.
- Four metals, including copper, lead, mercury, and/or zinc were detected above the Unrestricted Use SCOs in all of the samples collected from within the historic fill in AOC-3.
- No SVOCs, pesticides, or PCBs were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.

Groundwater

Groundwater samples were not collected at AOC-3.

Soil Vapor

Soil vapor point LSV-11 was installed within AOC-3. A summary of the soil vapor analytical results for AOC-3 is summarized as follows:

- No CVOCs were detected above the NYSDOH Soil Vapor Intrusion Matrix monitoring and/or mitigation thresholds.
- Gasoline-related VOCs ethylbenzene, xylenes, and toluene were detected in LSV-11.

AOC-3 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 105.4 ppm, odors, staining, and NAPL were observed in the fill material associated with AOC-3. Elevated concentrations of petroleum-related VOCs above applicable NYSDEC thresholds detected in soil and the presence of petroleum-related VOCs in soil vapor are attributed to the historical site operations within this AOC as a gasoline truck filling area.

Elevated concentrations of metals in fill material are attributable to fill material of unknown origin.

2.3.2.4 AOC-4: Former Heavy Petroleum Distillate AST Area

Four 275,000-gallon ASTs containing crude oil, Navy fuel oil, kerosene, and naphtha are shown on Sanborn Fire Insurance Maps in the southern portion of the Site from 1936 through 1970.

A total of 37 soil borings (LSB-6, LSB-13, LSB-28, LSB-30 through LSB-46, and LSB-56 through LSB-72) to depths ranging between 14 and 30 feet bgs and 15 groundwater monitoring wells (LMW-5, LMW-10, LMW-18 through LMW-30) were installed to investigate subsurface conditions associated with the former heavy petroleum distillate AST area and to laterally delineate the NAPL extents identified in the 2019 RIR. Soil borings LSB-56 through LSB-65 were advanced for the purposes of conducting a remedial treatability study and LSB-66 through LSB-72 were advanced to fully delineate the NAPL impacts associated with AOC 4; soil samples for laboratory chemical analysis were not collected from these locations.

Subsequent to delineating the extents of NAPL on-Site, a VEE pilot test was performed to assess the potential mobility of NAPL and determine the feasibility and effectiveness of the VEE technology for treatment of NAPL impacts present in saturated soil and groundwater. Based on the results of the VEE pilot testing, it was determined that the NAPL present onsite is immobile and, sorbed to saturated Site soils. Minimal NAPL was identified in the groundwater monitored and/or extracted during the pilot test activities.

AOC-4 Findings Summary

Soil

Soil samples were collected from the surficial two-foot interval in soil borings LSB-6 and LSB-13, the two-foot interval above the inferred groundwater interface in soil borings LSB-28 and LSB-30 through LSB-46, the two-foot interval above the confining layer in soil borings LSB-6, LSB-13, LSB-28, LSB-30 through LSB-37, LSB-39, LSB-40, and LSB-42 through LSB-44, the two-foot interval of fill directly beneath observed impacts in LSB-45 since no confining layer was observed, and the top two-foot interval of native material in LSB-38 and LSB-41 since the most impacted two-foot interval was also the two-foot interval above the confining layer in LSB-38 and the two-foot interval above groundwater was also the two-foot interval above the confining layer in LSB-41. Additional soil samples were collected from the depth interval where impacts were observed in soil borings LSB-36, LSB-38, and LSB-43 through LSB-45. A summary of the soil analytical results for AOC-4 is as follows:

- Elevated PID readings were observed in all 37 soil borings, with the highest reading (2,451 ppm) detected from the 9.5- to 10-foot depth interval in LSB-60. Petroleum impacts as evidenced by odors were observed in 25 soil borings; staining was observed in 13 soil borings; and NAPL was observed in 16 of the soil borings.
- VOCs were detected above the Unrestricted Use and Protection of Groundwater SCOs in 12 of the 20 soil borings from which samples were collected. Petroleum-related VOCs including BTEX, 1,2,4-trimethylbenzene, n-butylbenzene, n-propylbenzene, and sec-butylbenzene, were detected above the Unrestricted Use SCOs and Protection of Groundwater SCOs in 5 of the soil samples collected from 5 to 11 feet bgs. Other VOCs including acetone, chloroform, and methyl ethyl ketone were detected in 9 of the soil samples collected from 6 to 15 feet bgs. Acetone is a common laboratory artifact and is likely not associated with historical site uses. No VOCs were detected above the Commercial RUSCOs or Industrial RUSCOs in any of the soil samples collected in AOC-4.
- Ten SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene) were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, and/or Protection of Groundwater SCOs in 15 of the samples collected from between 5 and 20.5 feet bgs in the historic fill layer in AOC-4. SVOCs were detected above the Commercial RUSCOs and/or Industrial RUSCOs in 8 of the 20 soil borings from which samples were collected. The SVOC chrysene

was detected above the Unrestricted Use SCO and Protection of Groundwater SCO in the soil sample collected from 8 to 10 feet bgs in the native layer in LSB-41.

- Eleven metals, including arsenic, barium, cadmium, trivalent chromium, copper, lead, mercury, nickel, selenium, silver, and/or zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in all of the samples collected from within the historic fill in AOC-4, except for the sample collected from 18.5 to 20.5 feet bgs in soil boring LSB-40. The metals arsenic, barium, cadmium, copper, lead, mercury, nickel, and zinc were detected above the Commercial RUSCOs and/or Industrial RUSCOs in 26 of the 44 soil samples collected.
- The pesticides 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT were detected above the Unrestricted Use SCOs in the soil samples collected from 8 to 11 feet bgs in soil borings LSB-41 and LSB-46. The pesticide alpha-chlordane was also detected above the Unrestricted Use SCOs in the soil sample collected from 8 to 10 feet bgs in the native layer in LSB-41.
- Total PCBs were detected above the Unrestricted Use SCOs in the soil sample collected from 9 to 11 feet bgs in the historic fill layer in soil boring LSB-46 and above the Unrestricted Use SCOs and Commercial RUSCOs in the soil sample collected from 8 to 10 feet bgs in the native layer in LSB-41. No PCBs were detected above the Industrial RUSCOs or Protection of Groundwater SCOs in any of the soil samples collected.
- PFAS compounds were detected in 35 of the 40 soil samples collected for which they were analyzed. PFOS was detected above the Unrestricted Use SCO in the soil samples collected from 6 to 8 feet bgs in soil borings LSB-32, LSB-34, and LSB043 and from 11 to 13 feet bgs in LSB-28. PFOA was detected above the Unrestricted Use SCO in the soil sample collected from 6 to 8 feet bgs in soil boring LSB-43.

Groundwater

Soil borings LSB-5, LSB-13, LSB-30, LSB-32, LSB-34, LSB-35, LSB-37, LSB-40, LSB-44, LSB-46, LSB-45, LSB-70, LSB-43, LSB-58, and LSB-72 were completed as permanent monitoring wells LMW-5, LMW-10, LMW-18 through LMW-30, respectively. Monitoring wells LMW-26 through LMW-30 were installed for NAPL observations only and samples for laboratory analysis were not collected. A summary of the groundwater analytical results for AOC-4 is summarized as follows:

- Petroleum-related VOCs including 1,2,4-trimethylbenzene, BTEX, isopropylbenzene, and/or n-propylbenzene were detected above SGVs in two of the ten monitoring wells sampled.

- The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and/or indeno(1,2,3-c,d)pyrene were detected above the SGVs in five of the ten monitoring wells sampled.
- Six total and five dissolved metals, including iron, lead, magnesium, manganese, selenium, and sodium were detected above the SGVs in all ten groundwater samples collected from within AOC-4.
- PFAS compounds were detected in all groundwater samples collected for which they were analyzed. PFOS and/or PFOA were detected above the SGV of 10 ng/L in the samples collected from LMW-18 through LMW-24.
- The compound 1,4-dioxane was not detected above the NYSDEC Maximum Contaminant Level (MCL) in this AOC.

NAPL

A summary of the NAPL observations for AOC-4 is summarized as follows:

- The presence of NAPL was observed during drilling activities in 13 soil borings (LSB-6, LSB-13, LSB-36 through LSB-39, LSB-43 through LSB-46, LSB-56, LSB-58, and LSB-59).
- Based on the presence of NAPL in soil borings during the SRI, seven additional soil borings (LSB-66 through LSB-72) were advanced to further investigate the extents of NAPL impacts throughout the AOC; NAPL was observed in four of these borings (LSB-66, LSB-69, LSB-70, and LSB-72).
- Select soil borings (LSB-45, LSB-70, LSB-43, LSB-58, and LSB-72) were completed as permanent monitoring wells LMW-26 through LMW-30, respectively, for NAPL monitoring due to the observation of NAPL in the soil borings.
- Monitoring well gauging revealed the presence of LNAPL in two monitoring wells (LMW-21 and LMW-30), DNAPL in one monitoring well (LMW-25), and both LNAPL and DNAPL in one monitoring well (LMW-24). Depending on the location, product present in the wells was determined to either be too viscous to obtain thickness measurements or to be present in a thin but unmeasurable film visible on the oil/water interface probe following removal from the well. Four monthly monitoring events were completed between September and December 2020 which are discussed in Section 2.1.3.
- A VEE pilot test was performed in November and December 2020 to assess the potential mobility of NAPL and determine the feasibility and effectiveness of the VEE technology for treatment of NAPL impacts present in saturated soil and groundwater. The results of the VEE pilot testing defined the extents of NAPL and confirmed that NAPL consists of

heavy immobile petroleum consisting of degraded fuel oil #6 for which active recovery is not a viable option

Soil Vapor

Soil vapor samples were not collected from AOC-4.

AOC-4 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 2,451 ppm, odors, and/or staining were observed in the fill material immediately above the confining layer in soil borings completed as part of the AOC-4 NAPL delineation.

Elevated concentrations of petroleum-related VOCs above applicable NYSDEC thresholds detected in soil and groundwater and the field observations noted above are attributable to the historical releases associated with petroleum bulk storage at the Site. Methyl ethyl ketone was also identified in soil and may be attributable to historical site operations. The VOC acetone, a common laboratory artifact, was detected in soil above regulatory criteria although it is likely not associated with historical site uses.

Elevated concentrations of PAHs in groundwater are likely attributable to fill material of unknown origin; however, these may also be attributable to historical releases associated with bulk storage of heavy petroleum distillates. The presence of pesticides, PCBs, and metals in fill material and groundwater are likely attributable to the presence of impacted fill material of unknown origin. Detections of metals in groundwater are attributable to fill material of unknown origin (lead and selenium) or naturally occurring background concentrations.

NAPL was observed in 11 SRI soil borings completed as part of the AOC-4 NAPL delineation and in 4 of the additional 7 soil borings advanced for additional delineation. During monitoring well gauging, LNAPL and DNAPL were detected in four wells. NAPL was not observed in additional delineation soil borings LSB-67 and LSB-68; as such, the presence of NAPL in soil and groundwater has been delineated to the east, north, and west and these impacts do not extend beyond the western property boundary into Dutch Kills Creek. NAPL impacts extend laterally across an approximately 38,000 square foot area and vertically between approximately 6 feet below existing ground surface and 15 to 20 feet below existing ground surface. NAPL impacts have not been observed to extend below the clay confining layer existing on-Site. The lateral extents of the delineated NAPL impacts are inclusive of the three westernmost existing

subsurface foundations associated with former ASTs. Refer to Figure 2 and Figures 3A through 3H for a graphical representation of the delineated lateral and vertical NAPL extents, respectively.

As part of the development of a remedial path forward to address the delineated NAPL impacts on-Site, a VEE pilot test was performed in November and December 2020 to assess the potential mobility of NAPL and determine the feasibility and effectiveness of the VEE technology for treatment of NAPL impacts present in saturated soil and groundwater. Results of the VEE pilot testing confirmed the presence of immobile NAPL in which is primarily sorbed to saturated Site soils – little evidence of NAPL was seen in the groundwater monitored and/or extracted during the pilot test activities. Given the limited mobility of the NAPL, an active extraction remedial collection strategy was determined to not be feasible. A summary of the pilot test activities is included in Section 2.1.2.

2.3.2.5 AOC-5: Former Pump House Area

A pump house containing two horizontal steam boilers and an iron chimney is shown on Sanborn Fire Insurance Maps in the southwestern portion of the Site from 1936 through 1970. The pump house is located at the end of a pipe gallery that is constructed adjacent to the six 275,000 gallon ASTs and connects to a building associated with four 15,000-gallon USTs with unspecified contents.

A total of two soil borings (LSB-2 and LSB-23) to depths ranging between 12 and 16 feet bgs and one groundwater monitoring well (LMW-1) were installed to investigate subsurface conditions associated with the former pump house area. Soil boring LSB-23 was advanced to visually delineate the extent of NAPL impacts observed in soil in the southern portion of the site and soil samples were not collected for laboratory analysis from this location.

AOC-5 Findings Summary

Soil

Soil samples were collected from the surficial two-foot interval and the two-foot interval above the confining layer in soil boring LSB-2. A summary of the soil analytical results for AOC-1 is as follows:

- Elevated PID readings were observed in both soil borings with the highest reading (49.3 ppm) detected from the 6- to 6.5-foot depth interval in LSB-2. Petroleum-like impacts, as evidenced by odors and NAPL, were observed in both soil borings completed within AOC-5.

- The VOC acetone was detected above the Unrestricted Use SCO from between 0 and 2 feet bgs in LSB-2. This compound is a common laboratory contaminant (although not detected in the blanks) and is likely not representative of soil conditions.
- Three SVOCs (benzo(a)anthracene, chrysene, and indeno(1,2,3-cd)pyrene) were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in one sample collected from between 10 and 12 feet bgs in LSB-2. The SVOC benzo(a)pyrene was detected above the Unrestricted Use SCO, Commercial RUSCO, and Industrial RUSCO in the soil sample collected from 10 to 12 feet bgs in LSB-2.
- Six metals, including arsenic, copper, lead, mercury, nickel, and/or zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in all of the samples collected from within the historic fill in AOC-5. Lead and mercury were also detected above the Commercial RUSCO in the sample collected from between 10 and 12 feet bgs in LSB-2. Arsenic was also detected above the Industrial RUSCO in the sample collected from between 10 and 12 feet bgs in LSB-2.
- No pesticides or PCBs were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.

Groundwater

Soil boring LSB-2 was completed as permanent monitoring well LMW-1. A summary of the groundwater analytical results for AOC-5 is summarized as follows:

- Total and dissolved magnesium, total and dissolved selenium, and total and dissolved sodium were detected above the SGVs in LMW-1.
- No VOCs were detected above the SGVs in this AOC.

Soil Vapor

Soil vapor samples were not collected from AOC-5.

AOC-5 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 49.3 ppm, odors, and NAPL were observed in the fill material immediately above the confining layer in soil borings located within the footprint of AOC-5.

Elevated concentrations of PAHs and metals in fill material and groundwater are likely attributable to fill material of unknown origin; however, PAHs may also be attributable to historical releases associated with historical site operations. Detections of metals in groundwater are also attributable to naturally occurring background concentrations. NAPL was observed between 3- and 7-feet below the groundwater table in LSB-2 and LSB-23, and 0.1-foot of LNAPL was detected on groundwater in LMW-1 (installed in LSB-2). The presence of NAPL is attributable to releases associated with historical site operations at the site including the storage of heavy petroleum distillates.

2.3.2.6 AOC-6: Former Garage Area

A garage operated in the central portion of the site from 1936 through 1970.

A total of eight soil borings (LSB-4, LSB-5, LSB-9 through LSB-11, LSB-14, LSB-21, and LSB-25) to depths ranging between 12 and 16 feet bgs, five groundwater monitoring wells (LMW-3, LMW-4, and LMW-7 through LMW-9), and five soil vapor points (LSV-2, LSV-4, LSV-6, LSV-7, and LSV-9) were installed to investigate subsurface conditions associated with the former garage area. Soil borings LSB-21 and LSB-25 were advanced to visually delineate the extent of NAPL impacts observed in soil in the southern portion of the Site and soil samples were not collected for laboratory analysis from these locations.

AOC-6 Findings Summary

Soil

Soil samples were collected from the surficial two-foot interval in soil borings LSB-4, LSB-5, LSB-9 through LSB-11, and LSB-14, the two-foot interval above the inferred groundwater interface in soil boring LSB-14, the two-foot interval above the confining layer in soil borings LSB-10 and LSB-11, the top two-foot interval of the confining layer where impacts were observed in LSB-5, the two-foot interval where impacts were observed within the fill layer in LSB-9, and the two-foot interval at the bottom of the boring in LSB-4 since the confining layer was not observed. A summary of the soil analytical results for AOC-6 is as follows:

- Elevated PID readings were observed in all eight soil borings with the highest reading (375.5 ppm) detected from the 7.5- to 8-foot depth interval in LSB-9. Petroleum-impacts as evidenced by odors were observed in five soil borings; staining was observed in one soil boring; and NAPL was observed in three of the soil borings.

- The VOC n-propylbenzene was detected above the Unrestricted Use SCO from between 6 and 8 feet bgs in LSB-9 and the VOC acetone was detected above the Unrestricted Use SCO from between 0 and 2 feet bgs in LSB-11. Acetone is a common laboratory contaminant (although not detected in the blanks) and is likely not representative of soil conditions.
- Ten metals, including arsenic, barium, cadmium, hexavalent chromium, copper, lead, mercury, nickel, selenium, and/or zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs in all of the samples collected from within the historic fill in AOC-6. Arsenic was detected above the Industrial RUSCO in one soil sample, cadmium was detected above the Commercial RUSCOs in one soil sample, and mercury was detected above both the Commercial RUSCO and Industrial RUSCO in two samples. No other metals were detected above the Industrial RUSCOs in this AOC.
- No SVOCs, pesticides, or PCBs were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in this AOC.

Groundwater

Soil borings LSB-4, LSB-5, and LSB-9 through LSB-11 were completed as permanent monitoring wells LMW-3, LMW-4, and LMW-7 through LMW-9, respectively. A summary of the groundwater analytical results for AOC-6 is summarized as follows:

- The gasoline-related VOCs 1,2,4,5-tetramethylbenzene, benzene, isopropylbenzene, and n-propylbenzene were detected above the SGVs in LMW-8.
- The SVOCs benzo(a)anthracene and chrysene were detected above the SGVs in LMW-7.
- Total and dissolved metals including iron, magnesium, manganese, and sodium were detection in all five wells sampled.

Soil Vapor

Soil vapor points LSV-2, LSV-4, LSV-6, LSV-7, and LSV-9 were installed in the area of the former garage. A summary of the soil vapor analytical results for AOC-6 is summarized as follows:

- Petroleum-related VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and BTEX were detected in all five soil vapor samples.

AOC-6 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 375.5 ppm, odors, staining, and NAPL were observed in the fill material above the confining layer in soil borings located within the footprint of AOC-6. However, low levels of gasoline-related VOCs were detected above the Unrestricted Use SCOs in only one soil sample and one groundwater sample.

Elevated concentrations of PAHs and metals in fill material are likely attributable to fill material of unknown origin; however, PAHs may also be attributable to historical releases associated with historical site operations. Detections of metals in groundwater are attributable to naturally occurring background concentrations. Approximately 0.18-foot of LNAPL was detected on top of groundwater and 0.1-foot of DNAPL was detected at the bottom of the well casing in LMW-4 (installed in LSB-5). The presence of NAPL is attributable to releases associated with historical operations at the site including the storage of heavy petroleum distillates.

2.3.2.7 AOC-7: Historical Operations as a Trucking Terminal

The Site is identified on Sanborn Fire Insurance Maps as a Trucking Terminal from 1979 through 2006.

A total of six soil borings (LSB-1, LSB-3, LSB-7, LSB-8, LSB-12, and LSB-22) to depths ranging between 12 and 16 feet bgs, two groundwater monitoring wells (LMW-2 and LMW-6), and four soil vapor points (LSV-1, LSV-3, LSV-5, and LSV-8) were installed to investigate subsurface conditions associated with the former trucking terminal operations. Soil boring LSB-22 was advanced to visually delineate the extent of NAPL impacts observed in soil in the southern portion of the site and soil samples were not collected for laboratory analysis from this location.

AOC-7 Findings Summary

Soil

Soil samples were collected from the surficial two-foot interval and the two-foot interval above the confining layer in soil borings LSB-1, LSB-3, LSB-7, LSB-8, and LSB-12. A summary of the soil analytical results for AOC-7 is as follows:

- Elevated PID readings were observed in all six soil borings with the highest reading (370.6 ppm) detected from the 9.5- to 10.5-foot depth interval in LSB-22. Petroleum-impacts as evidenced by odors were observed in five soil borings and staining was observed in two soil borings.
- The VOC acetone was detected above the Unrestricted Use SCO and Protection of Groundwater SCO from between 8 and 13 feet bgs in three soil borings and the VOC methylene chloride was detected above the Unrestricted Use SCO and Protection of Groundwater SCO from between 8 to 10 feet in one soil boring. These compounds are common laboratory contaminants (although not detected in the blanks) and are likely not representative of soil conditions.
- Seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected above the Unrestricted Use SCOs, Commercial RUSCOs, Industrial RUSCOs, and/or Protection of Groundwater SCOs in four of the samples collected from between 0.5 and 15 feet bgs in the historic fill layer in AOC-7.
- Ten metals, including arsenic, barium, cadmium, trivalent chromium, copper, lead, mercury, nickel, silver, and/or zinc were detected above the Unrestricted Use SCOs, Protection of Groundwater SCOs, and/or Commercial RUSCOs in all of the samples collected from within the historic fill in AOC-7. Arsenic was detected above the Industrial RUSCO in four soil samples and cadmium was detected above the Industrial RUSCO in one sample. No other metals were detected above the Industrial RUSCOs in this AOC.
- Two pesticides, including 4,4'-DDD and 4,4'-DDT, were detected above Unrestricted Use SCOs in the soil sample collected from 10 to 12 feet bgs in the historic fill layer in soil boring LSB-1. No pesticides were detected above the Commercial RUSCOs, Industrial RUSCOs, or Protection of Groundwater SCOs in any of the soil samples collected.
- Total PCBs were detected above the Unrestricted Use SCOs and Commercial RUSCO in the soil sample collected from 10 to 12 feet bgs in the historic fill layer in soil boring LSB-1. No PCBs were detected above the Industrial RUSCOs or Protection of Groundwater SCOs in any of the soil samples collected.

Groundwater

Soil borings LSB-3 and LSB-8 were completed as permanent monitoring wells LMW-2 and LMW-6, respectively. A summary of the groundwater analytical results for AOC-7 is summarized as follows:

- The SVOCs benzo(a)pyrene and chrysene were detected above the SGVs in both monitoring wells. Benzo(a)anthracene was detected above the SGV in LMW-2.
- Total and dissolved metals were detected above the SGVs including total and dissolved iron in LMW-2, dissolved selenium LMW-6, and total and dissolved magnesium and sodium in both monitoring wells.
- No VOCs were detected above the SGVs in this AOC.

Soil Vapor

Soil vapor points LSV-1, LSV-3, LSV-5, and LSV-8 were installed within AOC-7. Soil vapor point LSV-1 could not be sampled due groundwater inundation of the soil vapor screen. A summary of the soil vapor analytical results for AOC-7 is summarized as follows:

- Petroleum-related VOCs 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and BTEX were detected in all four soil vapor samples collected.

AOC-7 Conclusions

Field observations of petroleum impacts including elevated PID readings of up to 370.6 ppm and odors were observed in the fill material immediately above the confining layer in soil borings located within the footprint of AOC-7.

Elevated concentrations of PAHs and metals in fill material and PAHs in groundwater are likely attributable to fill material of unknown origin; however, PAHs may also be attributable to historical releases associated with historical Site operations. Detections of metals in groundwater are attributable to naturally occurring background concentrations.

2.3.2.8 AOC-8: PCB Delineation

As requested by the NYSDEC, Langan completed a delineation investigation of PCBs detected from 10 to 12 feet bgs at LSB-1 during the 2020 RI.

A total of nine discrete soil samples were analyzed from six soil borings (LSB-47 through LSB-51 and LSB-55) for the analysis of PCBs. Soil samples were collected from 10 to 12 feet bgs in soil borings LSB-48 through LSB-51, which were each located at a five-foot offset from the original LSB-1 location to horizontally delineate PCBs. Soil samples were also collected from 8 to 10 and 12 to 14 feet bgs in LSB-47 which was installed at the former LSB-1 location to vertically delineate the PCB contamination previously detected from 10 to 12 feet bgs. Analytical results revealed that total PCBs was identified in exceedance of the Unrestricted Use SCOs and Commercial RUSCO at LSB-51 (2.34 mg/kg). Soil samples from 8 to 10 and 12 to 14 feet bgs at LSB-51 were analyzed for PCBs to vertically delineate PCB contamination within that soil boring location, and the soil sample from 10 to 12 feet bgs at LSB-55 (located at a five-foot offset from LSB-51) was analyzed for PCBs to horizontally delineate the impacts. PCBs were not identified in exceedance of the Commercial RUSCOs at LSB-55 or in the vertical delineation samples at LSB-51.

Delineation of PCBs exceeding the Commercial RUSCOs in LSB-1 is completed.

2.3.2.9 AOC-9: Soil Vapor Assessment

As requested by the NYSDEC, an additional soil vapor assessment consisting of three soil vapor samples along the eastern side of the Site was incorporated into 2020 SRI.

Temporary soil vapor sampling points LSV-13 through LSV-15 were co-located with soil borings LSB-26, LSB-30, and LSB-34, respectively. The soil vapor evaluation identified BTEX and other petroleum-related compounds in all three soil vapor samples collected. The highest concentrations of petroleum related compounds were identified in LSV-13.

The soil vapor evaluation identified carbon tetrachloride and PCE concentrations that would require monitoring or mitigation per the NYSDOH guidance values in soil vapor samples LSV-14 and LSV-15 in the southeastern portion of the Site. However, these compounds were not detected at concentrations exceeding NYSDEC threshold values in soil or groundwater samples collected from the corresponding soil borings and monitoring wells. As such, CVOCs in soil vapor are likely attributed to an unknown offsite source.

2.3.3 Nature and Extent of Contamination

2.3.3.1 Gasoline Impacts

Historically, three 4,000-gallon diesel USTs which reportedly previously contained gasoline, a former terminal loading rack, and a pump island were located on the eastern portion of the Site, two 275,000-gallon gasoline ASTs were located on the southeastern portion of the Site, and

gasoline filling island canopy was located on the east-central portion of the Site. The May 1990 Subsurface Investigation Report prepared by Tyree documents the presence of up to 12 inches of NAPL detected in monitoring wells advanced in the immediate vicinity of these structures and Spill No. 9010146 was assigned. NYSDEC administratively closed Spill No. 9010146 in 1991 based on ongoing NAPL recovery, review of monitoring well gauging results that showed a declining trend in LNAPL thickness, and the results of the final round of groundwater sampling prior to spill closure which documented the presence of benzene concentrations between 3.3 and 135 µg/L.

Gasoline-related VOCs were identified in soil and groundwater predominantly in the eastern portion of the Site and in an isolated area in the western portion of the Site as part of the 2018 RI and 2020 SRI. BTEX and associated breakdown products including, n-butylbenzene, p-propylbenzene, and sec-butylbenzene were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs between 4 and 13 feet bgs in nine soil borings advanced at the Site during the 2018 RI and 2020 SRI; eight of the soil borings are located in the eastern, southeastern, and east-central portion of the Site in the vicinity and downgradient of the historical Site structures described above (AOC-1 through AOC-3), and one soil boring is located in the western portion of the Site downgradient of the historical pump house (AOC 5).

Groundwater analytical results revealed gasoline-related VOCs including BTEX, 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, isopropyl benzene, n-butylbenzene, n-propylbenzene, and/or sec-butylbenzene at concentrations above the SGVs in eight groundwater samples collected from the eastern, southeastern, and east-central portion of the Site during the 2018 and 2020 investigations.

Soil sample analytical results exceeding the Unrestricted Use SCOs and/or Protection of Groundwater SCOs for gasoline-related VOCs and groundwater analytical results exceeding the SGVs are attributed to historical Site operations including gasoline filling and bulk gasoline storage. Benzene concentration were detected between 1.64 and 119 µg/L during the 2018 and 2020 investigations. As Spill No. 9010146 was administratively closed by NYSDEC in 1991 with up to 135 µg/L of benzene remaining in groundwater in AOC-1, concentrations of benzene detected during the RI and SRI are likely the result of naturally attenuating residual impacts from the closed spill. Based in the results of the 2018 and 2020 investigations, gasoline impacts in soil and groundwater are fully delineated.

2.3.3.2 NAPL Contamination

The Site was historically occupied by a Texaco petroleum bulk storage facility from approximately 1915 through 1970 and was subsequently converted for vehicle repair, storage, and refueling use. Four 275,000-gallon ASTs containing crude oil, Navy fuel oil, kerosene, and naphtha were present in the southern portion of the Site from 1936 through 1970.

The findings of the 2018 RI and 2020 SRI revealed that an area of LNAPL and DNAPL impacts is present in an approximately 38,000 SF area in the central and southwestern portion of the Site.

LNAPL and DNAPL impacts were observed in 19 soil borings from 4 to 20 feet bgs (corresponding to depths at the groundwater interface and below the groundwater interface) during the 2018 RI and 2020 SRI. Based on the observation of NAPL in SRI soil borings during the investigation, seven additional soil borings were advanced to further investigate the extent of NAPL impacts throughout the AOC; NAPL was observed in four of these borings. Select soil borings were completed as five additional permanent monitoring wells for future NAPL monitoring due to the observation of NAPL in the soil borings.

During the 2018 RI and 2020 SRI, monitoring wells were installed in 14 soil borings in which NAPL was present; 13 of these wells were gauged to evaluate for the presence of NAPL during the 2020 SRI which revealed the presence of LNAPL in two monitoring wells (LMW-21 and LMW-30), DNAPL in one monitoring well (LMW-25), and both LNAPL and DNAPL in one monitoring well (LMW-24). Depending on the location, product present in the wells was determined to either be too viscous to obtain thickness measurements or to be present in a thin but unmeasurable film visible on the oil/water interface probe following removal from the well. As NAPL was detected in only four of the 13 monitoring wells at which product was present in soil, it is inferred that the NAPL is not entering the well screens and appears to be in a generally immobile condition.

The presence of NAPL in soil and groundwater in the central and southwestern portion of the Site, which is attributed to historical heavy petroleum distillate storage (AOC-4), has been delineated to the east (LSB-34 LSB-63, LSB-22, LSB 9, and LSB-12), north (LSB-12, LSB-7, LSB-40, LSB-4, LSB-42, and LSB-1), and west (LSB-67 and LSB-68). The lack of NAPL in LSB-67 and LSB 68 confirms that these impacts do not extend beyond the western property boundary into Dutch Kills Creek. NAPL impacts extend laterally across an approximately 38,000 square foot area and vertically between approximately 6 feet below existing ground surface and 15 to 20 feet below existing ground surface. NAPL impacts have not been observed to extend below the clay confining layer existing on-Site. The lateral extents of the delineated NAPL impacts are inclusive

of the three westernmost existing subsurface foundations associated with former ASTs. Refer to Figure 2 and Figures 3A through 3H for a graphical representation of the delineated lateral and vertical NAPL extents, respectively. Based on the results of the VEE pilot testing performed between November and December 2020 NAPL present onsite was immobile and sorbed to saturated Site soils with minimal detection of NAPL in the groundwater monitored and/or extracted during the pilot test activities. Given the limited mobility of the NAPL, an active extraction remedial collection strategy was determined to not be feasible. A passive recovery system was determined to be a potential remedy based on the immobile and entrained nature of the NAPL.

A total of 31 soil samples were collected for laboratory analysis from soil borings in which NAPL was observed during the 2018 RI and 2020 SRI. Of the 31 samples, only two samples revealed detections of petroleum-related VOCs at concentrations exceeding the Unrestricted Use SCOs and only 10 samples revealed concentrations of PAHs at concentration exceeding the Unrestricted Use SCOs, Protection of Groundwater SCOs, Commercial RUSCOs, and/or Industrial RUSCOs. Nine monitoring wells which were installed in soil borings where NAPL was observed were sampled for laboratory analysis during the 2018 RI and 2020 SRI; three of the wells revealed the presence of petroleum-related VOCs and two of the wells revealed the presence of PAHs at concentrations exceeding the NYSDEC SGVs. Analytical results for samples collected from within the NAPL-impacted area of the Site reveal that the presence of NAPL has not resulted in greater impacts to soil and groundwater than those identified throughout the remainder of the Site where only historic fill or historical gasoline impacts were encountered.

2.3.3.3 Historic Fill

During the 2018 RI and 2020 SRI, a fill layer consisting of light brown to dark brown, fine- to coarse-grained sand with varying amounts of gravel, silt, brick clay, glass, miscellaneous debris and concrete extending from surface grade to between about 8 to 25 feet bgs was observed.

The VOC acetone was detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs between 3 and 15 feet bgs in seven soil borings, and the VOC methyl ethyl ketone was detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs between 6 and 13.5 feet bgs in four soil borings advanced at the Site during the 2020 SRI, primarily in the southeastern and southwestern portions of the Site.

SVOCs commonly associated with the presence of historic fill material including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were

detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs between 0.5 and 20.5 feet in 20 soil borings advanced at the Site during the 2018 RI and 2020 SRI. The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were also detected above the Commercial RUSCOs and/or Industrial RUSCOs in 16 of those soil borings.

The pesticides 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and alpha-chlordane were detected above the Unrestricted Use SCOs between 8 and 11 feet bgs in two soil borings advanced at the Site during the 2020 SRI. Total PCBs were detected above the Unrestricted Use SCOs between 8 and 11 feet bgs in two soil borings advanced at the Site during the 2020 SRI.

Metals including arsenic, barium, cadmium, hexavalent chromium, trivalent chromium, copper, lead, mercury, nickel, selenium, silver, and zinc were detected above the Unrestricted Use SCOs and/or Protection of Groundwater SCOs between 0 and 20.5 feet bgs in all of the soil borings advanced at the Site during the 2018 RI and 2020 SRI for which metals were analyzed. The metals arsenic, cadmium, lead, mercury, and zinc were also detected above the Commercial RUSCOs and/or Industrial RUSCOs between 0.5 and 16 feet bgs in 33 of those soil borings.

Groundwater analytical results revealed historic fill-related SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene at concentrations above the SGVs in 13 groundwater samples collected from throughout the Site during the 2018 RI and 2020 SRI.

The pesticide chlordane was detected above the SGV in one groundwater sample collected during the 2018 RI.

Metals including total and dissolved antimony, total arsenic, total and dissolved iron, total lead, total and dissolved magnesium, total and dissolved manganese, total and dissolved selenium, and total and dissolved sodium were detected above the SGVs in all groundwater samples collected throughout the Site during the 2018 RI and 2020 SRI.

2.3.3.4 Hot Spots

PCBs

Total PCBs were detected at a concentration exceeding the Commercial RUSCOs from 10 to 12 feet bgs at LSB-1 on the western side of the site during the 2018 RI. A delineation investigation was completed during the 2020 SRI to define the extent of contamination in the area, which

resulted in an approximately 75 SF area between 10 and 12 feet bgs horizontally and vertically delineated to concentrations below the Commercial RUSCOs.

Metals

Soil sampling during the 2020 SRI revealed the presence of hot spot metals at three locations. Lead was detected at concentrations of 18,300 mg/kg at LSB-28 in the northeastern portion of the Site in the vicinity of AOC-1 from 11 to 13 feet bgs and of 37,200 mg/kg at LSB-35 in the southern portion of the Site in the vicinity of AOC-4 from 11.5 to 13.5 feet bgs.

2.3.3.5 Soil Vapor Contamination

Soil vapor samples collected during the 2018 RI and 2020 SRI revealed vinyl chloride, carbon tetrachloride, and PCE at concentrations above the respective monitoring and/or mitigation threshold in three samples in the eastern and southeastern areas of the Site. However, these compounds were not detected at concentrations exceeding NYSDEC threshold values in soil or groundwater samples collected from the corresponding soil borings and monitoring wells. As such, CVOCs in soil vapor are likely attributed to an unknown offsite source.

Soil vapor sample analytical results also identified detections of petroleum-related VOCs including BTEX, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene throughout the Site footprint which are attributed to the presence of gasoline-related impacts in soil and groundwater resulting from historical Site operation and residual impacts from close Spill No. 9010146.

Soil vapor conditions at the Site have been fully investigated and assessment of the soil vapor quality is complete.

2.4 Qualitative Human Exposure Assessment

Based upon the CSM and the review of environmental data, partial on-Site exposure pathways appear to be present under current conditions at the Site. Institutional and engineering controls will be implemented to prevent complete on-Site exposure pathways 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. A discussion of the five elements comprising a complete pathway as they pertain to the Site is provided below.

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, a FWRIA for the Site is not required.

2.4.1 Current Conditions

The Site is located in the Long Island City neighborhood of Queens, New York and is identified as Block 294 Lot 106. The Site is an approximately 192,792-square foot parcel and is bound to the north by an asphalt-paved parking lot, to the east by 29th Street followed by an asphalt-paved parking lot associated with a four-story storage facility, to the south by at-grade railroad tracks associated with the MTA LIRR followed by the Sims Metal Recycling Center, and to the west by the Dutch Kills Creek. The Site is currently vacant and was most recently occupied by two single-story warehouse structures that operated as automotive repair facilities. The Site is comprised of asphalt-paved and asphalt milling-covered parking areas utilized by month-to-month tenants for vehicle storage, with several office trailers and storage containers present onsite. Vehicle storage ranges from passenger cars to tractor trailers.

The Site is enclosed in fencing and access is restricted to employees of the onsite businesses, personnel completing Site investigations, and other authorized guests. Personnel completing Site investigations prevent direct contact with subsurface conditions through the implementation of a Site-specific health and safety plan (HASP). Similarly, implementation of a community air monitoring plan (CAMP) in accordance with the HASP protects the adjacent public from exposure during soil disturbance activities; there were no exceedances of monitoring levels identified in the HASP for either dust or vapor during implementation of the 2018 RI or the 2020 SRI. Therefore, the potential exposure pathway for dermal absorption, inhalation, and ingestion has been and will continue to be fully controlled throughout the planned remediation and construction activities at the Site.

Due to the depth of groundwater, and the fact that groundwater in New York City is not used as a potable water source, there is no complete exposure to groundwater under current Site conditions. There is a potential exposure pathway through dermal absorption, inhalation, and ingestion by contractors during investigative groundwater sampling, but it is controlled by limiting Site access and through the implementation of the HASP during sampling.

Current there are no on-Site exposure pathways for soil vapor intrusion as all Site buildings were recently demolished. Soil vapor that may penetrate through the paved surface elsewhere on the Site primarily migrates vertically through the subsurface and will dissipate and dilute with ambient

air. Any remaining potential exposure pathways through dermal absorption and inhalation is controlled through the implementation of a HASP during ground-intrusive work.

2.4.2 Construction/Remediation Activities

During remedial construction, points of exposure include disturbed and exposed soil during Site work, dust and organic vapors generated during Site work, and disturbance of groundwater and NAPL during installation of the stabilization system. Routes of exposure include ingestion and dermal absorption of contaminated soil, groundwater, and NAPL inhalation of organic vapors arising from contaminated soil, groundwater, and NAPL, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers. Potential exposures to the properties adjacent to the site as described in Section 7.4.3 will be mitigated by the implementation of a HASP, CAMP, and SMMP as discussed below.

The potential for completed exposure pathways is present since all five elements exist; however, the risk will be minimized by limiting Site access and through implementation of appropriate health and safety measures, such as work zone and perimeter air monitoring for organic vapors and dust, using vapor and dust suppression measures, maintaining Site security, and wearing the appropriate personal protective equipment (PPE) and through implementation of SMMP measures including cleaning truck undercarriages before they leave the Site to prevent off-Site soil tracking.

2.4.3 Proposed Future Conditions

The current proposed future use of the Site is the construction of a building that is suitable for light industrial, warehouse and commercial uses. Preliminary concept plans developed to date consist of a three-story building with no cellar located in the central portion of the Site. The proposed building will consist of an approximately 77,250 square-foot ground-level warehouse with loading docks, structured parking and storage. The second and third floors would cantilever over the ground-level parking area on the eastern side of the Site. There would be car parking/fleet storage on the second floor, with light industrial and commercial spaces on the mezzanine and third floor. The proposed first floor building slab would occupy 40% of the Site footprint and the remaining 60% of the Site will consist of concrete- and asphalt-paved impervious surfaces. Alternately, the proposed redevelopment of the site may not include the construction of a new building; however, final development plans will be submitted to the NYSDEC prior to the implementation of the remedy for review. Under the proposed warehouse redevelopment scenario, a SSDS with a sealing layer vapor barrier/waterproofing membrane will serve as a long term mitigation measure to prevent any future human exposure to soil vapor that

may remain after the extensive remedial source removal effort is implemented. The SSDS will be installed as an active system within the portions of the building not occupied by the open air parking structure (i.e., the approximately 4,180 SF of lobby, egress and mechanical spaces that will be finished with a concrete slab).

Remedial construction will include installation of a Site-wide cover system and a NAPL stabilization system. After construction, contaminants will remain on-Site beneath the development. Contaminant release and transport mechanisms include penetrations through the asphalt pavement and any remaining exposed soil. If protective measures and remediation are not implemented, points of exposure include potential cracks in the yet-to-be determined industrial development and exposure during any future soil-disturbing activities. Routes of exposure may include inhalation of vapors or dust during any soil-disturbing work. The receptor population includes those that would have access to the new industrial development. The possible routes of exposure can be avoided or mitigated by construction and maintenance of a composite cover system and implementation of a Site Management Plan.

Future conditions on the LIRR property are anticipated to remain consistent, which will limit adverse human health exposures due to the lack exposure pathways.

2.4.4 Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure on-Site and off-site. The primary on-Site exposure pathways are for dermal contact, ingestion and inhalation of soil or soil vapor by tenant employees, personnel completing site investigations, and other authorized personnel. Exposure to NAPL and groundwater is limited to those completing investigation activities. The exposure risks can be avoided or minimized by limiting Site access and implementing the appropriate health and safety and vapor and dust suppression measures outlined in a Site-specific HASP and CAMP during ground-intrusive activities
2. In the absence of protective measures, there is a moderate risk of on-Site exposure during the construction and remediation activities. The primary exposure pathways are:
    a. Dermal contact, ingestion and inhalation of contaminated soil, groundwater, NAPL, or soil vapor by Site visitors and construction and remediation 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 exposure pathways can be avoided or minimized by performing community air monitoring, by implementing soil management measures, by following the appropriate health and safety plans, implementing vapor and dust suppression techniques, and using Site security to control access.

3. A complete exposure pathway is possible for the migration of Site contaminants to off-Site human receptors during the remedial construction phase. During this phase, Site access will be limited to authorized visitors and workers and protective measures will be used during construction to prevent completion of this pathway, including following a Site-specific HASP and implementation of a CAMP and SMMP.

4. The existence of a complete on-Site exposure pathway for Site contaminants to human receptors during proposed future conditions is unlikely, as construction of a composite cover will be completed. Regional groundwater is not used as a potable water source in this part of New York City. Potential soil vapor intrusion concerns will be addressed by the implementation of the remedy at the site.

5. The documentation reviewed for the Sims Metal Recycling Facility revealed a known source for the LNAPL impacts at the Sims site (150,000 diesel fuel oil AST and impaired piping) and documented the declining thickness of the LNAPL measured moving away from that source to the west and east along the northern property boundary. The fingerprint sample collected from the Sims Metal Recycling Facility in 2018 does not match the results of the fingerprint sample collected from the Site in 2009. As such, the LNAPL impacts at the Sims facility are attributed to historical releases of petroleum products stored on the Sims facility property and are unrelated to the Site. As noted above, NYSDEC has required further delineation of NAPL related to the Sims site to assess offsite migration from that facility.

   Based on the findings of the vacuum enhanced extraction pilot test and monthly well gauging, NAPL at the Site consists of weathered heavy oil that is sorbed to saturated Site soils in the immediate vicinity and downgradient of the former Site ASTs, and it currently exists in an immobile condition such that any off-Site migration is unlikely under current conditions.

   The existence of a complete exposure pathway for Site contaminants to off-Site human receptors is unlikely. NAPL impacts in saturated soil and groundwater are delineated on-Site to the north, west, and east, and NAPL at the Site is currently immobile and primarily sorbed to saturated Site soils. Furthermore, adjacent properties to the north and east are capped with asphalt-pavement and buildings. If

contaminant migration has historically occurred off-Site to the south, the at-grade railroad tracks associated with the MTA LIRR located immediately adjacent to the south of the Site are located in an area of elevated topography preventing access to the subsurface. Access to the south of the Site is severely limited by the significant elevation change and heavy vegetation that exists between the Site and the rail lines such that access to perform any additional investigation to determine if the NAPL impacts observed on the southern boundary of the Site would be limited to drilling within the existing rail beds. As such, further evaluation of the potential presence of NAPL beneath the southern property is infeasible and would not alter the results of this qualitative evaluation.

6. Based on the above, there is limited potential for off-Site receptors to be exposed to NAPL should it have historically migrated off-Site, and the qualitative human health exposure assessment for off-Site receptors is completed.

2.5 Remedial Action Objectives

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

2.5.1 Soil

RAOs for Public Health Protection:

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

RAOs for Environmental Protection

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

2.5.2 Groundwater

RAOs for Public Health Protection:

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

RAOs for Environmental Protection

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

2.5.3 Soil Vapor

RAOs for Public Health Protection:

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

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

This section presents an analysis of the proposed remedial alternatives that can potentially be achieved under the BCP. While a Track 1 remedial alternative is typically required to be evaluated, a preliminary review of a potential Track 1 remedy determined that that Track 1 cannot be achieved via an extensive excavation across the Site footprint due to the size of the Site and deeper presence of contamination exceeding the Unrestricted Use SCOs. Pursuing a Track 1 remediation would introduce the need for the design and construction of a support of excavation (SOE) and Site dewatering system, which are not necessary for construction of the contemplated redevelopment, to at least 20.5 feet below street level to remove the deepest known impacts in soil exceeding the NYSDEC Unrestricted Use SCOs and up to an additional five feet to remove all historic fill throughout the Site footprint. Following excavation, the entire Site footprint would need to be backfilled with clean fill to raise the Site to development grade. While implementation of a Track 1 remedy is technically feasible, the effort required to do so is cost-prohibitive, and therefore is not an economically viable option. Furthermore, as discussed below, a SSDS is an engineering control required for the Site remedy, which eliminates an unconditional Track 1 cleanup as a possible remedial alternative. As such, a Track 1 cleanup is not further analyzed in this RAWP.

The proposed SCOs under Alternative I will be a Track 4 Site-specific cleanup utilizing a combination of the NYSDEC Commercial RUSCOs and implementation of long-term engineering and institutional controls in the form of a passive NAPL recovery system, Site Management Plan and an Environmental Easement. Alternative II will be a Track 4 Site-specific cleanup utilizing the NYSDEC Commercial RUSCOs and implementation of long-term engineering and institutional controls in the form of an in-situ stabilization system, Site Management Plan and an

Environmental Easement. Both alternatives are expected to achieve the established RAOs. The Commercial RUSCOs are presented in Table 5a.

3.1 Technical Description of Alternative I – Track 4 with Passive NAPL Recovery System

Alternative I, a Site-specific Track 4 remedy, will include the following tasks:

- Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations.
- Construction of passive NAPL recovery system.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.
- Excavation, stockpiling, off-Site transport, and disposal of soil exhibiting petroleum impacts associated with Spill No. 1809113, soil in the vicinity of metals hotspots located in isolated locations on-Site, and any grossly contaminated soil source areas that may be encountered such as potentially around any encountered USTs. Excavation, stockpiling, off-Site transport, and disposal of excess non-hazardous contaminated fill as needed resulting from localized excavations for construction of proposed redevelopment structures.
- Appropriate off-Site disposal of material removed from the Site in accordance with federal, state and local rules and regulations for handling, transport, and disposal.
- Removal and decommissioning of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and disposal off-Site during Site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Collection and analysis of documentation soil samples to document soil quality remaining at the Site, to document the remediation of and support closure of Spill No. 1809113, and to document removal of hotspots impacted by lead.
- Reuse of Site soil meeting Commercial RUSCOs and Protection of Groundwater SCOs to raise Site grades.

- Importation of material meeting the Unrestricted Use SCOs, recycled concrete aggregate (RCA), or virgin crushed stone for backfilling of remediated areas and of utility trenches.
- Importation of material meeting the Commercial RUSCOs, recycled concrete aggregate (RCA), or virgin crushed stone to raise Site grade.
- Installation of a Site-wide engineered impermeable composite cover system (i.e., concrete building foundations and/or asphalt pavement.
- Placement of a demarcation barrier in residual soil areas not covered with impermeable surfaces and within utility trenches prior to backfilling with imported material.
- Importation of fill material meeting the Commercial RUSCOs or virgin crushed stone for construction of a one-foot clean fill cap in areas outside of impermeable cover.
- Completion of a survey to document the extent of the Site-wide composite cover system.
- Construction of a SSDS below any proposed building slab, including installation of a vapor barrier membrane below the slab of the proposed building and along sidewalls of any subgrade foundation elements. The SSDS will be installed as an active system within the portions of the building not occupied by the open air parking structure (i.e.; the approximately 4,180 SF of lobby, egress and mechanical spaces that will be finished with a concrete slab).
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved SMP to ensure long-term management of engineering and institutional controls, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the Site continue to maintain these controls as required and to restrict the Site to industrial and commercial uses.

The requirements for each of the Alternative I tasks are described below.

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

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

3.1.2 Excavation Dewatering

Dewatering of groundwater will be required to accommodate remedial excavation of hot spots as described in Section 3.1.3, for the installation of utilities (including stormwater infrastructure elements) and are also likely if a warehouse building is constructed for deep foundation elements. The contractor will be responsible for dewatering in accordance with applicable New York City Department of Environmental Protection (NYCDEP) and NYSDEC regulations. Treatment of dewatering fluids will be required to reduce contaminant concentrations below NYCDEP/NYSDEC effluent limitations prior to discharge. The dewatering and treatment system will be designed by the contractor's NYS-licensed Professional Engineer.

3.1.3 Contaminated Fill and Soil Removal

Elevated concentrations of lead exceeding the Commercial RUSCOs and Industrial RUSCOs were detected during the 2020 SRI. Lead was detected at a concentration of 18,300 mg/kg from 11 to 13 feet bgs at LSB-28 in the northeastern portion of the Site in the vicinity of AOC-1 and 37,200 mg/kg from 11.5 to 13.5 feet bgs at LSB-35 in the southern portion of the Site in the vicinity of AOC-4. These hotspots will be delineated via soil sampling during the RA. Excavation to remove these impacts will be determined based on the results of delineation sampling but is estimated to be completed in approximately 15-foot by 15-foot areas to a depth of 14 feet bgs. The estimated volume of material requiring removal and off-Site disposal to remediate these areas is about 230 cubic yards. Construction of a support-of-excavation (SOE) system around the perimeter of the hotspot excavations may be required.

Localized excavation for construction will also be completed as part of the Track 4 remediation. Excavated material unrelated to hotspot remediation, exhibiting no petroleum impacts, and meeting the Commercial RUSCOs will be redistributed to raise Site grade for redevelopment.

3.1.4 UST System Removal

Any USTs encountered during Site work and remedial excavation will be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5 and 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances will be registered and administratively closed with the NYSDEC petroleum bulk storage (PBS) unit. All excavation areas will be screened and inspected for the presence of petroleum-impacts to the surrounding soils. Petroleum-impacted soil, if encountered, will be excavated, stockpiled separately, characterized, and disposed of off-Site at a permitted disposal facility in accordance with applicable regulations. If the remedial or development excavation does not extend beyond the bottom of the encountered tank, additional confirmation soil samples will be collected as required.

Following removal of UST(s), affidavits of closure will be submitted to the FDNY, and PBS registration/de-registration applications will be submitted to NYSDEC.

3.1.5 Documentation Soil Sampling

Documentation soil samples will be collected across the Site at the final grade prior to the import of any additional fill required to meet Site grade requirements at a frequency of one per 5,000 square feet across the Site footprint. Endpoint samples will also be collected at the base of hotspot excavations at a frequency of one per 5,000 square feet and from hotspot excavation sidewalls (as necessary) at a frequency of one per 30 linear-feet. Sidewall samples will be collected from the base of the hotspot excavation sidewalls. An estimated 35 documentation soil samples, plus QA/QC samples, will be collected and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides/herbicides, cyanide, metals including hexavalent and trivalent chromium, PFAS, and 1,4-dioxane. Documentation soil samples will evaluate soil to remain in place after the development. No off-Site excavation will be required. Additional documentation samples will be collected following excavation of the metals hotspots as follows:

- 10 delineation soil samples (one from the base of each hotspot and one from each sidewall of each of the hotspots), plus QA/QC samples, will be collected and analyzed for lead. The delineation samples for the hotspots will also serve as end-point samples for the hotspots.

In the location of unidentified USTs, if the remedial or development excavation does not extend beyond the bottom of the encountered tank, five documentation samples will be collected from each excavation and will consist of one sample per excavation sidewall and a sample from each excavation base. As necessary, post removal soil samples will be collected in accordance with

the requirements of CP-51. Samples will be analyzed for CP-51 List VOCs and SVOCs and compared to the CP-51 Table 2 Soil Cleanup Levels for Gasoline Contaminated Soils or Table 3 Soil Cleanup Levels for Fuel Oil Contaminated Soil and the 6 NYCRR Part 375-6.8(a) Unrestricted Use SCOs, depending on the contents of the USTs.

3.1.6 SSDS and Required Sealing Layer Vapor Barrier/Waterproofing Membrane

Soil vapor samples collected during the 2018 RI and 2020 SRI revealed vinyl chloride, carbon tetrachloride, and PCE at concentrations above the respective NYSDOH Soil Vapor Intrusion Matrices monitoring and/or mitigation threshold in three samples in the eastern and southeastern areas of the Site. To mitigate potential soil vapor intrusion into the approximately 4,180 SF of lobby, egress (i.e., stairwells) and mechanical spaces that will be finished with a concrete slab, an active SSDS and minimum 20-mil vapor barrier/waterproofing membrane (required sealing layer) will be designed and installed within these areas.

3.1.7 Passive NAPL Recovery System

A product recovery trench will be designed and installed along the southern Site boundary adjacent to the extents of NAPL impacts observed during the 2018 RI and 2020 SRI to prevent off-Site migration. A second leg of the trench will extend northward into the delineated NAPL plume to directly target the onsite NAPL impacts and to accommodate for potential hydrogeological interference from the former AST foundations remaining onsite. The western end of the trench beyond the western edge of the plume will also extend northward to prevent further migration. The recovery trench will be installed to the top of the clay layer, will be approximately 3 feet in width, and will consist of clean stone fill and a poly liner cover. In order to recover any product collected in the trench, 8-inch diameter sumps screened (i.e., minimum 20-slot) across the water table will be installed within the trench approximately every 20 linear feet with flush mount access hatches at the surface. Where the recovery trench extends underneath the any proposed building extents, the spacing between sumps may be increased to minimize access required within the building. Each sump will be equipped with a passive skimmer (i.e., SOS® Passive Skimmer) containing a floating intake head, which accommodates fluctuations in groundwater elevation (i.e., tidal influence). The intake head is hydrophobic, which allows only free-floating LNAPL to be collected, without taking water, and stores collected product in the built-in reservoir for manual extraction and proper offsite disposal. All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental

Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e., a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

3.1.8 Reuse of Material for Raising Site Grade

Soil excavated during the remedy may be reused to raise Site grade if completed in accordance with Section 5.3.7. Reused soil must be non-hazardous and must not be grossly-impacted. All soil proposed for reuse must meet the Commercial RUSCOs and the Protection of Groundwater (PGW) SCOs for compounds identified in the June 2022 SRIR that exceeded the groundwater SGVs (refer to Table 5b). Attainment of these criteria will be based either on the results of the June 2022 SRIR or the results of sampling conducted on the material proposed for reuse in accordance with Table 5.4(e)10 of DER-10. All excavated soil will be screened in the field for grossly contaminated material, which is identifiable either visually, through strong odors, by elevated vapor levels or is otherwise readily detectable without laboratory analysis (See 6 NYCRR Part 375-1.2(u)). Grossly contaminated soil that is excavated will be segregate and will not be reused on site. Soil removed during implementation of the remedy or removed for grading or other purposes that meets the Commercial RUSCOs and PGW SCOs and does not result in a nuisance condition per Commissioner's Policy CP-51 Section G may be reused as backfill but will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

3.1.9 Imported Material for Excavation Backfill and Raising Site Grade

Importing material will be required to backfill remedial excavations, backfill utility trenches, and/or to raise the Site grade to the development elevation needed for construction. Any imported backfill shall comply with 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10, and Appendix 5.

Imported material for remedial excavation backfill and utility trench backfill will consist of fill that meets the Unrestricted Use SCOs and imported material for raising Site grade will consist of fill that meets the Commercial RUSCOs. All imported fill material will consist of fill meeting the NYSDEC Sampling, Analysis, and Assessment of PFAS guidance (June 2021) and Part 360.13(f) requirements for acceptable fill material uses, or other acceptable fill material such as virgin stone from a quarry or RCA.

If RCA is imported to the Site, it will come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 80 sieve). RCA is not acceptable for, and will not be used as, Site cover or drainage material.

3.1.10 Demarcation Barrier

In areas that will not be covered with an impermeable surface such as the building slab or concrete- and asphalt-paved driving and parking areas, a physical demarcation layer, consisting of orange snow fence or equivalent material will be placed on the top of residual contaminated soil to provide a visual reference. A demarcation barrier will be placed prior to backfilling utility trenches with imported material in accordance with Section 3.1.9. This demarcation layer will constitute the top of the zone that requires adherence to special conditions for disturbance of contaminated residual soil defined in an SMP.

3.1.11 Composite Site Cover

A composite cover system will be constructed throughout the Site consisting of either a concrete building slab and foundation walls and/or a concrete- and asphalt-paved driving and parking area. In areas where an impermeable cover is not present, the cover system will include a demarcation layer and a minimum one foot of approved imported material. The cover system will serve for the protection of human health by preventing contact with residual contaminated Site soil.

Imported material for construction of composite Site cover will consist of fill that meets the Commercial RUSCOs, NYSDEC Sampling, Analysis, and Assessment of PFAS guidance (June 2021) and Part 360.13(f) requirements for acceptable fill material uses, or other acceptable fill material such as virgin stone from a quarry. RCA is not acceptable for, and will not be used as, Site cover.

Following construction of the Site-wide cover system, a land survey will be performed by a NYS-licensed surveyor. The survey will define the extent of the cover system subject to long-term management. A map showing the survey results will be included in the FER and an SMP.

3.1.12 Environmental Easement

An environmental easement will be recorded referencing Institutional Controls (ICs) and Engineering Controls (ECs) that are part of the selected remedy, which will be binding upon all subsequent owners and occupants of the property. The ICs will: 1) restrict the Site to industrial and commercial uses, although land use is subject to local zoning laws; 2) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC or NYSDOH; 3) require implementation of an NYSDEC-approved SMP; 4) require the completion and submission to the NYSDEC a periodic certification of ICs and ECs in accordance with Part 375; and 5) include a Soil Excavation Work Plan to manage future excavation of on-Site soil. The ECs will be the composite cover system, NAPL recovery system, and SSDS/vapor barrier described in this RAWP.

3.1.13 Site Management Plan

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

1. An Excavation Work Plan which details the provisions for management of future excavations in areas of remaining contamination.
2. Descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions.
3. Provision for monitoring and maintaining the SSDS.
4. Provisions for the management and inspection of the identified ECs.
5. Maintaining Site access controls and NYSDEC notification.
6. The steps necessary for the periodic reviews and certification of the ICs and/or ECs.
7. A Monitoring Plan to assess the performance and effectiveness of the remedy. The Monitoring Plan will include, but may not be limited to a schedule of monitoring and frequency of submittals to NYSDEC.

3.2 Technical Description of Alternative II – Track 4 In-Situ Solidification, Excavation, Soil Cover, Sub-Slab Depressurization, and Institutional Controls

Alternative II, a Site-specific Track 4 remedy, will include the same requirements as those for Alternative I with the exception of the following elements:

- SOE installation and excavation for removal of three former AST foundations.
- Construction of an in-situ stabilization system.

3.2.1 In-Situ Stabilization (ISS)

Cement based in-situ soil stabilization and solidification (ISS) has a proven track record of implementation at low-mobility NAPL-contaminated soil sites. The primary objective of the ISS is to permanently immobilize soil contaminants into a soil-cement matrix. Immobilizing contaminants into the ISS monolith will meet the RAOs defined elsewhere throughout this document.

In support of a Site-specific ISS remedy implementation, considering the contaminants of concern and the lithology within the target treatment zone, Langan will perform a bench-scale treatability test. The results of the treatability study will provide insight into the effectiveness and efficiency of different potential mixes, so that an optimal stabilization mix can be determined and implemented accordingly. Each mix will be tested for its unconfined compressive strength (UCS) and hydraulic conductivity – after 28 days of curing the UCS preferred range is 50 to 200 psi (with an upper limit of 300 psi) and the hydraulic conductivity shall be less than $1 \times 10\text{-}6$ cm/s. In addition, an evaluation of potential swelling will be completed for each mix – a mix that has minimal swelling is preferred, as it will reduce the volume of excess soils that will need to be disposed of off-Site. The mixes will likely consist of a mixture of Portland cement and/or bentonite, and a stabilizing agent. The results of the treatability study will be reported in the final design in support of the final remedy.

The ISS remedy is proposed to extend laterally across the approximately 38,000 square feet identified during previous remedial investigation activities as showing evidence of NAPL impacts (i.e., NAPL plume). Similarly the depth of the ISS remedy will encompass previously identified NAPL impacts; although it will vary throughout the target treatment area, the ISS monolith will start at approximately six feet below existing ground surface and extend to 15 to 20 feet below existing ground surface. As impacts have not been observed beneath the confining clay layer which underlays the Site, the proposed ISS remedy will not fully penetrate the clay layer anywhere within the target treatment area. Refer to Figure 7A for the lateral extents of the proposed ISS remedy. Figures 7B through 7D identified the vertical extents of the proposed ISS remedy. As future site development will require installation of piles through the ISS monolith, the

design considers an UCS upper limit of 300 psi – this will allow for the installation of piles through the ISS monolith, while not damaging the monolith. Precautions will also be established which will prevent any potential downward migration of contaminants due to the installation of piles.

Prior to implementing the ISS remedy, the three westernmost existing subsurface tank foundations will be removed from within the target treatment area as detailed in Section 3.2.2 below and shown in Figure 7A. Due to variation in topography and groundwater elevation across the site, a minimum of 2-feet and up to 4-feet of cover soil within the target treatment area will also be excavated and stockpiled onsite. All soil and materials handling will be implemented in accordance with the Soil/Materials Management Plan presented as Section 5.4. The removal of this soil will facilitate the implementation of ISS at the proposed treatment interval between 6 and 15 to 20 feet below existing ground surface. It will also allow for soil swelling associated with the ISS and prevent heaving of the ground surface. The need for support of excavation measures will be evaluated and implemented, as needed, prior to implementing the ISS remedy. Support-of-excavation will likely consist of sloping or benching, if required. The ISS remedy will implemented via vertical mixing augers and/or excavator bucket mixing. The contractor will be responsible for demonstrating the target depths are met via penetration depth of the auger and Kelley Bar or a calibrated geographic positioning system (GPS) unit. The contractor will use overlapping bore patterns to create a radius of influence as to allow for complete lateral coverage of the area subject to treatment and allow sufficient overlap to ensure continuity and complete and homogeneous treatment of soil in the ISS area. The surface soil excavation and implementation of the ISS will be completed in phased approach, to reduce the size of the treatment area being opened and disturbed at one time. During implementation, the contractor will provide means for Langan to collect performance samples for curing and offsite testing. Langan will monitor the QA/QC parameters, UCS and hydraulic conductivity, to verify achievement of the ISS performance criteria, as outlined above.

After completion of the ISS remedy and subsequent QA/QC activities, excavated soil previously stockpiled for reuse will be used to backfill from the top of the ISS monolith to the Site surface a ISS monolith will be allowed to cure so that the swell can be measured. Soil removed during implementation of the remedy or removed for grading or other purposes which that meets the Commercial RUSCOs and PGW SCOs and does not result in a nuisance condition per Commissioner's Policy CP-51 Section G may be reused as backfill but will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Material excavated to facilitate the construction of the ISS will be disposed of offsite in accordance with the requirements of the Soil/Materials Management Plan presented as Section 5.4.

The extents of the ISS construction are shown in Figures 7A through 7D.

3.2.2 Demolition of AST Foundations

The concrete slabs of the three westernmost former ASTs, which range in thickness between 2.5 feet and 4.25 feet, will be demolished and disposed of off-Site to accommodate construction of the ISS. As the base of the foundations extend up to 8 feet below site grade, construction of a SOE system around the perimeter of the former foundations may be required. Based on geotechnical investigations previously completed by Langan, piles are not known to exist beneath the foundations; however, the potential exists that the former ASTs were supported on timber piles of unknown length. If piles are encountered during the demolition of the subsurface foundations they will be removed to the extent practicable and such that they will not impair the performance of the ISS. Any removal will be performed prior to the construction of the ISS. Piles removed from the former foundations will be properly segregated, sampled for disposal characterization and disposed of off-site in accordance with Section 5.3. The lateral and vertical extents of the foundations to be removed are shown on Figure 7A and 7C, respectively.

The potential presence of timber piles beneath the former ASTs will be evaluated during a Pre-Design Investigation. A work plan identifying the scope of this investigation will be provided to the NYSDEC for review prior to mobilizing to the site and the results will be submitted in a subsequent letter report.

3.3 Evaluation of Remedial Alternatives

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

1. Protection of Public Health and Environment
2. Compliance with Standards Criteria and Guidance (SCGs)
3. Reduction of Toxicity, Mobility, or Volume
4. Short-Term Effectiveness and Permanence
5. Long-Term Effectiveness and Permanence
6. Implementability
7. Cost Effectiveness
8. Community Acceptance
9. Land Use

3.3.1 Overall Protection of Public Health and the Environment

Both alternatives will eliminate pathways of exposure from on-Site contaminated media and will prevent off-Site migration of NAPL impacts. Localized areas of contaminated soil/fill will be excavated for off-Site disposal. Soil with contaminant concentrations exceeding the Commercial RUSCOs and/or Industrial RUSCOs will remain to a depth of 16 feet bgs, provided it is not a source of contamination; however, a Site-wide composite cover system will prevent contact with underlying contamination and both proposed remedial systems will prevent the potential off-Site migration of NAPL. Encountered USTs will be decommissioned and RAOs for public health will be met through the construction of the Site-wide cover system which will eliminate possible ingestion, inhalation, or dermal contact. The environment will be protected by implementing and enforcing soil management controls when needed during future Site excavation and any other institutional and engineering controls by implementation of the SMP and through enforcement of the EE.

Public health will be protected during remediation under both remedial alternatives by implementing and enforcing dust, odor, and organic vapor control and monitoring plans, procedures when needed.

3.3.2 Compliance with Standards, Criteria, and Guidance

Analytical results from the SRI revealed that for samples collected from within the NAPL-impacted area of the Site, the presence of NAPL has not resulted in greater impacts to soil and groundwater than those identified throughout the remainder of the Site where only historic fill or historical gasoline impacts were encountered. Both Alternatives will be in compliance with all applicable standards, criteria, and guidance listed in Section 4.1.1 by removing metals hot spots, implementing Commercial RUSCOs, and through the use of long term Site Management controls. While implementing either remedy, protection of public health and the environment will be maintained by enforcing a Site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-Site construction safety will be followed by Site contractors performing work.

3.3.3 Reduction of Toxicity, Mobility, and Volume

As noted above, the presence of NAPL has not had a significant negative impact on the soil and groundwater chemistry at the Site and has therefore not contributed to increased toxicity in Site media. As such, both remedial alternatives prioritize permanently reducing the mobility and volume of contamination. For both alternatives this will be achieved by the removal and off-Site disposal of lead-impacted soil hot spots, localized excavation of contaminated soil/fill for off-Site

disposal as needed for Site redevelopment, construction and maintenance of a Site-wide cover system, and construction and operation of a SSDS for any proposed buildings.

Both Alternative I (a passive NAPL recovery system) and Alternative II (ISS) would prevent off-Site migration of NAPL. Passive NAPL collection via the monthly deployment of oil-absorbent socks has been completed since September 2020 has resulted in the recovery of approximately 2.04-gallons of NAPL as of May 2021. Based on the pilot test results which determined that the NAPL present on Site is immobile and primarily sorbed to saturated Site soils, and the minimal volume of NAPL recovered to date via passive means, installation of an Alternative I passive NAPL recovery system would not significantly contribute to reduction of contaminant volume. However, a passive system would prevent the off-Site migration of NAPL should site conditions change such that the NAPL is mobilized.

Implementation of Alternative II, an ISS, would also not reduce the volume of NAPL impacts; however, construction of an ISS monolith would prevent off-Site migration via the permanently immobilization the NAPL throughout the lateral and vertical extents in which it has been detected.

3.3.4 Short-Term Effectiveness and Permanence

Both alternatives will remove similar volumes of soil for the remediation of metals impacts and to accommodate the remedy to address NAPL impact, and will involve a generally equivalent amount of truck traffic. Disposal of the excavated soil and fill will require approximately 20-60 20-cubic-yard truck trips, and importing material to backfill the excavation and raise Site grades to the development elevation will require about 1,040 20-cubic yard trips. Implementing either Alternative will require approximately seven months of effort (assuming normal work hours).

Under both remedial alternatives, dust will be controlled by the on-Site application of water spray as needed and the truck inspection station to avoid off-Site tracking of soil. Engineering controls, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering portions of the excavation will be used to suppress odors/dust when required. Work will be modified or stopped according to the action levels defined in the CAMP. Alternative II will expose more of the petroleum impacts as part of remedy implementation; however, the in-situ method of installation will limit the amount of surficial disturbance of impacted material, which may result in more odors. If required, odor suppression will be addressed by applying the previously noted suppression media and by utilizing a phased construction approach to reduce the size of the treatment area being opened and disturbed at one time. Short term impacts are generally similar between Alternative I and Alternative II, although Alternative I is slightly less impactful in the short term.

3.3.5 Long-Term Effectiveness and Permanence

The risks associated with leaving contaminated soil in place will be minimized, because both alternatives will eliminate potential exposure pathways to contaminated soil via the construction of a Site-wide composite cover system and implementation of long term Site Management controls. An EE and SMP will be put in place to maintain the cover system, the NAPL recovery system, and the SSDS at the Site and, if necessary, prohibit ingestion of groundwater; ingestion of groundwater is also precluded by Article 141 of the NYCDOH code, which prohibits potable use of groundwater without prior approval. The long-term effectiveness of each Alternative similarly mitigates environmental risks and satisfies the objectives of this criterion.

Both Alternative I and Alternative II will prevent off-Site migration of NAPL impacts. As noted above, neither Alternative would significantly reduce the volume of NAPL impacts. An Alternative I passive system would prevent the off-Site migration of NAPL should Site conditions change such that the NAPL is mobilized; however, implementation of Alternative II, construction of an ISS monolith, would prevent off-Site migration via the permanent immobilization the NAPL source material throughout the lateral and vertical extents in which it has been detected.

3.3.6 Implementability

For both Alternatives, hot spot excavation and backfilling will be completed with standard bucket excavators. Both Alternatives also include installation of an active SSDS with a sealing layer vapor barrier for any proposed buildings and a NAPL recovery system. The implementability of both Alternatives is high due to the availability of local contractors, personnel, and equipment and frequency of which this type of remediation is completed in this region. Coordination between trades will likely be required. However, less robust long-term operations and maintenance activities are necessary for Alternative II. Furthermore, a passive system will generate waste requiring disposal, whereas installation of an ISS will not. Both Alternatives are considered to be feasible; however, Alternative II is slightly more implementable.

3.3.7 Cost Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 4 remediation with a passive NAPL recovery system is about $12.8 million. Alternative I is the more cost effective option because installation of a passive NAPL recovery system requires lower upfront capital costs (approximately $680,000), although it requires higher annual operating/monitoring costs (approximately $230,000 annually). Table 6 details the individual cost components used to arrive at this cost estimate.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated cost of a Track 4 Cleanup with an ISS system is about $15.5 million. This alternative is 20% more expensive as upfront capital costs are significantly higher (approximately $3.8 million), although annual monitoring costs are lower (approximately $120,000 annually) for an ISS system than for a passive NAPL recovery system. Table 7 details the individual cost components used to arrive at this cost estimate.

Both Alternatives will leave contamination in place that will require monitoring over the long term to determine if the composite cover system remained effective in its protectiveness of human health and the environment.

3.3.8 Community Acceptance

Both remedial Alternatives are expected to be acceptable to the community because the potential exposure pathways to on-Site contamination will be addressed upon completion of the respective remedies. The Alternative II ISS system is more disruptive to Site operations as the remedy will disturb approximately 40% of the Site footprint, which may be disruptive to neighboring properties. The selected remedy will be subject to a 45-day public comment period and will incorporate substantive public comments before being approved.

3.3.9 Land Use

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with either of the Alternatives.

3.4 Selection of Preferred Remedy

Both alternatives will be protective of human health and the environment and meet the remedy selection criteria. Both alternatives achieve all of the remedial action goals established for the redevelopment project, effectively reduces contaminant mobility, and is effective in the reduction of contaminant toxicity and volume. Alternative I will require greater operation and maintenance costs. Alternative II will require greater capital costs, while being more disruptive to site conditions; however, Alternative II is also more implementable due to there being less coordination required for implementation. Both alternatives require the implementation of ICs and EC; however, these controls should be easily implementable long-term pursuant to an SMP and EE, which runs with the land. Both alternatives will require some long-term Site management, engineering controls, and associated future costs.

Alternative II is the selected remedy. Figure 7 depicts the Alternative II remediation plan.

3.4.1 Zoning

According to the New York City Planning Commission Zoning Map 9b, the Site is within a Manufacturing District (M3-1) and is currently designated for warehouse use (E9) by the New York City Department of Finance. Site zoning is consistent with future Site of the property.

3.4.2 Surrounding Property Uses

The surrounding land uses include multi-story industrial and manufacturing buildings.

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

3.4.3 Citizen Participation

The CPP is discussed in Section 4.1.9.

3.4.4 Environmental Justice Concerns

The Site is located in a potential Environmental Justice area. NYSDEC's Office of Environmental Justice acts as an advocate on behalf of these areas, which are disproportionately affected by environmental burdens. Construction and operation of a future building will provide new employment opportunities to the area.

3.4.5 Land Use Designations

There are no federal or state land use designations.

3.4.6 Population Growth Patterns

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

3.4.7 Accessibility to Existing Infrastructure

To construct the proposed development, demolition of the remaining on-Site structures has been completed. To demolish the structures, the property was disconnected from its existing infrastructure. Upon completion of the proposed development, water and sewer service will be provided by NYC water and sewer utilities, and electric and natural gas services will be supplied by Consolidated Edison. The property is nearby to New York City subway and bus routes.

3.4.8 Proximity to Cultural Resources

There are no City Landmarks located within 0.5 mile of the Site.

3.4.9 Proximity to Natural Resources

Potential wetlands on or near the Site were evaluated by reviewing the National Wetlands Inventory and NYSDEC regulated wetlands. Based on these documents, no mapped wetlands are listed on the subject property, although the Dutch Kills Creek is located adjacent to the west and Newtown Creek is approximately 375-feet south of the subject property.

3.4.10 Off Site Groundwater Impacts

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

3.4.11 Proximity to Flood Plains

According to the National Flood Insurance Rate map for the City of New York published by the Federal Emergency Management (FEMA) (Community Panel No. 3604970202F, effective date September 5, 2007), the Site is located in Zone AE, which is designated for areas that present a 1% annual chance of flooding. Construction of the proposed building will require importing fill material in accordance with the requirements of this RAWP to raise grades above the FEMA floodplain elevation.

3.4.12 Geography and Geology of the Site

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

3.4.13 Current Institutional Controls

The Site does not have any institutional controls.

3.5 Summary of Selected Remedial Actions

Alternative II, a Track 4 Site-specific cleanup utilizing a combination of the NYSDEC Commercial RUSCOs and implementation of engineering controls and long-term institutional controls, will include the following tasks:

- Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.

- Construction of an ISS system.
- Demolition and removal of three former AST foundations.
- Excavation, stockpiling, off-Site transport, and disposal of soil exhibiting petroleum impacts associated with Spill No. 1809113, soil in the vicinity of metals hotspots located in isolated locations on-Site, and any grossly contaminated soil source areas that may be encountered such as potentially around any encountered USTs. Excavation, stockpiling, off-Site transport, and disposal of excess non-hazardous contaminated fill as needed resulting from localized excavations for construction of proposed redevelopment structures.
- Appropriate off-Site disposal of material removed from the Site in accordance with federal, state and local rules and regulations for handling, transport, and disposal.
- Removal and decommissioning of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and disposal off-Site during Site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Collection and analysis of documentation soil samples to document soil quality remaining at the Site, to document the remediation of and support closure of Spill No. 1809113, and to document removal of hotspots impacted by lead.
- Reuse of Site soil meeting Commercial RUSCOs and PGW SCOs to raise Site grades.
- Importation of material meeting the Unrestricted Use SCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone for backfilling of remediated areas and of utility trenches.
- Importation of material meeting the Commercial RUSCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone to raise Site grade.
- Installation of a Site-wide engineered impermeable composite cover system (i.e., concrete building foundations and/or asphalt pavement).
- Placement of a demarcation barrier in residual soil areas not covered with impermeable surfaces and within utility trenches prior to backfilling with imported material.
- Importation of fill material meeting the Commercial RUSCOs or virgin, native crushed stone for construction of a one-foot cap in areas outside of impermeable cover.
- Completion of a survey to document the extent of the Site-wide composite cover system.
- Construction of a SSDS below any proposed building slab, including installation of a vapor barrier membrane below the slab of the proposed building and along sidewalls

of any subgrade foundation elements. The SSDS will be installed as an active system within the portions of the building not occupied by the open air parking structure (i.e.; the approximately 4,180 SF of lobby, egress and mechanical spaces that will be finished with a concrete slab).

- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved SMP to ensure long-term management of engineering and institutional controls, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the Site continue to maintain these controls as required and to restrict the Site to industrial and commercial uses.

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

4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section. Where referenced, copies of the full plan are provided in the appendices.

4.1.1 Standards, Criteria and Guidance

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

- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 – Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators

- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 750 –SPDES Permits
- CP-43 – CP on Groundwater Monitoring Well Decommissioning (December 2009)
- CP-51 – Soil Cleanup Guidance (2010)
- DER-10 – Technical Guidance for Site Investigation and Remediation (May 3, 2010)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March, 2010)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006)
- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs (June 2021)
- USEPA OSWER Directive 9200.4-17 – Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (December 1997)
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.2 Site Specific Construction Health & Safety Plan

The Remediation Engineer (RE) prepared a Site-specific CHASP, which is included as Appendix D. The CHASP will address Site-specific contaminants and will apply only to remedial and construction-related work on-Site. Contractors operating on the Site are required to adhere to their own plans that, at a minimum, meet the requirements of the CHASP. Remedial work performed under this plan will be in compliance with governmental requirements, including Site and worker safety requirements mandated by the Federal Occupational Safety and Health Administration (OSHA). The CHASP provides a mechanism for establishing on-Site safe working conditions, safety organization, procedures, and PPE requirements during implementation of the remedy. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes

29 CFR 1910.120 and 29 CFR 1926.65). The CHASP includes, but is not limited to, the following components:

- Organization and identification of key personnel
- Training requirements
- Medical surveillance requirements
- List of Site hazards
- Excavation safety
- Work zone descriptions
- Personal safety equipment and protective clothing requirements
- Decontamination requirements
- Standard operating procedures
- Protective measure plan
- CAMP
- Safety Data Sheets

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

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

4.1.3 Quality Assurance Project Plan

The RE has prepared a Quality Assurance Project Plan (QAPP) that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals, remedial action objectives, and is completed in accordance with the design specifications. The QAPP is provided as Appendix E and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy;
- Qualifications of the quality assurance officer;

- Sampling requirements including methodologies, quantity, volume, locations, frequency, acceptance and rejection criteria; and
- Description of the reporting requirements for quality assurance activities including weekly quality assurance review reports, periodic quality assurance and quality control audits, and other report and data submissions.

4.1.4 Construction Quality Assurance Plan

The RE has prepared the following Construction Quality Assurance Plan (CQAP) that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals, remedial action objectives, and is completed in accordance with the design specifications. Because the remedy is being accomplished through construction, the contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are identified below. Project personnel resumes are provided in Appendix F.

The following project personnel are anticipated to implement the RAWP.

Remediation Engineer (RE):	Stewart Abrams, P.E.
Project Manager:	Amanda Forsburg, CHMM
Langan Health & Safety Officer:	Tony Moffa, ASP, CHMM, COSS
Langan Site Safety Coordinator:	Ashley Sandve
Qualified Environmental Professional (QEP):	Chris McMahon, CHMM
Field Team Leader:	Ashley Sandve
Quality Assurance Officer:	Joe Conboy

The QEP or RE will directly supervise field engineers, scientists, and/or geologists that will be on Site during the remedial action to monitor particulates and organic vapor in accordance with the CAMP. Daily reports will be submitted to the NYSDEC and NYSDOH and will include reporting of any CAMP results that exceed the specified action levels.

The QEP or RE will directly supervise field engineers, scientists, and/or geologists who will meet with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. The field engineer/scientist/geologist will document remedial

activities in the daily report. This document will be forwarded to the Field Team Leader on a daily basis and to the Project Manager and the RE on a weekly basis.

The QEP or RE will directly supervise field engineers, scientists and/or geologists who will screen the excavation with a PID during intrusive activities. PID readings will be noted in the record. PID readings that exceed action levels will be reported to the NYSDEC and NYSDOH in the daily reports. The field engineer/scientist/geologist will collect the post-excavation soil samples in accordance with this RAWP.

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

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

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

4.1.5 Soil/Materials Management Plan

The RE has prepared a Soil/Materials Management Plan (SMMP), which includes detailed plans for managing soil/materials that are disturbed at the Site, including excavation, handling, storage, transport and disposal. It also includes controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with applicable federal, state and local laws and regulations. The SMMP is further described in Section 5.4.

4.1.6 Erosion and Sediment Control Plan

Where needed, silt fencing or hay bales will be installed around the perimeter of the remediation area in compliance with a NYSDEC-approved Storm Water Pollution Prevention Plan (SWPPP). Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of silt fence toe anchors shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

4.1.7 Community Air Monitoring Program

A CAMP was prepared for the Site as part of the CHASP (Appendix D), and is further discussed in Section 5.4.12.

4.1.8 Technical Design of the In-Situ Stabilization Remedy

The technical design of the ISS remedy will be prepared and submitted for NYSDEC review prior to the implementation of the remedy.

4.1.9 Citizen Participation Plan

Fact Sheets describing the Remedial Action proposed in the RAWP will be distributed through DEC Delivers, the NYSDEC's email listserv service and online Environmental Notice Bulletin. Additional Fact Sheets will be distributed to parties on the Site Contact List to announce: 1) a 45-day comment period for this RAWP; 2) the completion of the Remedial Action once implemented, with a summary of the FER; and, 3) the issuance of the Certificate of Completion for the Site.

No changes will be made to the approved Fact Sheets without written consent of the NYSDEC. Other information, such as brochures and flyers, will not be included with the Fact Sheet mailing. Due to the permanent closure of the Queens Library at Court Square, the CPP has been revised to reflect the addition of the Queens Library at Long Island City as a designated repository. The revised CPP for this project is included in Appendix G.

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

Borough of Queens, Community Board 2
Lisa Deller, Chairperson
43-22 50th Street, Room 2B
Queens, NY 11377
Email: qn02@cb.nyc.gov
Website: https://www1.nyc.gov/site/queenscb2/index.page

Queens Library at Long Island City
37-44 21st Street
Long Island City, NY 11101
Phone: (718) 752-3700
Hours (Call to verify):

Monday	Closed
Tuesday	1:00 p.m. to 5:00 p.m.
Wednesday	10:00 a.m. to 5:00 p.m.
Thursday	12:00 p.m. to 7:00 p.m,
Friday and Saturday	10:00 a.m. to 5:00 p.m.
Sunday	Closed

Documents will also be posted on the NYSDEC DECinfo Locator website (https://www.dec.ny.gov/data/DecDocs/C241236/).

4.1.10 Remedial Design and Green Remediation Principles

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and Site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term
- Reducing direct and indirect greenhouse gases and other emissions
- Increasing energy efficiency and minimizing use of non-renewable energy
- Conserving and efficiently managing resources and materials
- Reducing waste, increasing recycling and increasing reuse of materials that would otherwise be considered a waste
- Maximizing habitat value and creating habitat when possible
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development

4.2 General Remedial Construction Information

4.2.1 Project Organization

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

4.2.2 Remedial Engineer

The RE for this project will be Stewart Abrams, P.E. The RE is a registered professional engineer licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program for the 28-90 Review Avenue Site. The RE will certify in the FER that the remedial activities were observed by Langan personnel under his supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with the RAWP.

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

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

4.2.3 Remedial Action Construction Schedule

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

4.2.4 Work Hours

The hours for operation of remedial construction will conform to the New York City Department of Buildings (NYCDOB) construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Volunteer of any variances issued by the NYCDOB. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

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

4.2.6 Traffic Control

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

4.2.7 Contingency Plan

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

4.2.7.1 Discovery of Additional USTs

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

4.2.7.2 Discovery of Additional Contaminated Soil

During remediation and construction activities, the soil will be continuously monitored by the RE's field representatives using a PID as well as visual and olfactory field screening techniques to identify additional soil that may not be suitable for the selected disposal facility(ies) or on-Site reuse. If discovered, this material will be segregated and sampled in accordance with disposal facility requirements. If the facility is not permitted to receive the suspect materials, the material will be disposed of off-Site at a permitted facility able to receive the material based on the characterization data.

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

4.2.8 Worker Training and Monitoring

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

4.2.9 Agency Approvals

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

4.2.10 Pre-Construction Meeting with NYSDEC

Prior to the onset of construction, a meeting will be held between the NYSDEC, QEP and/or RE, Volunteer, Construction Manager, and Contractor to discuss project roles, responsibilities, and expectations associated with the NYSDEC-approved RAWP. Notice will be provided to the NYSDEC seven days prior to Site mobilization.

4.2.11 Emergency Contact Information

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

4.2.12 Remedial Action Costs

The estimated cost of the Track 4 Remedial Action is $15.5 million. An itemized and detailed summary of estimated costs for the remedy is provided in Table 7.

4.3 Site Preparation

4.3.1 Mobilization

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

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

4.3.2 Erosion and Sedimentation Controls

As detailed in Section 4.1.6, silt fencing or hay bales will be installed around the perimeter of the remediation area in compliance with a NYSDEC-approved SWPPP. Best management practices for soil erosion will be selected and implemented, as needed, to minimize erosion and sedimentation off Site.

4.3.3 Monitoring Well Decommissioning

Existing groundwater monitoring wells will be properly decommissioned in accordance with NYSDEC policy CP-43 Groundwater Monitoring Well Decommissioning Policy or during excavation as part of ISS and/or future foundation construction. However, a series of five permanent groundwater monitoring wells will be installed following site redevelopment construction activities along the downgradient edge of the Site to allow for the monitoring of the natural attenuation of the dissolved phase groundwater contamination. The locations of the permanent groundwater monitoring wells are shown on Figure 7A. Details of the proposed permanent downgradient groundwater monitoring wells, their sampling and reporting of the analytical results will be provided in the Site Management Plan submitted as part of the Final Engineering Report.

4.3.4 Temporary Gravel Construction Entrance(s)

A temporary gravel construction entrance and exit will be installed on-Site for all vehicles exiting the BCP Site. The entrances will be covered with gravel or RCA and graded so that runoff water will be directed back into the Site. Vehicles exiting construction areas will be cleaned using clean water or dry brushing, as needed, to remove Site soil from the tires and undercarriages. The Contractor will protect and maintain the sidewalks and roadway at Site access and existing points.

4.3.5 Utility Marker and Easements Layout

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

The presence of utilities and easements on the Site has been investigated. It has been determined that no risk or impediment to the planned work under this RAWP is posed by utilities or easements on the Site.

4.3.6 Support-of-Excavation

Appropriate management of structural stability of on-Site or off-Site structures during remedial activities, including excavation, is the responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of work performed under this RAWP. The Volunteer and its contractors must obtain the necessary local, state, or federal permits or approvals that may be required to perform work under this RAWP. Further, the Volunteer and its contractors are responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved RAWP. As only minor excavation in limited areas is required for the remediation and redevelopment of the Site, SOE design is not anticipated to be a notable component of the remedy except as may be required for construction of portions of the ISS and removal of the AST foundations.

4.3.7 Equipment and Material Staging

The Contractor will notify the RE and the Volunteer, in writing with receipt confirmed, of pending Site mobilization at least 30 calendar days in advance. During mobilization, construction equipment will be delivered to the Site, temporary facilities constructed, and temporary utilities

installed. The Contractor will place and maintain temporary toilet facilities within the work areas for use by all Site personnel. The contractor will provide drinking water for all Site personnel.

4.3.8 Truck Wash and Inspection Station

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

4.3.9 Site Fencing

The Site perimeter will be secured with gated, signed, plywood fencing. The purpose of the fencing is to limit Site access to authorized personnel, protect pedestrians from Site activities, minimize construction noise, and maintain Site security.

4.3.10 Demobilization

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

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

4.4 Reporting

Periodic reports and an FER will be submitted to the NYSDEC as required to document the remedial action. Following the completion of the proposed ISS treatability study, and prior to the implementation of the ISS remedy, a final remedial design document will be prepared and submitted to the NYSDEC, which will provide specifics regarding the required ISS mix, means and methods, and schedule. Daily and monthly reports will be included as appendices to the FER.

In addition to the periodic reports and the FER, copies of the relevant contractor documents will be submitted to the NYSDEC.

The Project RE responsible for certifying all reports will be an individual licensed to practice engineering in the State of New York. Stewart Abrams, P.E. of Langan, will have this responsibility. Should Mr. Abrams become unable to fulfill this responsibility, another suitably qualified Professional Engineer will take his place.

4.4.1 Daily Reports

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

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

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information; however, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will reference the NYSDEC-assigned project number and include a description of daily activities keyed to an alpha-numeric map that identifies work areas. These reports will include a summary of air monitoring results, odor and dust problems and corrective actions, and complaints received from the public.

4.4.2 Monthly Reports

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

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

4.4.3 Other Reporting

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

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

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

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

4.4.5 Deviations from the RAWP

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

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

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

5.1 Soil Cleanup Objectives

The Soil Cleanup Objectives for the Site are the Commercial RUSCOs; SCOs for the selected remedy are listed in Table 5a.

Soil and materials management on-Site and off-Site will be conducted in accordance with the SMMP as described below.

5.2 Remedial Performance Evaluation (Documentation Sampling)

5.2.1 Documentation Sampling Frequency

Documentation soil samples will be collected from the surface of the material remaining in place prior to construction of the Site cover at a frequency of one per 5,000 square feet.

The proposed collection of documentation soil samples at a reduced sampling frequency of one per 5,000 square feet is based on the following:

- The proposed remedy will achieve a Track 4 cleanup – per DER-10, documentation samples will be collected to document the soil levels remaining at the Site and inform the Site Management Plan; confirmation endpoint soil samples are not required as part of the Track 4 cleanup.
- The Site contaminants of concern in soil are primarily related to former Site use including petroleum storage and can readily be observed through field screening (e.g., PID readings, visual, and olfactory means).
- The site covers an area of approximately 4.4 acres (about 192,792 square feet).

Based on the proposed reduced sampling frequency, an estimated 35 documentation soil samples, plus QA/QC samples, will be collected to document the condition of soil remaining at the Site after development. Additional documentation samples will be collected as follows:

- 10 delineation soil samples (one from the base of each hotspot and one from each sidewall of each of the hotspots), plus QA/QC samples, will be collected and analyzed for

lead. The delineation samples for the hotspots will also serve as end-point samples for the hotspots.

In the event over-excavation or additional hotspot removal is required, one sidewall soil sample will be collected for every 30 linear feet of sidewall for those areas.

5.2.1.1 Methodology

Documentation soil samples will be collected from the surface of soil remaining in place immediately prior to construction of the Site-wide cover to document contamination remaining beneath the Site-wide cover and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, herbicides, pesticides, cyanide, metals including hexavalent and trivalent chromium, and per- and PFAS and 1,4-dioxane. Samples collected to document the removal of hotspots identified during Site work will be analyzed and compared to the NYSDEC RUSCOs.

Should additional soil sampling be deemed necessary (e.g., additional tank closure, unknown environmental condition through visual evidence of a remaining source, over-excavation of failed documentation sample), documentation sampling will be conducted in accordance with NYSDEC DER-10. No off-Site excavation is required. The results will be presented in NYSDEC ASP Category B deliverable format.

5.2.1.2 Quality Assurance/Quality Control

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

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

5.2.1.3 Data Usability Summary Reports

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

5.2.1.4 Documentation Sampling Reporting

Analytical laboratories that analyze documentation soil samples, prepare results, and perform contingency sampling will be NYSDOH ELAP-certified laboratories. Documentation and endpoint soil sampling will be performed in accordance with NYSDEC DER-10 sample frequency requirements. The FER will provide a tabular and map summary of all documentation and endpoint soil sample results with a comparison to the Commercial RUSCOs. Soil samples with concentrations of contaminants above the Commercial RUSCOs, if any, will be identified.

5.2.1.5 Estimated Material Removal and Backfill Quantities

The estimated volume of soil requiring removal and off-Site disposal for the Track 4 remedy will vary based on the amount of swell that results from the proposed ISS remedy. The selected ISS mix will consider the potential for swell so as to minimize the amount of swell and subsequent off-Site soil disposal that will be required. At this time it is estimated that up to approximately 3,730 cubic yards of soil will need to be disposed of off-Site. Backfilling to return the excavated area to original grade following excavation for remediation of the metals hotspots in the eastern portion of the Site is anticipated. Up to an additional 21,000 cubic yards of fill will be required to raise grade beneath any proposed building footprint such that the first floor elevation is above the FEMA floodplain elevation and to raise grade throughout the remainder of the Site. Backfill that meets the Commercial RUSCOs and the requirements outlined in Section 5.4.9 will be imported to the Site or on-Site material that meets the requirements of 5.4.6 will be reused at the Site.

5.3 Soil/Materials Management Plan

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

The following material types are reasonably anticipated to be encountered during remediation:

- Historic Fill Material – This material refers to historic fill that contains contaminants above the Commercial RUSCOs. This material will be excavated in localized areas as needed across the Site footprint for construction of the ISS and development-related construction. Localized excavation of hotspots for the removal of elevated concentrations of metals above the Commercial RUSCOs will also be completed; these hotspots locations are presented on Figure 7A. Material excavated for localized hotspot remediation will be transported off-Site and disposed of at a facility permitted to accept the material. Documentation samples will be collected from the base and sidewalls of the excavations to document hotspot removal. A proposed endpoint documentation sample location plan is provided as Figure 8. Excavated material unrelated to hotspot remediation and ISS installation and meeting the Commercial RUSCOs will be replaced above the ISS structure to return the Site to development grade and/or redistributed to raise Site grade for redevelopment.
- Petroleum-Impacted Soil/Fill and Concrete – LNAPL and DNAPL impacts were observed in 19 soil borings from 4 to 20 feet bgs in an approximately 38,000 SF area in the central and southwestern portion of the Site during the 2018 RI and 2020 SRI. Gasoline-related VOCs also were identified in between 4 and 13 feet bgs in nine soil borings in the eastern portion of the Site and in an isolated area in the western portion of the Site as part of the 2018 RI and 2020 SRI. NAPL and gasoline impacts are delineated and may be disturbed during Site remedial work. Non-hazardous petroleum-impacted soil/fill and concrete requiring excavation as part of Site remedial work or associated with any undocumented USTs will be transported off-Site and disposed of at a facility permitted to accept the material.
- Former AST Foundation Timber Piles – Although the presence of timber piles beneath the former AST foundations has not been confirmed by the investigations completed to date, it is reasonably anticipated that they would have been utilized as the support of these former structures. As identified in Section 3.2.2, the removal of any timber piles within the area of the ISS will be necessary for the construction of the ISS. All timber piles will be properly characterized and disposed of off-Site at a facility capable of accepting them.

5.3.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by an engineer, geologist, or scientist under the direct supervision of a PE or QEP during all remedial and development excavations into known or potentially contaminated material. Soil screening will be

performed regardless of the time of year that invasive work is conducted and will take place during excavation and invasive work performed as part of the remedy and development-related construction performed prior to issuance of the Certificate of Completion, including, but not limited to, excavating for remediation, foundation construction, and utility work.

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

5.3.2 Stockpile Methods

Stockpiles will be constructed as necessary to separate and stage excavated material pending loading or characterization sampling. Stockpile areas will meet the following minimum requirements:

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

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

5.3.3 Materials Excavation and Load Out

A field engineer, scientist, or geologist under the supervision of the RE will monitor ground-intrusive work and the excavation and load-out of excavated material.

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

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

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

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

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

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

Development-related grading cuts and fills will not interfere with, or otherwise impair or compromise, the performance of remediation required by this RAWP.

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

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during Site characterization, the RI, and implementation of the remedy will be located via field measurements to the nearest permanent structures or property lines and/or via the ArcGIS Collector application on a tablet utilizing the GPS location. The information will be shown on maps to be included with the FER.

5.3.4 Materials Transport Off-Site

Transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. The trucking entrance will be determined prior to the initiation of the remedy. All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes.

These routes are the most appropriate routes to and from the Site and take into account:

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

Truck routes are shown on Figure 9. Trucks will be prohibited from excessive stopping and idling in the neighborhood outside of the Site.

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

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

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

5.3.5 Materials Disposal Off-Site

Disposal facilities will be determined at a later date and will be reported to the NYSDEC Project Manager prior to off-Site transport and disposal of excavated material. Soil/fill/solid waste excavated and removed from the Site will be handled, transported and disposed in accordance with local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

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

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

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

These documents will be included in the FER.

Non-hazardous historic fill material and contaminated soil transported off-Site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360. Historic fill and contaminated soil excavated from the Site are prohibited from being disposed of at Part 360 Registration Facilities (also known as Soil Recycling Facilities).

Soil that is contaminated but non-hazardous and is being removed from the Site may be sent to a permitted Part 360 landfill. This material is prohibited from being sent or redirected to a Part 360-15 Registration Facility.

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

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

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

A waste characterization study will be performed for soil, and any former foundation timber piles intended for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported in the FER. Data available for excavated material to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.3.6 Fluids Management

Some dewatering may be required for construction of the ISS as construction will extend beyond the groundwater table. All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e., a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

5.3.7 Materials Reuse On-Site

Soil excavated during the remedy may be reused on Site if the requirements in this section are met. Reused soil must be non-hazardous and must meet the Commercial RUSCOs and the PGW SCOs only for compounds which were identified in the June 2022 SRIR to be present in groundwater at concentrations greater than the SGVs based on the dissolved groundwater analytical results (refer to Table 5b). Attainment of these criteria will be based either on the results of the June 2022 SRIR or the results of sampling conducted on the material proposed for reuse in accordance with Table 5.4(e)10 of DER-10. Grossly-impacted soil will not be reused. All excavated soil will be screened in the field for grossly contaminated material, which is identifiable either visually, through strong odors, by elevated vapor levels or is otherwise readily detectable without laboratory analysis (See 6 NYCRR Part 375-1.2(u)). Grossly contaminated soil that is excavated will be segregate and will not be reused on site. Soil removed during implementation of the remedy or removed for grading or other purposes which that meets the Commercial RUSCOs and PGW SCOs and does not result in a nuisance condition per Commissioner's Policy CP-51 Section G may be reused as backfill but will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. . Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site. Excavated material deemed unfit for reuse will be transported for off-Site disposal.

5.3.8 Backfill from Off-Site Sources

Materials proposed for import onto the Site for excavation backfill, utility trench backfill, and/or raising Site grade will be approved by the RE and will be in compliance with the provisions in this RAWP prior to receipt at the Site. Imported material for remedial excavation backfill and utility trench backfill will consist of fill that meets the Unrestricted Use SCOs and imported material for raising Site grade will consist of fill that meets the Commercial RUSCOs. All imported fill material will consist of fill meeting the NYSDEC Sampling, Analysis, and Assessment of PFAS guidance (June 2021) and Part 360.13(f) requirements for acceptable fill material uses, or other acceptable fill material such as virgin stone from a quarry or RCA. Material from industrial Sites, spill Sites, other environmental remediation Sites, or other potentially contaminated Sites will not be imported to the Site. Solid waste will not be imported onto the Site.

Non-compliant soils will not be imported to the Site. Fill proposed for import will be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel will collect representative samples at a frequency consistent with NYSDEC DER-10 Table 5.4(e)10 – Recommended Number of Soil Samples for Soil Imported To or Exported From a Site. The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, metals including trivalent and hexavalent chromium, PFAS, and 1,4-dioxane by a NYSDOH ELAP-certified laboratory. Upon meeting the criteria for the selected proposed uses described above, the fill will be transported to the Site and segregated from impacted material, as necessary, on plastic sheeting until it is used as backfill.

If RCA is imported to the Site, it will be from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing, unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete, with no more than 10% by weight passing through a No. 80 sieve. RCA is not acceptable for and will not be used as cover or drainage material or to fill areas beneath the groundwater table. Crushed virgin stone from a permitted mine or quarry may also be imported without chemical testing if sieve analysis shows no more than 10% by weight passing through a No. 80 sieve.

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

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

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

5.3.9 Demarcation

A Track 4 remedy will be implemented; therefore, contaminated soil will be left on-Site and a physical demarcation barrier consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference in areas where impermeable cover will not be present. A demarcation barrier will be placed prior to backfilling utility trenches with imported material in accordance with Section 5.4.8. The proposed foundation slab and other impermeable cover associated with site redevelopment may also serve as a demarcation layer.

5.3.10 Stormwater Pollution Prevention

As detailed in Section 4.1.6 and 4.3.2, silt fencing or hay bales will be installed around the perimeter of the remediation area in compliance with a NYSDEC-approved SWPPP. Best management practices for soil erosion will be selected and implemented, as needed, to minimize erosion and sedimentation off-Site.

5.3.11 Contingency Plan

If USTs or other previously unidentified contaminant sources are found during on-Site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone, etc.) in accordance with Section 5.2.1. Chemical analyses will be for full scan parameters (Part 375 VOCs, SVOCs, PCBs, pesticides, herbicides, cyanide, and metals including hexavalent and trivalent chromium) as well as emerging contaminants 1,4-dioxane and PFAs. Analyses will not be otherwise limited without NYSDEC approval.

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

It is anticipated that a Track 4 cleanup will be achieved. SCOs for a Track 4 cleanup are presented in Table 5a.

5.3.12 Community Air Monitoring Plan

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

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

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

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

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

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

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

concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

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

5.3.13 Odor, Dust and Nuisance Control Plan

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

5.3.14 Odor Control Plan

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

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

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

5.3.15 Dust Control Plan

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

- Dust suppression will be achieved through the use of a dedicated water distribution system or on-Site water truck for road wetting, or an alternate source with suitable supply and pressure for use in dust control.
- Stockpiles shall be maintained in accordance with Section 5.4.2.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

5.3.16 Other Nuisances

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

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

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Because residual contaminated soil, groundwater, and soil vapor will exist beneath the Site above the Track 1 Unrestricted Use SCOs (soil), SGVs (groundwater), and NYSDOH monitoring and mitigation guidance values (soil vapor) after the Track 4 remedy is complete, ECs and ICs are required to protect human health and the environment. These ECs and ICs have been described throughout this RAWP and are described hereafter.

Following completion of a Track 4 cleanup, ECs and ICs will be implemented to protect public health and the environment by appropriately managing residual contamination. Components of the system include a Site-wide cover system, an ISS monolith, and an SSDS for vapor mitigation in any proposed buildings.

The FER will document the end point sample results on the Site in tabular and map form. This will include presentation of and exceedances of Unrestricted Use SCOs, Protection of Groundwater SCOs, and Commercial RUSCOs.

Groundwater monitoring will be implemented to document the performance of the remedy in accordance with a Site Management Plan, as discussed in Section 9.2.

7.0 ENGINEERING CONTROLS

Following completion of the remedy, it is anticipated that the Site will meet Commercial and Industrial Use throughout the Site footprint. As such, long-term engineering controls will be required as part of the remedial action in the form of a Site-wide composite cover system, an ISS monolith, and an SSDS requiring a sealing layer vapor barrier/waterproofing membrane in any proposed buildings.

7.1 In-Situ Stabilization

An ISS monolith will be installed such that it extends laterally the approximately 38,000 square feet identified during previous remedial investigation activities as showing evidence of NAPL impacts (i.e., NAPL plume). Similarly the depth of the ISS monolith will encompass previously identified NAPL impacts – although it will vary throughout the target treatment area, the ISS monolith will start at approximately six feet below existing ground surface and extend to 15 to 20 feet below existing ground surface. As impacts have not been observed beneath the confining clay layer which underlays the Site, the ISS monolith is not currently designed to penetrate the clay layer anywhere within the target treatment area, unless determined to be advantageous for future site development. As part of future Site development piles may need to be installed – precautions will be established which will prevent damage to the ISS monolith, as well as any potential downward migration of contaminants due to the installation of piles. During implementation, performance samples for curing and offsite testing will be collected to verify achievement of the ISS performance criteria.

7.2 SSDS and Required Sealing Layer Vapor Barrier/Waterproofing Membrane

Exposure to residual contaminated soil vapor into any proposed building will be prevented by construction of an active SSDS with a required sealing layer in the form of a vapor barrier/waterproofing membrane installed beneath the approximately 4,180 SF of lobby, egress (i.e.; stairwells) and mechanical spaces that will be finished with a concrete slab. The areas of the SSDS installation are presented on Figure 7A. The vapor barrier will consist of Grace Preprufe 300R (or its approved equivalent) underneath the slab and Grace Preprufe160R or Bituthene (or its approved equivalent) on the subsurface walls. Vapor barrier manufacturer's documentation and specifications are included as Appendix I.

7.3 Composite Cover System

Exposure to residual contaminated soils will be prevented by an engineered, composite cover system that will be built on the Site during the Track 4 remedy. This composite cover system will be comprised of impervious cover such as concrete building slabs, concrete and/or asphalt pavement, and at least one foot of fill meeting the Commercial RUSCOs in landscaped areas or areas of otherwise impermeable cover.

A Soil Management Plan will be included in the SMP and will outline the procedures to be followed in the event that soil with contamination remaining beneath the Site-wide cover system is disturbed after the Remedial Action is complete. Maintenance of the composite cover system will be described in the SMP in the FER.

8.0 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS

8.1 In-Situ Stabilization

The ISS monolith is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

8.2 SSDS and Required Sealing Layer Vapor Barrier/Waterproofing Membrane

The SSDS and required sealing layer vapor barrier/waterproofing membrane is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity. The SSDS will operate as specified in the NYSDEC and NYSDOH approved, PE-certified design plans without modifications, unless such proposed modifications are approved in advance by NYSDEC and NYSDOH.

8.3 Composite Cover System

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

9.0 INSTITUTIONAL CONTROLS

After the Track 4 remedy is complete, the Site will have contamination remaining in place. ECs to manage the residual contamination have been incorporated into the Track 4 remedy to render the final remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an

Environmental Easement and an SMP requiring compliance with the maintenance and monitoring of the ISS monolith, SSDS (as necessary), and cover system. These elements are described in this section.

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

9.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination above Unrestricted Use SCOs is left on-Site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Queens County Clerk. The Environmental Easement will be submitted as part of the FER.

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

The ICs that support the ECs are:

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

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

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

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose as approved by NYSDOH and NYSDEC;
- All future activities on the Controlled Property that will disturb residual contaminated material, if present, are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for commercial or industrial use only, provided the long-term ECs and ICs included in the SMP are employed and in compliance with current zoning;

- The Controlled Property may not be used for a higher level of use, such as unrestricted or residential use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

9.2 Site Management Plan

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

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

The SMP will include three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with

the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annual. The SMP will be based on a calendar year and will be due for submission to NYSDEC by March 1 of the year following the reporting period.

No exclusions for handling of residual contaminated soils, if any is remaining on the Site, will be provided in the SMP. All handling of residual contaminated material, if any, will be subject to provisions contained in the SMP.

10.0 FINAL ENGINEERING REPORT

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

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

fluids. Documentation associated with the disposal of material must also include records and approvals for receipt of the material.

- An accounting of the origin and chemical quality of each material type imported onto the Site.

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

10.1 Certifications

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

I, Stewart Abrams, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 28-90 Review Avenue Site.

I certify that the Site description presented in this Final Engineering Report is identical to the Site descriptions presented in the Brownfield Cleanup Agreement for the 28-90 Review Avenue Site.

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

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

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

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

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

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

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

11.0 SCHEDULE

Implementation of this RAWP is anticipated to begin in the third quarter of 2021. Mobilization is expected to take about one to two weeks. Once mobilization is complete, remediation of the Site will continue. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take about 7 months to complete. After completion of the remedy, a FER will be submitted to the NYSDEC for review and approval.

12.0 REFERENCES

1. Tyree Brothers Environmental Services, Inc., Subsurface Investigation, dated May 1990.
2. Tyree Brothers Environmental Services, Inc., Monitoring Well Installation and Tank Tightness Testing Summary Letter, dated 1 October 1990.
3. Tyree Brothers Environmental Services, Inc., various correspondence between Tyree and NYSDEC, dated May 1990 through November 1991.
4. Impact Environmental, Remote Sensing Survey Ground Penetrating Radar Investigation, dated 28 July 1999.
5. The Franklin Company, Tank Closure Affidavit, dated 11 May 1999.
6. Alvin Petroleum Systems, Inc., Tank Closure Affidavit, dated 5 August 1999.
7. Tyree Brothers Environmental Services, Inc., Phase I Environmental Site Assessment, dated September 2001.
8. Impact Environmental, Subsurface Investigation, dated 2 October 2008.
9. Impact Environmental, Investigation Summary Report, dated 24 June 2009.
10. Impact Environmental, Quarterly Monitoring Report, dated 12 March 2010.
11. Impact Environmental, Quarterly Monitoring Report, dated 11 June 2010.
12. Impact Environmental, Quarterly Monitoring Report, dated 10 September 2010.

13. Impact Environmental, Groundwater Monitoring Well Decommissioning Letter, dated 9 August 2011.

14. Impact Environmental, Summary of Remediation Completed, dated 16 January 2012.

15. Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., Remedial Investigation Report, dated 24 April 2019.

16. Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., Supplemental Remedial Investigation Work Plan, dated 21 April 2020.

17. Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., Supplemental Remedial Investigation Report, dated 7 October 2020.

18. Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C., Vacuum Enhanced Extraction Pilot Test Work Plan, dated 12 October 2020.

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

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

21. New York State Department of Environmental Conservation, Division of Environmental Remediation, Technical and Administrative Guidance Memorandum No. 4031 Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Waste Sites, dated October 27, 1989.

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

23. 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.

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

25. New York State Division of Water Technical and Operational Guidance Series (TOGS) 5.1.8 New York State Stormwater Management Design Manual, dated June 2008.

26. United States Environmental Protection Agency, Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, "EPA/540/S-95/504, April 1996.

TABLES

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-1A 43 LSB-1A_112118 18K0921-06 11/21/2018 0.5-2.5		LSB-1A 43 LSB-1A_112118 18K0921-06RE1 11/21/2018 0.5-2.5		LSB-1B 44 LSB-1B_112118 18K0921-07 11/21/2018 10-12		LSB-1B 44 LSB-1B_112118 18K0921-07RE1 11/21/2018 10-12		LSB-2A 41 LSB-2A_112118 18K0921-04 11/21/2018 0-2		LSB-2B 42 LSB-2B_112118 18K0921-05 11/21/2018 10-12		LSB-3A 45 LSB-3A_112118 18K0921-08 11/21/2018 0-2		LSB-3B 46 LSB-3B_112118 18K0921-09 11/21/2018 11-13		LSB-3B 46 LSB-3B_112118 18K0921-09RE1 11/21/2018 11-13		LSB-4A 47 LSB-4A_112118 18K0921-10 11/21/2018 2-4		LSB-4B 48 LSB-4B_112118 18K0921-11 11/21/2018 14-16		LSB-4B 49 DUP-2_112118 18K0921-12 11/21/2018 14-16		LSB-5A 39 LSB-5A_112118 18K0921-02 11/21/2018 1.5-3.5	
Volatile Organic Compounds (mg/kg)																																
1,1,1,2-Tetrachloroethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1,2,2-Tetrachloroethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.5		0.0026	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1,2-Trichloroethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1-Dichloroethane	0.27	0.27	240	480	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1-Dichloroethene	0.33	0.33	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,1-Dichloropropene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2,3-Trichlorobenzene	~	~	~	~	0.0027	U	NA		0.032		NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.07		0.0026	U
1,2,3-Trichloropropane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.23		0.0026	U
1,2,4,5-Tetramethylbenzene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	3.6	D	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2,4-Trichlorobenzene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.011		0.0026	U
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.0027	U	NA		0.0082	J	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0027	U	NA		0.046		NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,2-Dichloroethane	0.02	0.02	30	60	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0061	J	0.0026	U
1,2-Dichloropropane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0027	U	NA		0.01	J	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,3-Dichloropropane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0027	U	NA		0.014		NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.054	U	NA		*0.11*	U	NA		0.053	U	*11*	U	0.041	U	0.09	U	NA		0.052	U	0.079	U	0.092	U	0.052	U
2,2-Dichloropropane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
2-Chlorotoluene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
2-Hexanone (MBK)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.18		0.0026	U
4-Chlorotoluene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.018		0.0026	U
Acetone	0.05	0.05	500	1,000	0.027		NA		**0.13**		NA		**0.063**		*1.1*	U	0.0041	U	**0.1**		NA		0.0052	U	0.018		0.021		0.0064	J
Acrolein	~	~	~	~	0.0054	U	NA		0.011	U	NA		0.0053	U	1.1	U	0.0041	U	0.009	U	NA		0.0052	U	0.0079	U	0.0092	U	0.0052	U
Acrylonitrile	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Benzene	0.06	0.06	44	89	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Bromobenzene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.015		0.0026	U
Bromochloromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Bromodichloromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0049	J	0.0026	U
Bromoform	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Bromomethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Carbon Disulfide	~	~	~	~	0.0027	U	NA		0.0097	J	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0091		0.034		0.0026	U
Carbon Tetrachloride	0.76	0.76	22	44	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Chlorobenzene	1.1	1.1	500	1,000	0.0027	U	NA		0.019		NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Chloroethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Chloroform	0.37	0.37	350	700	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Chloromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Cis-1,3-Dichloropropene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Cyclohexane	~	~	~	~	0.0027	U	NA		0.013		NA		0.0027	U	0.67	JD	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Dibromochloromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Dibromomethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Dichlorodifluoromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Ethylbenzene	1	1	390	780	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Hexachlorobutadiene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Isopropyl Ether	~	~	~	~	0.0044	U	NA		0.0088	U	NA		0.0043	U	0.91	U	0.0033	U	0.0072	U	NA		0.0041	U	0.0063	U	0.0074	U	0.0041	U
Isopropylbenzene (Cumene)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
M,P-Xylene	~	~	~	~	0.0054	U	NA		0.011	U	NA		0.0053	U	1.1	U	0.0041	U	0.009	U	NA		0.0052	U	0.0079	U	0.019		0.0052	U
Methyl Acetate	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	0.0027	U	NA		0.02		NA		0.0027	U	*0.57*	U	0.002	U	0.015		NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.12		0.0026	U
Methylcyclohexane	~	~	~	~	0.0027	U	NA		0.0087	J	NA		0.0027	U	1.6	D	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Methylene Chloride	0.05	0.05	500	1,000	0.006	J	NA		0.011	U	NA		0.0053	U	*1.1*	U	0.0041	U	0.009	U	NA		0.0052	U	0.0084	J	0.011	J	0.0052	U
n-Butylbenzene	12	12	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
n-Propylbenzene	3.9	3.9	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.01		0.0026	U
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Sec-Butylbenzene	11	11	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Styrene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
T-Butylbenzene	5.9	5.9	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Tert-Butyl Alcohol	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.03		0.57	U	0.002	U	0.042	J	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Toluene	0.7	0.7	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.008	J	0.0026	U
Total Xylenes	0.26	1.6	500	1,000	0.0082	U	NA		0.016	U	NA		0.008	U	*1.7*	U	0.0061	U	0.013	U	NA		0.0078	U	0.012	U	0.03		0.0078	U
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Trans-1,3-Dichloropropene	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Trichloroethene (TCE)	0.47	0.47	200	400	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Trichlorofluoromethane	~	~	~	~	0.0027	U	NA		0.0055	U	NA		0.0027	U	0.57	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U
Vinyl Chloride	0.02	0.02	13	27	0.0027	U	NA		0.0055	U	NA		0.0027	U	*0.57*	U	0.002	U	0.0045	U	NA		0.0026	U	0.0039	U	0.0046	U	0.0026	U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-1A 43 LSB-1A_112118 18K0921-06 11/21/2018 0.5-2.5		LSB-1A 43 LSB-1A_112118 18K0921-06RE1 11/21/2018 0.5-2.5		LSB-1B 44 LSB-1B_112118 18K0921-07 11/21/2018 10-12		LSB-1B 44 LSB-1B_112118 18K0921-07RE1 11/21/2018 10-12		LSB-2A 41 LSB-2A_112118 18K0921-04 11/21/2018 0-2		LSB-2B 42 LSB-2B_112118 18K0921-05 11/21/2018 10-12		LSB-3A 45 LSB-3A_112118 18K0921-08 11/21/2018 0-2		LSB-3B 46 LSB-3B_112118 18K0921-09 11/21/2018 11-13		LSB-3B 46 LSB-3B_112118 18K0921-09RE1 11/21/2018 11-13	LSB-4A 47 LSB-4A_112118 18K0921-10 11/21/2018 2-4		LSB-4B 48 LSB-4B_112118 18K0921-11 11/21/2018 14-16		LSB-4B 49 DUP-2_112118 18K0921-12 11/21/2018 14-16		LSB-5A 39 LSB-5A_112118 18K0921-02 11/21/2018 1.5-3.5	
Semivolatile Organic Compounds (mg/kg)																														
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
1,2,4-Trichlorobenzene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
1,2-Diphenylhydrazine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
2,4,5-Trichlorophenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2,4,6-Trichlorophenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2,4-Dichlorophenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2,4-Dimethylphenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2,4-Dinitrophenol	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
2,4-Dinitrotoluene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2,6-Dinitrotoluene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2-Chloronaphthalene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2-Chlorophenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2-Methylnaphthalene	~	~	~	~	0.0726	JD	NA		0.23	D	NA		0.0457	U	0.44	U	0.0455	U	0.107	JD	NA		0.0632	JD	0.425	D	0.387	D	0.203	D
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0512	U	NA		0.0717	U	NA		0.0457	U	*0.44*	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
2-Nitroaniline	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
2-Nitrophenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0512	U	NA		0.0717	U	NA		0.0715	JD	*0.44*	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
3,3'-Dichlorobenzidine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
3-Nitroaniline	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
4-Chloro-3-Methylphenol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
4-Chloroaniline	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
4-Nitroaniline	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
4-Nitrophenol	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
Acenaphthene	20	98	500	1,000	0.436	D	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.305	D	NA		0.0472	U	0.177	D	0.0616	U	0.0469	U
Acenaphthylene	100	107	500	1,000	0.261	D	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.695	D	NA		0.533	D	2.53	D	2.94	D	0.0469	U
Acetophenone	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0486	JD
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.204	U	NA		0.286	U	NA		0.183	U	1.76	U	0.182	U	0.276	U	NA		0.188	U	0.231	U	0.246	U	0.187	U
Anthracene	100	1,000	500	1,000	1.57	D	NA		1.78	D	NA		0.0457	U	2.35	D	0.0455	U	2.13	D	NA		0.0472	U	0.268	D	0.38	D	0.0867	JD
Atrazine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Benzaldehyde	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Benzidine	~	~	~	~	0.204	U	NA		0.286	U	NA		0.183	U	1.76	U	0.182	U	0.276	U	NA		0.188	U	0.231	U	0.246	U	0.187	U
Benzo(a)anthracene	1	1	5.6	11	NA		**5.58**	D	**2.25**	D	NA		0.158	D	**1.94**	D	0.0455	U	**3.5**	D	NA		0.0767	JD	0.399	D	0.528	D	0.233	D
Benzo(a)pyrene	1	22	1	1.1	NA		**6.02**	D	**1.37**	D	NA		0.112	D	**1.54**	D	0.0455	U	**2.66**	D	NA		0.0933	JD	0.83	D	0.904	D	0.2	D
Benzo(b)fluoranthene	1	1.7	5.6	11	NA		**5.12**	D	**1.43**	D	NA		0.097	D	0.44	U	0.0455	U	**1.41**	D	NA		0.129	D	0.441	D	0.779	D	0.185	D
Benzo(g,h,i)Perylene	100	1,000	500	1,000	2.93	D	NA		0.7	D	NA		0.0846	JD	1.13	D	0.0455	U	1.18	D	NA		0.162	D	0.371	D	0.461	D	0.119	D
Benzo(k)fluoranthene	0.8	1.7	56	110	NA		**4.81**	D	0.728	D	NA		0.101	D	0.44	U	0.0455	U	**1.31**	D	NA		0.0925	JD	0.689	D	0.721	D	0.163	D
Benzoic Acid	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Benzyl Alcohol	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Benzyl Butyl Phthalate	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Biphenyl (Diphenyl)	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0538	JD
Bis(2-chloroethoxy) methane	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.114	D	NA		NA		31	D	0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Caprolactam	~	~	~	~	0.102	U	NA		0.143	U	NA		0.0913	U	0.878	U	0.0908	U	0.138	U	NA		0.0941	U	0.115	U	0.123	U	0.0935	U
Carbazole	~	~	~	~	0.866	D	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Chrysene	1	1	56	110	NA		**5.58**	D	**2.43**	D	NA		0.148	D	**2.6**	D	0.0559	JD	**3.68**	D	NA		0.152	D	0.645	D	0.883	D	0.253	D
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	**1.16**	D	NA		0.254	D	NA		0.0457	U	*0.44*	U	0.0455	U	**0.373**	D	NA		0.0472	U	0.176	D	0.159	D	0.0469	U
Dibenzofuran	7	210	350	1,000	0.317	D	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Dibutyl phthalate	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Diethyl phthalate	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Dimethyl phthalate	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Dioctyl phthalate	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Diphenylamine	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoranthene	100	1,000	500	1,000	NA		11.9	D	4.4	D	NA		0.218	D	1.63	D	0.0704	JD	NA		5.9	D	0.0662	JD	0.617	D	1.12	D	0.336	D
Fluorene	30	386	500	1,000	0.459	D	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0737	JD	0.0578	U	0.0616	U	0.0469	U
Hexachlorobenzene	0.33	3.2	6	12	0.0512	U	NA		0.0717	U	NA		0.0457	U	*0.44*	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Hexachlorobutadiene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Hexachlorocyclopentadiene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Hexachloroethane	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	NA		**3.1**	D	**0.553**	D	NA		0.0751	JD	**0.519**	JD	0.0455	U	**0.994**	D	NA		0.117	D	0.383	D	0.446	D	0.135	D
Isophorone	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Naphthalene	12	12	500	1,000	0.171	D	NA		0.423	D	NA		0.0457	U	0.44	U	0.0455	U	0.327	D	NA		0.117	D	1.12	D	0.974	D	0.11	D
Nitrobenzene	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
n-Nitrosodimethylamine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
n-Nitrosodiphenylamine	~	~	~	~	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Pentachlorophenol	0.8	0.8	6.7	55	0.0512	U	NA		0.0717	U	NA		0.0457	U	0.44	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Phenanthrene	100	1,000	500	1,000	NA		5.41	D	1.04	D	NA		0.178	D	0.44	U	0.0487	JD	0.801	D	NA		0.106	D	0.215	D	0.248	D	0.27	D
Phenol	0.33	0.33	500	1,000	0.0512	U	NA		0.0717	U	NA		0.0457	U	*0.44*	U	0.0455	U	0.0691	U	NA		0.0472	U	0.0578	U	0.0616	U	0.0469	U
Pyrene	100	1,000	500	1,000	NA		9.75	D	NA		5.68	D	0.279	D	6.9	D	0.0726	JD	NA		8.17	D	0.073	JD	1.78	D	2.62	D	0.356	D
Pyridine	~	~	~	~	0.204	U	NA		0.286	U	NA		0.183	U	1.76	U	0.182	U	0.276	U	NA		0.188	U	0.231	U	0.246	U	0.187	U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-1A 43 LSB-1A_112118 18K0921-06 11/21/2018 0.5-2.5	LSB-1A 43 LSB-1A_112118 18K0921-06RE1 11/21/2018 0.5-2.5	LSB-1B 44 LSB-1B_112118 18K0921-07 11/21/2018 10-12	LSB-1B 44 LSB-1B_112118 18K0921-07RE1 11/21/2018 10-12	LSB-2A 41 LSB-2A_112118 18K0921-04 11/21/2018 0-2	LSB-2B 42 LSB-2B_112118 18K0921-05 11/21/2018 10-12	LSB-3A 45 LSB-3A_112118 18K0921-08 11/21/2018 0-2	LSB-3B 46 LSB-3B_112118 18K0921-09 11/21/2018 11-13	LSB-3B 46 LSB-3B_112118 18K0921-09RE1 11/21/2018 11-13	LSB-4A 47 LSB-4A_112118 18K0921-10 11/21/2018 2-4	LSB-4B 48 LSB-4B_112118 18K0921-11 11/21/2018 14-16	LSB-4B 49 DUP-2_112118 18K0921-12 11/21/2018 14-16	LSB-5A 39 LSB-5A_112118 18K0921-02 11/21/2018 1.5-3.5
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	0.00202 U	NA	**0.245** D	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
4,4'-DDE	0.0033	17	62	120	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
4,4'-DDT	0.0033	136	47	94	0.00202 U	NA	**0.146** D	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Aldrin	0.005	0.19	0.68	1.4	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Alpha Chlordane	0.094	2.9	24	47	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Alpha Endosulfan	2.4	102	200	920	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Beta Endosulfan	2.4	102	200	920	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Chlordane (alpha and gamma)	~	~	~	~	0.0404 U	NA	0.0566 U	NA	0.036 U	0.0462 U	0.0359 U	0.0546 U	NA	0.0373 U	0.0458 U	0.0488 U	0.0369 U	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Dieldrin	0.005	0.1	1.4	2.8	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Endosulfan Sulfate	2.4	1000	200	920	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Endrin	0.014	0.06	89	410	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Endrin Aldehyde	~	~	~	~	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Endrin Ketone	~	~	~	~	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Gamma-Chlordane	~	~	~	~	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Heptachlor	0.042	0.38	15	29	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Heptachlor Epoxide	~	~	~	~	0.00202 U	NA	0.00283 U	NA	0.0018 U	0.00231 U	0.0018 U	0.00273 U	NA	0.00186 U	0.00229 U	0.00244 U	0.00184 U	
Methoxychlor	~	~	~	~	0.0101 U	NA	0.0141 U	NA	0.009 U	0.0115 U	0.00899 U	0.0137 U	NA	0.00931 U	0.0114 U	0.0122 U	0.00922 U	
Toxaphene	~	~	~	~	0.102 U	NA	0.143 U	NA	0.0911 U	0.117 U	0.0909 U	0.138 U	NA	0.0943 U	0.116 U	0.124 U	0.0933 U	
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0204 U	NA	0.0286 U	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0294	NA	1.29	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
Total PCBs	0.1	3.2	1	25	0.0294	NA	**1.29**	NA	0.0182 U	0.0233 U	0.0181 U	0.0276 U	NA	0.0188 U	0.0231 U	0.0246 U	0.0186 U	
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	9,330 B	NA	12,700 B	NA	6,530 B	4,720 B	6,240 B	6,160 B	NA	1,370 B	2,210 B	3,060 B	5,000 B	
Antimony	~	~	~	~	3.07 U	NA	13.5	NA	2.74 U	3.51 U	2.74 U	4.15 U	NA	2.83 U	5.85	8.97	2.81 U	
Arsenic	13	16	16	16	1.84 U	NA	**36.4**	NA	5.06	**24.9**	1.64 U	**58.7**	NA	7.19	**21.7**	**30.1**	4.56	
Barium	350	820	400	10,000	163	NA	331	NA	69.8	207	46.7	328	NA	52.7	19.9	25.1	67	
Beryllium	7.2	47	590	2,700	0.061 U	NA	0.23	NA	0.11	0.267	0.164	0.268	NA	0.061	0.236	0.269	0.218	
Cadmium	2.5	7.5	9.3	60	0.609	NA	**144**	NA	0.329 U	0.53	0.328 U	2.29	NA	0.34 U	**21.5**	**48.5**	0.514	
Calcium	~	~	~	~	34,300	NA	19,800	NA	4,010	13,200	1,600	1,330	NA	1,710	1,540	1,760	3,610	
Chromium, Hexavalent	1	19	400	800	0.613 U	NA	0.86 U	NA	0.548 U	0.703 U	0.547 U	0.831 U	NA	0.567 U	0.695 U	0.741 U	0.561 U	
Chromium, Total	~	~	~	~	21	NA	704	NA	23.7	18	13.4	30.9	NA	5.28	8.62	13	13.4	
Chromium, Trivalent	30	~	1,500	6,800	21	NA	**704**	NA	23.7	18	13.4	**30.9**	NA	5.28	8.62	13	13.4	
Cobalt	~	~	~	~	8.02	NA	29.3	NA	9.03	7.11	7.92	9.03	NA	4.48	8.85	13.2	6.68	
Copper	50	1,720	270	10,000	38.1	NA	**1,910**	NA	30.2	**532**	24.8	**427**	NA	25.1	**141**	**240**	**90.3**	
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	~	~	~	~	20,700	NA	35,700	NA	15,000	44,100	12,000	16,300	NA	6,920	7,260	9,760	12,900	
Lead	63	450	1,000	3,900	**173**	NA	**1,090**	NA	61.9	**1,340**	12.3	**466**	NA	**63.4**	60	**88.3**	**133**	
Magnesium	~	~	~	~	5,270	NA	13,900	NA	3,660	2,020	2,760	2,280	NA	463	819	1,220	3,130	
Manganese	1,600	2,000	10,000	10,000	297	NA	277	NA	308	277	294	122	NA	32.4	22.1	32.2	129	
Mercury	0.18	0.73	2.8	5.7	**0.267**	NA	**2.91**	NA	**0.223**	**3.17**	0.0328 U	**4.77**	NA	0.1	0.116	0.0812	**0.288**	
Nickel	30	130	310	10,000	17.7	NA	**630**	NA	**44.4**	15.3	26.9	**77.4**	NA	13.3	**157**	**219**	29.5	
Potassium	~	~	~	~	2,090 B	NA	2,390 B	NA	1,330 B	791 B	1,440 B	1,290 B	NA	413 B	315 B	437 B	848 B	
Selenium	3.9	4	1,500	6,800	3.07 U	NA	*4.3* U	NA	2.74 U	3.51 U	2.74 U	*4.15* U	NA	2.83 U	3.48 U	3.7 U	2.81 U	
Silver	2	8.3	1,500	6,800	0.613 U	NA	**37.2**	NA	0.548 U	1.94	0.547 U	0.831 U	NA	0.567 U	0.695 U	0.741 U	0.561 U	
Sodium	~	~	~	~	745 B	NA	9,190 B	NA	500 B	2,940 B	274 B	5,290 B	NA	872 B	2,340 B	2,450 B	170 B	
Thallium	~	~	~	~	3.07 U	NA	4.3 U	NA	2.74 U	3.51 U	2.74 U	4.15 U	NA	2.83 U	3.48 U	3.7 U	2.81 U	
Vanadium	~	~	~	~	23	NA	114	NA	23.5	20.5	19.5	18.3	NA	11.6	17.7	27.8	16.7	
Zinc	109	2,480	10,000	10,000	**162**	NA	**2,750**	NA	73.1	**539**	34.6	**510**	NA	45.4	**624**	**1,050**	**130**	
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Solids, Percent (%)	~	~	~	~	81.5	NA	58.1	NA	91.2	71.1	91.4	60.2	NA	88.3	71.9	67.5	89.1	
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-5B 40 LSB-5B_112118 18K0921-03 11/21/2018 10-12	LSB-6A 31 LSB-6A_112018 18K0823-11 11/20/2018 0.25-2.25	LSB-6B 32 LSB-6B_112018 18K0823-12 11/20/2018 10.5-12.5	LSB-7A 27 LSB-7A_112018 18K0823-07 11/20/2018 1-3	LSB-7B 28 LSB-7B_112018 18K0823-08 11/20/2018 13-15	LSB-7B 28 LSB-7B_112018 18K0823-08RE1 11/20/2018 13-15	LSB-8A 25 LSB-8A_112018 18K0823-05 11/20/2018 0-2	LSB-8B 26 LSB-8B_112018 18K0823-06 11/20/2018 13-15	LSB-9A LSB-9A_111918 18K0780-09 11/19/2018 0.5-2.5	LSB-9B LSB-9B_111918 18K0780-10 11/19/2018 6-8	LSB-10A LSB-10A_111918 18K0780-11 11/19/2018 0.5-2.5	LSB-10B LSB-10B_111918 18K0780-12 11/19/2018 8-10	LSB-11A 23 LSB-11A_112018 18K0823-03 11/20/2018 0-2
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,1,2,2-Tetrachloroethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,1,2-Trichloroethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,1-Dichloroethane	0.27	0.27	240	480	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
1,1-Dichloroethene	0.33	0.33	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
1,1-Dichloropropene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2,3-Trichlorobenzene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2,3-Trichloropropane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2,4,5-Tetramethylbenzene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	15 D	0.0031 U	2.7 D	0.0032 U
1,2,4-Trichlorobenzene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.33 U	0.0027 U	0.074	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,2-Dichloroethane	0.02	0.02	30	60	*0.33* U	0.0027 U	0.0032 U	0.003 J	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
1,2-Dichloropropane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.33 U	0.0027 U	0.032	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,3-Dichloropropane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	*6.6* U	0.054 U	0.063 U	0.052 U	0.068 U	NA	0.071 U	0.089 U	0.057 U	*7.8* U	0.063 U	*8* U	0.064 U
2,2-Dichloropropane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
2-Chlorotoluene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0069	0.0034 U	NA	0.0036 U	0.012	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
2-Hexanone (MBK)	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
4-Chlorotoluene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Acetone	0.05	0.05	500	1,000	*0.66* U	0.0054 U	0.019	0.0052 U	0.035	NA	0.0071 U	0.0089 U	0.0057 U	*0.78* U	0.021	*0.8* U	**0.1**
Acrolein	~	~	~	~	0.66 U	0.0054 U	0.0063 U	0.0052 U	0.0068 U	NA	0.0071 U	0.0089 U	0.0057 U	0.78 U	0.0063 U	0.8 U	0.0064 U
Acrylonitrile	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Benzene	0.06	0.06	44	89	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
Bromobenzene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Bromochloromethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Bromodichloromethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.013	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Bromoform	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 J	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Bromomethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Carbon Disulfide	~	~	~	~	0.33 U	0.0027 U	0.0038 J	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Carbon Tetrachloride	0.76	0.76	22	44	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Chlorobenzene	1.1	1.1	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Chloroethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Chloroform	0.37	0.37	350	700	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
Chloromethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
Cis-1,3-Dichloropropene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Cyclohexane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0037 J	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Dibromochloromethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Dibromomethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Dichlorodifluoromethane	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Ethylbenzene	1	1	390	780	0.33 U	0.0027 U	0.016	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Hexachlorobutadiene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Isopropyl Ether	~	~	~	~	0.52 U	0.0043 U	0.0051 U	0.0042 U	0.0055 U	NA	0.0057 U	0.0071 U	0.0046 U	0.62 U	0.005 U	0.64 U	0.0052 U
Isopropylbenzene (Cumene)	~	~	~	~	0.33 U	0.0027 U	0.0069	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	5.1 D	0.0031 U	0.4 U	0.0032 U
M,P-Xylene	~	~	~	~	0.66 U	0.0054 U	0.11	0.0052 U	0.0068 U	NA	0.0071 U	0.0089 U	0.0057 U	0.78 U	0.0063 U	0.8 U	0.0064 U
Methyl Acetate	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.054	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.014	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Methylcyclohexane	~	~	~	~	0.33 U	0.0027 U	0.11	0.0087	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	17 D	0.0031 U	2.3 D	0.0033 J
Methylene Chloride	0.05	0.05	500	1,000	*0.66* U	0.0054 U	**0.074**	0.028	0.011 J	NA	0.0071 U	0.016 J	0.0057 U	*0.78* U	0.013	*0.8* U	0.02
n-Butylbenzene	12	12	500	1,000	0.33 U	0.0027 U	0.01	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	7.3 D	0.0031 U	0.4 U	0.0032 U
n-Propylbenzene	3.9	3.9	500	1,000	0.33 U	0.0027 U	0.01	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	**7.9** D	0.0031 U	1.4 D	0.0032 U
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.33 U	0.0027 U	0.039	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.33 U	0.0027 U	0.0071	0.0026 U	0.063	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Sec-Butylbenzene	11	11	500	1,000	0.33 U	0.0027 U	0.0058 J	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Styrene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
T-Butylbenzene	5.9	5.9	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Tert-Butyl Alcohol	~	~	~	~	1.3 JD	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.17
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.33 U	0.0027 U	0.02	0.0026 U	0.0034 U	NA	0.0062 J	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0046 J
Toluene	0.7	0.7	500	1,000	0.33 U	0.0027 U	0.02	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.077	0.4 U	0.0087
Total Xylenes	0.26	1.6	500	1,000	*0.98* U	0.0081 U	0.14	0.0078 U	0.01 U	NA	0.011 U	0.013 U	0.0086 U	*1.2* U	0.0094 U	*1.2* U	0.0097 U
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U
Trans-1,3-Dichloropropene	~	~	~	~	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	0.33 U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0032 U
Trichlorofluoromethane	~	~	~	~	0.33 U	0.0027 U	0.015	0.018	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	0.39 U	0.0031 U	0.4 U	0.0056 J
Vinyl Chloride	0.02	0.02	13	27	*0.33* U	0.0027 U	0.0032 U	0.0026 U	0.0034 U	NA	0.0036 U	0.0044 U	0.0029 U	*0.39* U	0.0031 U	*0.4* U	0.0032 U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-5B 40 LSB-5B_112118 18K0921-03 11/21/2018 10-12	LSB-6A 31 LSB-6A_112018 18K0823-11 11/20/2018 0.25-2.25	LSB-6B 32 LSB-6B_112018 18K0823-12 11/20/2018 10.5-12.5	LSB-7A 27 LSB-7A_112018 18K0823-07 11/20/2018 1-3	LSB-7B 28 LSB-7B_112018 18K0823-08 11/20/2018 13-15	LSB-7B 28 LSB-7B_112018 18K0823-08RE1 11/20/2018 13-15	LSB-8A 25 LSB-8A_112018 18K0823-05 11/20/2018 0-2	LSB-8B 26 LSB-8B_112018 18K0823-06 11/20/2018 13-15	LSB-9A LSB-9A_111918 18K0780-09 11/19/2018 0.5-2.5	LSB-9B LSB-9B_111918 18K0780-10 11/19/2018 6-8	LSB-10A LSB-10A_111918 18K0780-11 11/19/2018 0.5-2.5	LSB-10B LSB-10B_111918 18K0780-12 11/19/2018 8-10	LSB-11A 23 LSB-11A_112018 18K0823-03 11/20/2018 0-2
Semivolatile Organic Compounds (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
1,2,4-Trichlorobenzene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
1,2-Diphenylhydrazine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
2,4,5-Trichlorophenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2,4,6-Trichlorophenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2,4-Dichlorophenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2,4-Dimethylphenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2,4-Dinitrophenol	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
2,4-Dinitrotoluene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2,6-Dinitrotoluene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2-Chloronaphthalene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2-Chlorophenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
2-Methylnaphthalene	~	~	~	~	0.0508 U	0.0867 JD	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0507 JD	0.0481 U	0.0725 U	0.34 U
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	*0.34* U
2-Nitroaniline	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
2-Nitrophenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	*0.34* U
3,3'-Dichlorobenzidine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
3-Nitroaniline	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
4-Chloro-3-Methylphenol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
4-Chloroaniline	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
4-Nitroaniline	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
4-Nitrophenol	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
Acenaphthene	20	98	500	1,000	0.0508 U	0.0453 U	0.176 D	0.0478 U	0.171 D	NA	0.046 U	0.0748 JD	0.0477 U	0.0658 JD	0.0481 U	0.0725 U	0.34 U
Acenaphthylene	100	107	500	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0498 JD	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Acetophenone	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0714 JD	0.0725 U	0.34 U
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.203 U	0.181 U	0.212 U	0.191 U	0.252 U	NA	0.184 U	0.195 U	0.191 U	0.199 U	0.192 U	0.29 U	1.36 U
Anthracene	100	1,000	500	1,000	0.0508 U	0.0453 U	0.298 D	0.0478 U	2.21 D	NA	0.0718 JD	0.237 D	0.0943 JD	0.113 D	0.066 JD	0.0725 U	0.34 U
Atrazine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Benzaldehyde	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Benzidine	~	~	~	~	0.203 U	0.181 U	0.212 U	0.191 U	0.252 U	NA	0.184 U	0.195 U	0.191 U	0.199 U	0.192 U	0.29 U	1.36 U
Benzo(a)anthracene	1	1	5.6	11	0.0819 JD	0.11 D	0.485 D	0.096 D	NA	**7.8** D	0.218 D	0.618 D	0.366 D	0.428 D	0.296 D	0.104 JD	0.34 U
Benzo(a)pyrene	1	22	1	1.1	0.0778 JD	0.136 D	0.457 D	0.153 D	NA	**8.31** D	0.299 D	0.649 D	0.369 D	0.522 D	0.291 D	0.129 JD	0.34 U
Benzo(b)fluoranthene	1	1.7	5.6	11	0.0592 JD	0.118 D	0.288 D	0.142 D	NA	**6.44** D	0.226 D	0.483 D	0.313 D	0.422 D	0.312 D	0.101 JD	0.34 U
Benzo(g,h,i)Perylene	100	1,000	500	1,000	0.0527 JD	0.103 D	0.244 D	0.221 D	3.83 D	NA	0.21 D	0.413 D	0.229 D	0.347 D	0.199 D	0.0936 JD	0.34 U
Benzo(k)fluoranthene	0.8	1.7	56	110	0.0508 U	0.0961 D	0.276 D	0.0526 JD	NA	**5.5** D	0.176 D	0.413 D	0.269 D	0.401 D	0.21 D	0.108 JD	0.34 U
Benzoic Acid	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Benzyl Alcohol	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	1.24 D	0.0725 U	0.34 U
Benzyl Butyl Phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.164 D	0.0725 U	0.34 U
Biphenyl (Diphenyl)	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Bis(2-chloroethoxy) methane	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.151 D	0.0786 JD	0.0586 JD	0.0497 U	0.185 D	0.0725 U	0.34 U
Caprolactam	~	~	~	~	0.101 U	0.0904 U	0.106 U	0.0953 U	0.126 U	NA	0.0917 U	0.0974 U	0.0952 U	0.0992 U	0.096 U	0.145 U	0.678 U
Carbazole	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0755 JD	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Chrysene	1	1	56	110	0.0827 JD	0.144 D	0.473 D	0.246 D	NA	**6.88** D	0.31 D	0.691 D	0.374 D	0.443 D	0.359 D	0.0936 JD	0.34 U
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	0.0508 U	0.0453 U	0.0609 JD	0.0945 JD	**1.33** D	NA	0.0616 JD	0.113 D	0.0715 JD	0.0793 JD	0.0481 U	0.0725 U	*0.34* U
Dibenzofuran	7	210	350	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0956 JD	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Dibutyl phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Diethyl phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Dimethyl phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Dioctyl phthalate	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Diphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	1,000	500	1,000	0.144 D	0.142 D	0.805 D	0.0478 U	NA	15.5 D	0.358 D	1 D	0.631 D	0.659 D	0.545 D	0.153 D	0.34 U
Fluorene	30	386	500	1,000	0.0508 U	0.0453 U	0.0659 JD	0.0478 U	0.267 D	NA	0.046 U	0.081 JD	0.0477 U	0.0523 JD	0.0481 U	0.0725 U	0.34 U
Hexachlorobenzene	0.33	3.2	6	12	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	*0.34* U
Hexachlorobutadiene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Hexachlorocyclopentadiene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Hexachloroethane	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	0.0508 U	0.0903 JD	0.212 D	0.0838 JD	**3.86** D	NA	0.165 D	0.308 D	0.246 D	0.369 D	0.221 D	0.0902 JD	0.34 U
Isophorone	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Naphthalene	12	12	500	1,000	0.0508 U	0.0499 JD	0.053 U	0.0478 U	0.0685 JD	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Nitrobenzene	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
n-Nitrosodimethylamine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
n-Nitrosodiphenylamine	~	~	~	~	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Pentachlorophenol	0.8	0.8	6.7	55	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	0.34 U
Phenanthrene	100	1,000	500	1,000	0.0508 U	0.0961 D	0.38 D	0.0495 JD	NA	5.78 D	0.338 D	0.892 D	0.467 D	0.404 D	0.316 D	0.0867 JD	0.34 U
Phenol	0.33	0.33	500	1,000	0.0508 U	0.0453 U	0.053 U	0.0478 U	0.0631 U	NA	0.046 U	0.0488 U	0.0477 U	0.0497 U	0.0481 U	0.0725 U	*0.34* U
Pyrene	100	1,000	500	1,000	0.305 D	0.217 D	1.5 D	0.0945 JD	NA	15.2 D	0.504 D	1.38 D	0.734 D	0.81 D	0.645 D	0.195 D	0.34 U
Pyridine	~	~	~	~	0.203 U	0.181 U	0.212 U	0.191 U	0.252 U	NA	0.184 U	0.195 U	0.191 U	0.199 U	0.192 U	0.29 U	1.36 U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-5B 40 LSB-5B_112118 18K0921-03 11/21/2018 10-12	LSB-6A 31 LSB-6A_112018 18K0823-11 11/20/2018 0.25-2.25	LSB-6B 32 LSB-6B_112018 18K0823-12 11/20/2018 10.5-12.5	LSB-7A 27 LSB-7A_112018 18K0823-07 11/20/2018 1-3	LSB-7B 28 LSB-7B_112018 18K0823-08 11/20/2018 13-15	LSB-7B 28 LSB-7B_112018 18K0823-08RE1 11/20/2018 13-15	LSB-8A 25 LSB-8A_112018 18K0823-05 11/20/2018 0-2	LSB-8B 26 LSB-8B_112018 18K0823-06 11/20/2018 13-15	LSB-9A LSB-9A_111918 18K0780-09 11/19/2018 0.5-2.5	LSB-9B LSB-9B_111918 18K0780-10 11/19/2018 6-8	LSB-10A LSB-10A_111918 18K0780-11 11/19/2018 0.5-2.5	LSB-10B LSB-10B_111918 18K0780-12 11/19/2018 8-10	LSB-11A 23 LSB-11A_112018 18K0823-03 11/20/2018 0-2
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
4,4'-DDE	0.0033	17	62	120	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
4,4'-DDT	0.0033	136	47	94	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Aldrin	0.005	0.19	0.68	1.4	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Alpha Chlordane	0.094	2.9	24	47	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0398 DP	0.00286 U	0.0018 U
Alpha Endosulfan	2.4	102	200	920	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Beta Endosulfan	2.4	102	200	920	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Chlordane (alpha and gamma)	~	~	~	~	0.0401 U	0.0358 U	0.0417 U	0.0376 U	0.0505 U	NA	0.0363 U	0.0384 U	0.0374 U	0.039 U	0.29 DP	0.0572 U	0.036 U
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Dieldrin	0.005	0.1	1.4	2.8	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Endosulfan Sulfate	2.4	1000	200	920	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Endrin	0.014	0.06	89	410	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Endrin Aldehyde	~	~	~	~	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Endrin Ketone	~	~	~	~	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Gamma-Chlordane	~	~	~	~	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0243 D	0.00286 U	0.0018 U
Heptachlor	0.042	0.38	15	29	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Heptachlor Epoxide	~	~	~	~	0.00201 U	0.00179 U	0.00209 U	0.00188 U	0.00252 U	NA	0.00181 U	0.00192 U	0.00187 U	0.00195 U	0.0019 U	0.00286 U	0.0018 U
Methoxychlor	~	~	~	~	0.01 U	0.00894 U	0.0104 U	0.0094 U	0.0126 U	NA	0.00907 U	0.0096 U	0.00936 U	0.00976 U	0.0095 U	0.0143 U	0.009 U
Toxaphene	~	~	~	~	0.102 U	0.0905 U	0.106 U	0.0951 U	0.128 U	NA	0.0918 U	0.0972 U	0.0947 U	0.0987 U	0.0962 U	0.145 U	0.0911 U
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
Total PCBs	0.1	3.2	1	25	0.0203 U	0.0181 U	0.0211 U	0.019 U	0.0255 U	NA	0.0183 U	0.0194 U	0.0189 U	0.0197 U	0.0192 U	0.0289 U	0.0182 U
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	12,300 B	4,570	6,230	2,510	3,690	NA	3,380	3,140	4,440	5,860	8,360	7,600	5,620
Antimony	~	~	~	~	3.05 U	2.71 U	3.16 U	2.85 U	3.84 U	NA	3	8.1	2.85 U	2.97 U	2.89 U	4.33 U	2.73 U
Arsenic	13	16	16	16	2.55	12.8	**19.2**	**17.4**	**14.3**	NA	10.6	13	7.81	7.52	3.94	10.4	2.34
Barium	350	820	400	10,000	137	65.7	182	44.5	137	NA	310	**538**	69.3	177	113	**372**	38.5
Beryllium	7.2	47	590	2,700	0.061 U	0.138	0.198	0.057 U	0.077 U	NA	0.055 U	0.058 U	0.074	0.059 U	0.058 U	0.237	0.055 U
Cadmium	2.5	7.5	9.3	60	0.366 U	0.527	0.564	0.342 U	0.461 U	NA	**16.2**	**20.6**	0.383	0.686	0.696	0.647	0.327 U
Calcium	~	~	~	~	1,460	76,500	23,800	1,330	7,980	NA	29,100	17,800	3,920	5,330	46,800	21,400	70,400
Chromium, Hexavalent	1	19	400	800	0.61 U	0.542 U	0.632 U	0.57 U	0.768 U	NA	0.55 U	0.582 U	0.571 U	0.595 U	0.578 U	0.867 U	0.546 U
Chromium, Total	~	~	~	~	25.5	57.9	85.2	6.76	12.4	NA	12.2	15.8	12.8	22	17	18.9	12
Chromium, Trivalent	30	~	1,500	6,800	25.5	**57.9**	**85.2**	6.76	12.4	NA	12.2	15.8	12.8	22	17	18.9	12
Cobalt	~	~	~	~	14.7	8.33	4.82	5.49	5.1	NA	36.5	30.8	6.86	6.31	5.59	15.5	5.95
Copper	50	1,720	270	10,000	33.2	**129**	**113**	26.7	**224**	NA	**74.9**	**75.9**	**59.9**	**181**	31.8	**93.3**	48.8
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	~	~	~	~	22,600	15,000	12,800	14,300	14,600	NA	12,400	12,100	10,700	30,700	10,000	80,600	11,400
Lead	63	450	1,000	3,900	**67**	**110**	**1,680**	42.7	**557**	NA	**396**	**550**	**128**	**430**	**132**	**893**	25.7
Magnesium	~	~	~	~	4,950	40,700	3,840	568	1,570	NA	8,850	5,880	3,450	2,860	6,560	1,170	26,200
Manganese	1,600	2,000	10,000	10,000	109	249	136	78.7	96	NA	175	123	212	166	281	431	184
Mercury	0.18	0.73	2.8	5.7	**0.354**	**0.402**	**3.47**	0.0342 U	**2.76**	NA	0.033 U	**0.29**	**2.18**	**6.3**	**0.243**	**18**	0.0612
Nickel	30	130	310	10,000	26.9	**41.7**	20.8	14	12.6	NA	**40.1**	**48.1**	**37.9**	15.7	13.2	26.8	9.07
Potassium	~	~	~	~	7,740 B	769	786	613	737	NA	703	613	991	1,160	1,270	841	849
Selenium	3.9	4	1,500	6,800	3.05 U	**6.91**	3.16 U	2.85 U	3.84 U	NA	2.75 U	2.91 U	2.85 U	2.97 U	2.89 U	*4.33* U	**8.34**
Silver	2	8.3	1,500	6,800	0.61 U	0.542 U	0.632 U	0.57 U	0.768 U	NA	0.55 U	0.582 U	0.571 U	0.595 U	0.578 U	0.867 U	0.546 U
Sodium	~	~	~	~	838 B	316	505	131	3,630	NA	492	915	454	1,680	674	1,120	504
Thallium	~	~	~	~	3.05 U	2.71 U	3.16 U	2.85 U	3.84 U	NA	2.75 U	2.91 U	2.85 U	2.97 U	2.89 U	4.33 U	2.73 U
Vanadium	~	~	~	~	30.6	20.6	21.2	13.3	17.3	NA	19.9	25.5	13	20.2	21.2	25.1	33.8
Zinc	109	2,480	10,000	10,000	87.5	**144**	**495**	16.2	**312**	NA	**348**	**563**	**176**	**261**	**196**	**326**	38.3
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Solids, Percent (%)	~	~	~	~	82	92.2	79.1	87.8	65.1	NA	90.9	85.9	87.6	84.1	86.5	57.7	91.6
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-11B 24 LSB-11B_112018 18K0823-04 11/20/2018 7-9	LSB-12A 21 LSB-12A_112018 18K0823-01 11/20/2018 1-3	LSB-12B 22 LSB-12B_112018 18K0823-02 11/20/2018 8-10	LSB-13A LSB-13A_111918 18K0780-07 11/19/2018 0.5-2.5	LSB-13B LSB-13B_111918 18K0780-08 11/19/2018 7-9	LSB-14A LSB-14A_111918 18K0780-05 11/19/2018 0.5-2.5	LSB-14B LSB-14B_111918 18K0780-06 11/19/2018 5-7	LSB-14B DUP-1_111918 18K0780-18 11/19/2018 5-7	LSB-15A LSB-15A_111918 18K0780-01 11/19/2018 0.5-2.5	LSB-15A LSB-15A_111918 18K0780-01RE1 11/19/2018 0.5-2.5	LSB-15B LSB-15B_111918 18K0780-02 11/19/2018 4-6	LSB-16A LSB-16A_111918 18K0780-03 11/19/2018 1-3	LSB-16B LSB-16B_111918 18K0780-04 11/19/2018 4-6
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1,2,2-Tetrachloroethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1,2-Trichloroethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1-Dichloroethane	0.27	0.27	240	480	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1-Dichloroethene	0.33	0.33	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,1-Dichloropropene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2,3-Trichlorobenzene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2,3-Trichloropropane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2,4,5-Tetramethylbenzene	~	~	~	~	0.0034 U	0.0028 U	0.0096	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.028	NA	8.2 D	0.0023 U	0.028
1,2,4-Trichlorobenzene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.0034 U	0.0028 U	0.046	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0033 J	NA	2.6 D	0.0023 U	0.0099
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,2-Dichloroethane	0.02	0.02	30	60	0.0034 U	0.0035 J	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	*0.18* U	0.0023 U	0.0044 U
1,2-Dichloropropane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.0034 U	0.0028 U	0.012	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,3-Dichloropropane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.068 U	0.057 U	0.078 U	0.049 U	0.071 U	0.061 U	*0.11* U	0.099 U	0.048 U	NA	*3.7* U	0.046 U	0.087 U
2,2-Dichloropropane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
2-Chlorotoluene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
2-Hexanone (MBK)	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
4-Chlorotoluene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Acetone	0.05	0.05	500	1,000	0.014	0.0057 U	**<u>0.067</u>**	0.042	**<u>0.091</u>**	0.01 J	0.011 U	0.011 J	0.018	NA	*0.37* U	0.019	0.027
Acrolein	~	~	~	~	0.0068 U	0.0057 U	0.0078 U	0.0049 U	0.0071 U	0.0061 U	0.011 U	0.0099 U	0.0048 U	NA	0.37 U	0.0046 U	0.0087 U
Acrylonitrile	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Benzene	0.06	0.06	44	89	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	*0.18* U	0.0023 U	**<u>0.064</u>**
Bromobenzene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Bromochloromethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Bromodichloromethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Bromoform	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Bromomethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Carbon Disulfide	~	~	~	~	0.0034 U	0.01	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Carbon Tetrachloride	0.76	0.76	22	44	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Chlorobenzene	1.1	1.1	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Chloroethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Chloroform	0.37	0.37	350	700	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Chloromethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Cis-1,3-Dichloropropene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Cyclohexane	~	~	~	~	0.0062 J	0.0031 J	0.012	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Dibromochloromethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Dibromomethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Dichlorodifluoromethane	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Ethylbenzene	1	1	390	780	0.0034 U	0.0028 U	0.004 J	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0034 J	NA	0.18 U	0.0023 U	0.021
Hexachlorobutadiene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Isopropyl Ether	~	~	~	~	0.0054 U	0.0045 U	0.0063 U	0.0039 U	0.0057 U	0.0049 U	0.0091 U	0.0079 U	0.0038 U	NA	0.29 U	0.0036 U	0.007 U
Isopropylbenzene (Cumene)	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	2.6 D	0.0023 U	0.024
M,P-Xylene	~	~	~	~	0.0068 U	0.0057 U	0.014 J	0.0049 U	0.0071 U	0.0061 U	0.011 U	0.0099 U	0.0057 J	NA	0.37 U	0.0046 U	0.043
Methyl Acetate	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.025	0.0031 U	0.0057 U	0.005 U	0.0049	NA	*0.18* U	0.0023 U	0.0044 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Methylcyclohexane	~	~	~	~	0.0041 J	0.0051 J	0.0074 J	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	11 D	0.0023 U	0.1
Methylene Chloride	0.05	0.05	500	1,000	0.016	0.0078 J	**<u>0.066</u>**	0.0049 U	0.0071 U	0.0088 J	0.016 J	0.017 J	0.0048 U	NA	*0.37* U	0.0047 J	0.0087 U
n-Butylbenzene	12	12	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	5.6 D	0.0023 U	0.0044 U
n-Propylbenzene	3.9	3.9	500	1,000	0.0034 U	0.0028 U	0.0047 J	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0033 J	NA	**<u>9.6</u>** D	0.0023 U	0.016
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.0034 U	0.0028 U	0.011	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.007 J
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.51 D	0.0023 U	0.0044 U
Sec-Butylbenzene	11	11	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Styrene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
T-Butylbenzene	5.9	5.9	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Tert-Butyl Alcohol	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.058	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Toluene	0.7	0.7	500	1,000	0.0034 U	0.0028 U	0.011	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0043 J	NA	0.18 U	0.0023 U	0.051
Total Xylenes	0.26	1.6	500	1,000	0.01 U	0.0085 U	0.025	0.0073 U	0.011 U	0.0092 U	0.017 U	0.015 U	0.0071 U	NA	*0.55* U	0.0068 U	0.05
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Trans-1,3-Dichloropropene	~	~	~	~	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Trichlorofluoromethane	~	~	~	~	0.0034 U	0.003 J	0.023	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	0.18 U	0.0023 U	0.0044 U
Vinyl Chloride	0.02	0.02	13	27	0.0034 U	0.0028 U	0.0039 U	0.0024 U	0.0035 U	0.0031 U	0.0057 U	0.005 U	0.0024 U	NA	*0.18* U	0.0023 U	0.0044 U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-11B 24 LSB-11B_112018 18K0823-04 11/20/2018 7-9	LSB-12A 21 LSB-12A_112018 18K0823-01 11/20/2018 1-3	LSB-12B 22 LSB-12B_112018 18K0823-02 11/20/2018 8-10	LSB-13A LSB-13A_111918 18K0780-07 11/19/2018 0.5-2.5	LSB-13B LSB-13B_111918 18K0780-08 11/19/2018 7-9	LSB-14A LSB-14A_111918 18K0780-05 11/19/2018 0.5-2.5	LSB-14B LSB-14B_111918 18K0780-06 11/19/2018 5-7	LSB-14B DUP-1_111918 18K0780-18 11/19/2018 5-7	LSB-15A LSB-15A_111918 18K0780-01 11/19/2018 0.5-2.5	LSB-15A LSB-15A_111918 18K0780-01RE1 11/19/2018 0.5-2.5	LSB-15B LSB-15B_111918 18K0780-02 11/19/2018 4-6	LSB-16A LSB-16A_111918 18K0780-03 11/19/2018 1-3	LSB-16B LSB-16B_111918 18K0780-04 11/19/2018 4-6
Semivolatile Organic Compounds (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
1,2,4-Trichlorobenzene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
1,2-Diphenylhydrazine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
2,4,5-Trichlorophenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2,4,6-Trichlorophenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2,4-Dichlorophenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2,4-Dimethylphenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2,4-Dinitrophenol	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
2,4-Dinitrotoluene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2,6-Dinitrotoluene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2-Chloronaphthalene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2-Chlorophenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2-Methylnaphthalene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0681 JD	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.369 D	NA	NA	1.39 D	0.0969 D	1.23 D
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
2-Nitroaniline	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
2-Nitrophenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
3,3'-Dichlorobenzidine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
3-Nitroaniline	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
4-Chloro-3-Methylphenol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
4-Chloroaniline	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
4-Nitroaniline	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
4-Nitrophenol	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA	NA	0.0919 U	0.0905 U	0.112 U
Acenaphthene	20	98	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0977 D	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.29 D	NA	NA	0.0537 JD	0.0454 U	0.168 D
Acenaphthylene	100	107	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0481 JD	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.163 D	NA	NA	0.0461 U	0.0454 U	0.056 U
Acetophenone	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0756 JD	0.0934 JD	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.213 U	0.183 U	0.193 U	0.185 U	0.245 U	0.186 U	0.206 U	0.193 U	0.188 U	NA	NA	0.184 U	0.181 U	0.224 U
Anthracene	100	1,000	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.303 D	0.0613 U	0.0465 U	0.0515 U	0.0532 JD	0.665 D	NA	NA	0.072 JD	0.0514 JD	0.056 U
Atrazine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
Benzaldehyde	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.11 JD	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA	NA	0.0461 U	0.0454 U	0.056 U
Benzidine	~	~	~	~	0.213 U	0.183 U	0.193 U	0.185 U	0.245 U	0.186 U	0.206 U	0.193 U	0.188 U	NA	NA	0.184 U	0.181 U	0.224 U
Benzo(a)anthracene	1	1	5.6	11	0.15 D	0.195 D	0.0964 JD	0.663 D	0.129 D	0.0802 JD	0.0978 JD	0.275 D	**2.08** D	NA		0.0728 JD	0.213 D	0.0696 JD
Benzo(a)pyrene	1	22	1	1.1	0.248 D	0.231 D	0.16 D	0.664 D	0.134 D	0.0831 JD	0.113 D	0.285 D	NA	**3.22** D		0.0544 JD	0.268 D	0.056 U
Benzo(b)fluoranthene	1	1.7	5.6	11	0.186 D	0.212 D	0.116 D	0.541 D	0.114 JD	0.0839 JD	0.107 D	0.223 D	**1.94** D	NA		0.0544 JD	0.234 D	0.0875 JD
Benzo(g,h,i)Perylene	100	1,000	500	1,000	0.4 D	0.176 D	0.225 D	0.409 D	0.105 JD	0.0787 JD	0.0994 JD	0.208 D	2.94 D	NA		0.0461 U	0.194 D	0.056 U
Benzo(k)fluoranthene	0.8	1.7	56	110	0.0993 JD	0.154 D	0.0483 U	0.535 D	0.0968 JD	0.0861 JD	0.0518 JD	0.194 D	**1.68** D	NA		0.0461 U	0.237 D	0.056 U
Benzoic Acid	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Benzyl Alcohol	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Benzyl Butyl Phthalate	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Biphenyl (Diphenyl)	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.094 JD	NA		0.0461 U	0.0454 U	0.0875 JD
Bis(2-chloroethoxy) methane	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0738 JD	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.321 D	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.109 D	0.056 U
Caprolactam	~	~	~	~	0.106 U	0.0911 U	0.0965 U	0.0926 U	0.122 U	0.0929 U	0.103 U	0.0965 U	0.0941 U	NA		0.0919 U	0.0905 U	0.112 U
Carbazole	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0711 JD	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.088 JD	NA		0.0461 U	0.0454 U	0.056 U
Chrysene	1	1	56	110	0.244 D	0.262 D	0.254 D	0.712 D	0.121 JD	0.098 D	0.122 D	0.285 D	**2.25** D	NA		0.0757 JD	0.25 D	0.209 D
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	0.142 D	0.0561 JD	0.0856 JD	0.0963 D	0.0613 U	0.0465 U	0.0515 U	0.0633 JD	**0.635** D	NA		0.0461 U	0.0543 JD	0.056 U
Dibenzofuran	7	210	350	1,000	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.113 D	NA		0.0461 U	0.0454 U	0.056 U
Dibutyl phthalate	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Diethyl phthalate	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Dimethyl phthalate	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Dioctyl phthalate	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Diphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA
Fluoranthene	100	1,000	500	1,000	0.158 D	0.297 D	0.0483 U	1.22 D	0.206 D	0.151 D	0.0994 JD	0.356 D	2.55 D	NA		0.184 D	0.307 D	0.0723 JD
Fluorene	30	386	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.101 D	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.227 D	NA		0.0904 JD	0.0454 U	0.156 D
Hexachlorobenzene	0.33	3.2	6	12	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Hexachlorobutadiene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Hexachlorocyclopentadiene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Hexachloroethane	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	0.186 D	0.111 D	0.074 JD	0.366 D	0.0959 JD	0.0638 JD	0.0772 JD	0.204 D	**2.13** D	NA		0.0461 U	0.197 D	0.056 U
Isophorone	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Naphthalene	12	12	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0763 JD	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.48 D	NA		0.0461 U	0.0861 JD	1.14 D
Nitrobenzene	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
n-Nitrosodimethylamine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
n-Nitrosodiphenylamine	~	~	~	~	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Pentachlorophenol	0.8	0.8	6.7	55	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Phenanthrene	100	1,000	500	1,000	0.095 JD	0.0947 D	0.0483 U	0.988 D	0.112 JD	0.0868 JD	0.0534 JD	0.184 D	1.95 D	NA		0.29 D	0.208 D	0.257 D
Phenol	0.33	0.33	500	1,000	0.0532 U	0.0457 U	0.0483 U	0.0464 U	0.0613 U	0.0465 U	0.0515 U	0.0484 U	0.0472 U	NA		0.0461 U	0.0454 U	0.056 U
Pyrene	100	1,000	500	1,000	0.233 D	0.323 D	0.0609 JD	1.36 D	0.232 D	0.166 D	0.127 D	0.475 D	NA	4 D		0.187 D	0.374 D	0.091 JD
Pyridine	~	~	~	~	0.213 U	0.183 U	0.193 U	0.185 U	0.245 U	0.186 U	0.206 U	0.193 U	0.188 U	NA		0.184 U	0.181 U	0.224 U

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-11B 24 LSB-11B_112018 18K0823-04 11/20/2018 7-9	LSB-12A 21 LSB-12A_112018 18K0823-01 11/20/2018 1-3	LSB-12B 22 LSB-12B_112018 18K0823-02 11/20/2018 8-10	LSB-13A LSB-13A_111918 18K0780-07 11/19/2018 0.5-2.5	LSB-13B LSB-13B_111918 18K0780-08 11/19/2018 7-9	LSB-14A LSB-14A_111918 18K0780-05 11/19/2018 0.5-2.5	LSB-14B LSB-14B_111918 18K0780-06 11/19/2018 5-7	LSB-14B DUP-1_111918 18K0780-18 11/19/2018 5-7	LSB-15A LSB-15A_111918 18K0780-01 11/19/2018 0.5-2.5	LSB-15A LSB-15A_111918 18K0780-01RE1 11/19/2018 0.5-2.5	LSB-15B LSB-15B_111918 18K0780-02 11/19/2018 4-6	LSB-16A LSB-16A_111918 18K0780-03 11/19/2018 1-3	LSB-16B LSB-16B_111918 18K0780-04 11/19/2018 4-6
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
4,4'-DDE	0.0033	17	62	120	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
4,4'-DDT	0.0033	136	47	94	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Aldrin	0.005	0.19	0.68	1.4	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Alpha Chlordane	0.094	2.9	24	47	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Alpha Endosulfan	2.4	102	200	920	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Beta Endosulfan	2.4	102	200	920	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Chlordane (alpha and gamma)	~	~	~	~	0.042 U	0.036 U	0.0382 U	0.0365 U	0.0485 U	0.0367 U	0.0407 U	0.0381 U	0.037 U	NA	0.0362 U	0.0357 U	0.0439 U	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Dieldrin	0.005	0.1	1.4	2.8	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Endosulfan Sulfate	2.4	1000	200	920	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Endrin	0.014	0.06	89	410	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Endrin Aldehyde	~	~	~	~	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Endrin Ketone	~	~	~	~	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Gamma-Chlordane	~	~	~	~	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Heptachlor	0.042	0.38	15	29	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Heptachlor Epoxide	~	~	~	~	0.0021 U	0.0018 U	0.00191 U	0.00182 U	0.00242 U	0.00183 U	0.00204 U	0.0019 U	0.00185 U	NA	0.00181 U	0.00178 U	0.0022 U	
Methoxychlor	~	~	~	~	0.0105 U	0.009 U	0.00955 U	0.00911 U	0.0121 U	0.00917 U	0.0102 U	0.00952 U	0.00925 U	NA	0.00906 U	0.00891 U	0.011 U	
Toxaphene	~	~	~	~	0.106 U	0.0911 U	0.0967 U	0.0922 U	0.123 U	0.0928 U	0.103 U	0.0963 U	0.0937 U	NA	0.0917 U	0.0902 U	0.111 U	
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
Total PCBs	0.1	3.2	1	25	0.0212 U	0.0182 U	0.0193 U	0.0184 U	0.0245 U	0.0185 U	0.0206 U	0.0192 U	0.0187 U	NA	0.0183 U	0.018 U	0.0222 U	
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	3,550	2,210	1,510	4,680	6,930	9,110	2,840	3,830	7,520	NA	4,900	6,210	1,490	
Antimony	~	~	~	~	3.18 U	2.73 U	2.91 U	2.78 U	3.68 U	2.78 U	3.09 U	2.89 U	2.81 U	NA	2.75 U	2.71 U	3.34 U	
Arsenic	13	16	16	16	9.14	8.9	**19.2**	10.1	**15**	5.93	12.2	10.9	12.4	NA	1.65 U	10.3	5.38	
Barium	350	820	400	10,000	44	39.5	31.6	75.4	260	87	66	188	95.1	NA	37.4	76	56.3	
Beryllium	7.2	47	590	2,700	0.064 U	0.055 U	0.058 U	0.072	0.171	0.056 U	0.062 U	0.079	0.056 U	NA	0.055 U	0.054 U	0.067 U	
Cadmium	2.5	7.5	9.3	60	0.382 U	0.328 U	0.349 U	0.678	0.825	0.384	0.371 U	0.378	0.925	NA	0.33 U	0.79	0.4 U	
Calcium	~	~	~	~	35,100	2,060	2,020	24,300	24,500	77,400	2,820	3,400	26,600	NA	2,200	82,800	1,290	
Chromium, Hexavalent	1	19	400	800	0.636 U	0.546 U	0.582 U	0.555 U	0.736 U	**1.47**	0.618 U	0.579 U	0.562 U	NA	0.549 U	0.543 U	0.667 U	
Chromium, Total	~	~	~	~	15.5	5.1	5.84	49.5	21.7	23.1	9.32	15.1	19.3	NA	10.1	15	6.61	
Chromium, Trivalent	30	~	1,500	6,800	15.5	5.1	5.84	**49.5**	21.7	21.6	9.32	15.1	19.3	NA	10.1	15	6.61	
Cobalt	~	~	~	~	5.79	4.64	4.93	9.55	28.3	5.29	17.5	8.94	8.63	NA	6.76	7.3	4.06	
Copper	50	1,720	270	10,000	50	20.2	22.2	**181**	**275**	20.4	**54.4**	**111**	**183**	NA	20.5	**128**	29.7	
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	~	~	~	~	8,630	6,920	6,700	16,600	20,700	7,740	10,400	10,800	17,500	NA	8,840	13,800	14,800	
Lead	63	450	1,000	3,900	60.2	26.9	11.8	**204**	**1,160**	25.4	**122**	**220**	**140**	NA	27.3	**122**	38.8	
Magnesium	~	~	~	~	16,400	650	191	10,400	3,960	7,520	583	626	3,800	NA	3,980	24,500	119	
Manganese	1,600	2,000	10,000	10,000	99.6	51.4	33.1	231	189	263	144	101	365	NA	170	218	29.8	
Mercury	0.18	0.73	2.8	5.7	**0.39**	**0.287**	0.125	**0.681**	12.1	0.0858	**0.916**	**1.25**	**0.404**	NA	0.0902	**0.345**	**0.224**	
Nickel	30	130	310	10,000	12.1	12.2	10.1	**37.8**	**42.3**	11.7	23.2	25.1	29	NA	**34.5**	23.2	9.28	
Potassium	~	~	~	~	798	523	329	673	859	415	504	488	1,400	NA	1,170	1,090	146	
Selenium	3.9	4	1,500	6,800	**11.2**	2.73 U	2.91 U	2.78 U	3.68 U	2.78 U	3.09 U	2.89 U	2.81 U	NA	2.75 U	2.71 U	3.34 U	
Silver	2	8.3	1,500	6,800	0.636 U	0.546 U	0.582 U	0.555 U	0.736 U	0.557 U	0.618 U	0.579 U	0.562 U	NA	0.549 U	0.543 U	0.667 U	
Sodium	~	~	~	~	693	236	277	314	539	162	468	443	484	NA	214	645	73.3	
Thallium	~	~	~	~	3.18 U	2.73 U	2.91 U	2.78 U	3.68 U	2.78 U	3.09 U	2.89 U	2.81 U	NA	2.75 U	2.71 U	3.34 U	
Vanadium	~	~	~	~	24.9	13	13.7	22.6	18.1	18.6	15.5	12.2	24.7	NA	16	24.2	19.7	
Zinc	109	2,480	10,000	10,000	46.1	27.7	9.97	**159**	**557**	55.4	88.6	**150**	**218**	NA	43.5	**148**	8.46	
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Solids, Percent (%)	~	~	~	~	78.6	91.5	85.9	90	67.9	89.8	80.9	86.4	88.9	NA	91	92.2	75	
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-17A 29 LSB-17A_112018 18K0823-09 11/20/2018 0.5-2.5		LSB-17A 29 LSB-17A_112018 18K0823-09RE1 11/20/2018 0.5-2.5		LSB-17B 30 LSB-17B_112018 18K0823-10 11/20/2018 14-16		LSB-17B 30 LSB-17B_112018 18K0823-10RE1 11/20/2018 14-16		LSB-18A LSB-18A_111918 18K0780-13 11/19/2018 0.5-2.5		LSB-18B LSB-18B_111918 18K0780-14 11/19/2018 2.5-4.5		LSB-18B LSB-18B_111918 18K0780-14RE1 11/19/2018 2.5-4.5		LSB-18C LSB-18C_111918 18K0780-15 11/19/2018 7-9		LSB-18C LSB-18C_111918 18K0780-15RE1 11/19/2018 7-9		LSB-19A LSB-19A_111918 18K0780-16 11/19/2018 0-2		LSB-19B LSB-19B_111918 18K0780-17 11/19/2018 4-6		LSB-20A 34 LSB-20A_112018 18K0823-14 11/20/2018 0.5-2.5		LSB-20A 34 LSB-20A_112018 18K0823-14RE1 11/20/2018 0.5-2.5	
Volatile Organic Compounds (mg/kg)																																
1,1,1,2-Tetrachloroethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1,2,2-Tetrachloroethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1,2-Trichloroethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1-Dichloroethane	0.27	0.27	240	480	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1-Dichloroethene	0.33	0.33	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,1-Dichloropropene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2,3-Trichlorobenzene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2,3-Trichloropropane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2,4,5-Tetramethylbenzene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0083		0.28		NA		0.31		NA		0.0045	U	0.0037	U	NA		35	D		
1,2,4-Trichlorobenzene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0062	J	NA		0.011	J	NA		0.0045	U	0.0037	U	0.05		NA			
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2-Dichloroethane	0.02	0.02	30	60	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,2-Dichloropropane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0091	J	NA		0.0045	U	0.0037	U	0.016		NA			
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,3-Dichloropropane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.056	U	NA		0.062	U	NA		0.048	U	0.064	U	NA		*0.12*	U	NA		0.09	U	0.074	U	0.054	U	NA			
2,2-Dichloropropane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
2-Chlorotoluene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
2-Hexanone (MBK)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
4-Chlorotoluene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Acetone	0.05	0.05	500	1,000	0.0056	U	NA		0.046		NA		0.027		**0.08**		NA		**0.17**		NA		0.009	U	0.036		0.013		NA			
Acrolein	~	~	~	~	0.0056	U	NA		0.0062	U	NA		0.0048	U	0.0064	U	NA		0.012	U	NA		0.009	U	0.0074	U	0.0054	U	NA			
Acrylonitrile	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Benzene	0.06	0.06	44	89	0.0028	U	NA		0.0031	U	NA		0.0064		0.021		NA		0.0061	U	NA		0.0045	U	0.0037	U	0.021		NA			
Bromobenzene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Bromochloromethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Bromodichloromethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Bromoform	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Bromomethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Carbon Disulfide	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.012		NA		0.0045	U	0.0037	U	0.0027	U	NA			
Carbon Tetrachloride	0.76	0.76	22	44	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Chlorobenzene	1.1	1.1	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Chloroethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Chloroform	0.37	0.37	350	700	0.0028	U	NA		0.0031	U	NA		0.0034	J	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Chloromethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Cis-1,3-Dichloropropene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Cyclohexane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.087		NA		0.12		NA		0.0045	U	0.0042	J	0.0027	U	NA			
Dibromochloromethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Dibromomethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Dichlorodifluoromethane	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Ethylbenzene	1	1	390	780	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0068		NA		0.0061	U	NA		0.0045	U	0.0037	U	0.014		NA			
Hexachlorobutadiene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Isopropyl Ether	~	~	~	~	0.0045	U	NA		0.005	U	NA		0.0038	U	0.0051	U	NA		0.0097	U	NA		0.0072	U	0.0059	U	0.0043	U	NA			
Isopropylbenzene (Cumene)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.37		NA		0.21		NA		0.0045	U	0.0037	U	0.046		NA			
M,P-Xylene	~	~	~	~	0.0056	U	NA		0.0062	U	NA		0.0048	U	0.019		NA		0.017	J	NA		0.009	U	0.0074	U	0.09		NA			
Methyl Acetate	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.028		NA		0.0045	U	0.011		0.0097		NA			
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Methylcyclohexane	~	~	~	~	0.0028	U	NA		0.013		NA		0.027		NA		8.3	D	NA		9.5	D	0.0045	U	0.0037	U	0.023		NA			
Methylene Chloride	0.05	0.05	500	1,000	0.0056	U	NA		**0.057**		NA		0.0057	J	0.0064	U	NA		0.019	J	NA		0.009	U	0.0074	U	0.0054	U	NA			
n-Butylbenzene	12	12	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.077		NA		0.062		NA		0.0045	U	0.0037	U	0.1		NA			
n-Propylbenzene	3.9	3.9	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.26		NA		0.17		NA		0.0045	U	0.0037	U	0.087		NA			
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0087		NA		0.016		NA		0.0045	U	0.0037	U	0.018		NA			
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0046	J	NA		0.0066	J	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Sec-Butylbenzene	11	11	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.067		NA		0.044		NA		0.0045	U	0.0037	U	0.081		NA			
Styrene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
T-Butylbenzene	5.9	5.9	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.011		NA		0.036		NA		0.0045	U	0.0037	U	0.0027	U	NA			
Tert-Butyl Alcohol	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Toluene	0.7	0.7	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0078		NA		0.0061	U	NA		0.0045	U	0.0037	U	0.032		NA			
Total Xylenes	0.26	1.6	500	1,000	0.0085	U	NA		0.0093	U	NA		0.0072	U	0.028		NA		0.032	J	NA		0.014	U	0.011	U	0.11		NA			
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Trans-1,3-Dichloropropene	~	~	~	~	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
Trichloroethene (TCE)	0.47	0.47	200	400	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Trichlorofluoromethane	~	~	~	~	0.0028	U	NA		0.02		NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			
Vinyl Chloride	0.02	0.02	13	27	0.0028	U	NA		0.0031	U	NA		0.0024	U	0.0032	U	NA		0.0061	U	NA		0.0045	U	0.0037	U	0.0027	U	NA			

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-17A 29 LSB-17A_112018 18K0823-09 11/20/2018 0.5-2.5		LSB-17A 29 LSB-17A_112018 18K0823-09RE1 11/20/2018 0.5-2.5		LSB-17B 30 LSB-17B_112018 18K0823-10 11/20/2018 14-16		LSB-17B 30 LSB-17B_112018 18K0823-10RE1 11/20/2018 14-16		LSB-18A LSB-18A_111918 18K0780-13 11/19/2018 0.5-2.5		LSB-18B LSB-18B_111918 18K0780-14 11/19/2018 2.5-4.5		LSB-18B LSB-18B_111918 18K0780-14RE1 11/19/2018 2.5-4.5		LSB-18C LSB-18C_111918 18K0780-15 11/19/2018 7-9		LSB-18C LSB-18C_111918 18K0780-15RE1 11/19/2018 7-9		LSB-19A LSB-19A_111918 18K0780-16 11/19/2018 0-2		LSB-19B LSB-19B_111918 18K0780-17 11/19/2018 4-6		LSB-20A 34 LSB-20A_112018 18K0823-14 11/20/2018 0.5-2.5		LSB-20A 34 LSB-20A_112018 18K0823-14RE1 11/20/2018 0.5-2.5	
Semivolatile Organic Compounds (mg/kg)																																
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
1,2,4-Trichlorobenzene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
1,2-Diphenylhydrazine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
2,4,5-Trichlorophenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2,4,6-Trichlorophenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2,4-Dichlorophenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2,4-Dimethylphenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2,4-Dinitrophenol	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
2,4-Dinitrotoluene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2,6-Dinitrotoluene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2-Chloronaphthalene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2-Chlorophenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2-Methylnaphthalene	~	~	~	~	0.384	D	NA		0.0739	JD	NA		0.0909	D	0.0599	U	NA		0.101	JD	NA		0.048	U	0.157	D	0.908	D	NA	
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
2-Nitroaniline	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
2-Nitrophenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
3,3'-Dichlorobenzidine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
3-Nitroaniline	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
4-Chloro-3-Methylphenol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
4-Chloroaniline	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
4-Nitroaniline	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
4-Nitrophenol	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
Acenaphthene	20	98	500	1,000	1.12	D	NA		0.551	D	NA		0.137	D	0.751	D	NA		0.271	D	NA		0.048	U	0.0932	JD	0.0665	JD	NA	
Acenaphthylene	100	107	500	1,000	0.0823	JD	NA		0.169	D	NA		0.0603	JD	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0919	D	NA	
Acetophenone	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.189	U	NA		0.206	U	NA		0.182	U	0.239	U	NA		0.402	U	NA		0.192	U	0.214	U	0.181	U	NA	
Anthracene	100	1,000	500	1,000	1.71	D	NA		2.47	D	NA		0.102	D	0.348	D	NA		0.283	D	NA		0.048	U	0.0536	U	0.0731	JD	NA	
Atrazine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Benzaldehyde	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Benzidine	~	~	~	~	0.189	U	NA		0.206	U	NA		0.182	U	0.239	U	NA		0.402	U	NA		0.192	U	0.214	U	0.181	U	NA	
Benzo(a)anthracene	1	1	5.6	11	NA		**4.02**	D	NA		**6.24**	D	0.443	D	0.219	D	NA		0.509	D	NA		0.132	D	0.0536	U	0.16	D	NA	
Benzo(a)pyrene	1	22	1	1.1	NA		**3.73**	D	NA		**6.69**	D	0.433	D	0.189	D	NA		0.398	D	NA		0.239	D	0.144	D	0.188	D	NA	
Benzo(b)fluoranthene	1	1.7	5.6	11	**2.94**	D	NA		NA		**5.01**	D	0.431	D	0.157	D	NA		0.374	D	NA		0.119	D	0.105	JD	0.221	D	NA	
Benzo(g,h,i)Perylene	100	1,000	500	1,000	2.15	D	NA		NA		4.47	D	0.417	D	0.117	JD	NA		0.21	D	NA		0.178	D	0.15	D	0.195	D	NA	
Benzo(k)fluoranthene	0.8	1.7	56	110	**2.21**	D	NA		NA		**4.25**	D	0.248	D	0.101	JD	NA		0.31	D	NA		0.0544	JD	0.101	JD	0.145	D	NA	
Benzoic Acid	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Benzyl Alcohol	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Benzyl Butyl Phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Biphenyl (Diphenyl)	~	~	~	~	0.0777	JD	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Bis(2-chloroethoxy) methane	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.11	JD	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Caprolactam	~	~	~	~	0.0944	U	NA		0.103	U	NA		0.0909	U	0.12	U	NA		0.201	U	NA		0.0958	U	0.107	U	0.0905	U	NA	
Carbazole	~	~	~	~	0.458	D	NA		0.554	D	NA		0.0456	U	0.0599	U	NA		0.101	JD	NA		0.048	U	0.0536	U	0.0453	U	NA	
Chrysene	1	1	56	110	NA		**4.19**	D	NA		**5.88**	D	0.518	D	0.305	D	NA		0.541	D	NA		0.365	D	0.0769	JD	0.236	D	NA	
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	**0.54**	D	NA		**1.04**	D	NA		0.0901	JD	0.0599	U	NA		0.101	U	NA		0.082	JD	0.0536	U	0.0788	JD	NA	
Dibenzofuran	7	210	350	1,000	0.427	D	NA		0.31	D	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Dibutyl phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Diethyl phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Dimethyl phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Dioctyl phthalate	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Diphenylamine	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Fluoranthene	100	1,000	500	1,000	NA		10.3	D	NA		14.9	D	0.483	D	0.435	D	NA		0.85	D	NA		0.048	U	0.0538	JD	0.284	D	NA	
Fluorene	30	386	500	1,000	0.844	D	NA		0.538	D	NA		0.134	D	1.35	D	NA		0.381	D	NA		0.048	U	0.0692	JD	0.0731	JD	NA	
Hexachlorobenzene	0.33	3.2	6	12	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Hexachlorobutadiene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Hexachlorocyclopentadiene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Hexachloroethane	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	**1.85**	D	NA		NA		**3.25**	D	0.282	D	0.087	JD	NA		0.204	D	NA		0.0643	JD	0.112	D	0.152	D	NA	
Isophorone	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Naphthalene	12	12	500	1,000	0.316	D	NA		0.1	JD	NA		0.0676	JD	0.464	D	NA		0.101	U	NA		0.048	U	0.28	D	1.76	D	NA	
Nitrobenzene	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
n-Nitrosodimethylamine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
n-Nitrosodiphenylamine	~	~	~	~	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Pentachlorophenol	0.8	0.8	6.7	55	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Phenanthrene	100	1,000	500	1,000	NA		10.1	D	NA		11	D	0.373	D	2.21	D	NA		1.24	D	NA		0.048	U	0.0624	JD	0.194	D	NA	
Phenol	0.33	0.33	500	1,000	0.0473	U	NA		0.0515	U	NA		0.0456	U	0.0599	U	NA		0.101	U	NA		0.048	U	0.0536	U	0.0453	U	NA	
Pyrene	100	1,000	500	1,000	NA		9.84	D	NA		14.5	D	0.642	D	0.725	D	NA		0.981	D	NA		0.0927	JD	0.0709	JD	0.343	D	NA	
Pyridine	~	~	~	~	0.189	U	NA		0.206	U	NA		0.182	U	0.239	U	NA		0.402	U	NA		0.192	U	0.214	U	0.181	U	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-17A 29 LSB-17A_112018 18K0823-09 11/20/2018 0.5-2.5	LSB-17A 29 LSB-17A_112018 18K0823-09RE1 11/20/2018 0.5-2.5	LSB-17B 30 LSB-17B_112018 18K0823-10 11/20/2018 14-16	LSB-17B 30 LSB-17B_112018 18K0823-10RE1 11/20/2018 14-16	LSB-18A LSB-18A_111918 18K0780-13 11/19/2018 0.5-2.5	LSB-18B LSB-18B_111918 18K0780-14 11/19/2018 2.5-4.5	LSB-18B LSB-18B_111918 18K0780-14RE1 11/19/2018 2.5-4.5	LSB-18C LSB-18C_111918 18K0780-15 11/19/2018 7-9	LSB-18C LSB-18C_111918 18K0780-15RE1 11/19/2018 7-9	LSB-19A LSB-19A_111918 18K0780-16 11/19/2018 0-2	LSB-19B LSB-19B_111918 18K0780-17 11/19/2018 4-6	LSB-20A 34 LSB-20A_112018 18K0823-14 11/20/2018 0.5-2.5	LSB-20A 34 LSB-20A_112018 18K0823-14RE1 11/20/2018 0.5-2.5
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	*0.00398* U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
4,4'-DDE	0.0033	17	62	120	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	*0.00398* U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
4,4'-DDT	0.0033	136	47	94	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	*0.00398* U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Aldrin	0.005	0.19	0.68	1.4	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Alpha Chlordane	0.094	2.9	24	47	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Alpha Endosulfan	2.4	102	200	920	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Beta Endosulfan	2.4	102	200	920	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Chlordane (alpha and gamma)	~	~	~	~	0.0371 U	NA	0.0408 U	NA	0.0361 U	0.0474 U	NA	0.0797 U	NA	0.0378 U	0.042 U	0.0357 U	NA	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Dieldrin	0.005	0.1	1.4	2.8	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Endosulfan Sulfate	2.4	1000	200	920	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Endrin	0.014	0.06	89	410	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Endrin Aldehyde	~	~	~	~	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Endrin Ketone	~	~	~	~	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Gamma-Chlordane	~	~	~	~	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Heptachlor	0.042	0.38	15	29	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Heptachlor Epoxide	~	~	~	~	0.00186 U	NA	0.00204 U	NA	0.0018 U	0.00237 U	NA	0.00398 U	NA	0.00189 U	0.0021 U	0.00178 U	NA	
Methoxychlor	~	~	~	~	0.00928 U	NA	0.0102 U	NA	0.00901 U	0.0119 U	NA	0.0199 U	NA	0.00945 U	0.0105 U	0.00892 U	NA	
Toxaphene	~	~	~	~	0.0939 U	NA	0.103 U	NA	0.0912 U	0.12 U	NA	0.202 U	NA	0.0956 U	0.106 U	0.0903 U	NA	
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
Total PCBs	0.1	3.2	1	25	0.0187 U	NA	0.0206 U	NA	0.0182 U	0.0239 U	NA	0.0402 U	NA	0.0191 U	0.0212 U	0.018 U	NA	
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	6,380	NA	7,900	NA	6,120	1,560	NA	6,430	NA	1,470	5,620	5,400	NA	
Antimony	~	~	~	~	2.82 U	NA	3.43	NA	2.73 U	3.6 U	NA	6.04 U	NA	2.87 U	6.16	2.71 U	NA	
Arsenic	13	16	16	16	**20.7**	NA	**19.2**	NA	3.85	9.62	NA	8.64	NA	11.7	**23.4**	8.26	NA	
Barium	350	820	400	10,000	149	NA	**360**	NA	40.9	33	NA	97.8	NA	24.8	277	38	NA	
Beryllium	7.2	47	590	2,700	0.389	NA	0.378	NA	0.055 U	0.072 U	NA	0.121 U	NA	0.057 U	0.064 U	0.095	NA	
Cadmium	2.5	7.5	9.3	60	1.12	NA	0.646	NA	0.328 U	0.432 U	NA	0.725 U	NA	0.345 U	0.436	0.325 U	NA	
Calcium	~	~	~	~	11,900	NA	3,780	NA	3,700	1,030	NA	8,440	NA	4,570	3,990	1,860	NA	
Chromium, Hexavalent	1	19	400	800	0.564 U	NA	0.62 U	NA	0.547 U	0.719 U	NA	*1.21* U	NA	0.574 U	0.641 U	0.542 U	NA	
Chromium, Total	~	~	~	~	19.4	NA	20.4	NA	13.4	5.36	NA	14.4	NA	3.15	83.5	7.9	NA	
Chromium, Trivalent	30	~	1,500	6,800	19.4	NA	20.4	NA	13.4	5.36	NA	14.4	NA	3.15	**83.5**	7.9	NA	
Cobalt	~	~	~	~	11.3	NA	9.57	NA	7.57	5.86	NA	6.87	NA	3.01	10	4.03	NA	
Copper	50	1,720	270	10,000	**249**	NA	**355**	NA	24.1	25.4	NA	47	NA	21.6	**399**	**350**	NA	
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	~	~	~	~	18,800	NA	19,300	NA	13,300	17,200	NA	18,400	NA	4,760	26,000	10,900	NA	
Lead	63	450	1,000	3,900	**430**	NA	**1,330**	NA	35	**94.3**	NA	**235**	NA	22.3	**398**	**63.2**	NA	
Magnesium	~	~	~	~	2,920	NA	1,890	NA	2,830	153	NA	2,780	NA	316	995	597	NA	
Manganese	1,600	2,000	10,000	10,000	276	NA	342	NA	158	196	NA	234	NA	22.8	122	85	NA	
Mercury	0.18	0.73	2.8	5.7	**0.873**	NA	**10.8**	NA	0.143	**1.44**	NA	**0.645**	NA	0.0624	**1.96**	**0.222**	NA	
Nickel	30	130	310	10,000	**37**	NA	**35.4**	NA	27.8	14.6	NA	18.2	NA	7.59	29.1	9.6	NA	
Potassium	~	~	~	~	916	NA	1,290	NA	1,020	270	NA	1,160	NA	336	688	279	NA	
Selenium	3.9	4	1,500	6,800	2.82 U	NA	3.1 U	NA	2.73 U	3.6 U	NA	*6.04* U	NA	2.87 U	3.2 U	2.71 U	NA	
Silver	2	8.3	1,500	6,800	0.564 U	NA	1.66	NA	0.547 U	0.719 U	NA	1.21 U	NA	0.574 U	**5.82**	0.542 U	NA	
Sodium	~	~	~	~	270	NA	1,370	NA	336	110	NA	1,530	NA	344	315	132	NA	
Thallium	~	~	~	~	2.82 U	NA	3.1 U	NA	2.73 U	3.6 U	NA	6.04 U	NA	2.87 U	3.2 U	2.71 U	NA	
Vanadium	~	~	~	~	28.9	NA	23.5	NA	22.6	10.4	NA	29.4	NA	7.03	33.7	13	NA	
Zinc	109	2,480	10,000	10,000	**471**	NA	**659**	NA	65.6	55	NA	**134**	NA	11.6	**257**	42.5	NA	
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Solids, Percent (%)	~	~	~	~	88.6	NA	80.6	NA	91.4	69.5	NA	41.4	NA	87	78	92.2	NA	
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-20B 35 LSB-20B_112018 18K0823-15 11/20/2018 4-6	LSB-20B 35 LSB-20B_112018 18K0823-15RE1 11/20/2018 4-6	LSB-20B 35 LSB-20B_112018 18K0823-15RE2 11/20/2018 4-6	LSB-26A 108 LSB-26A_20200713 20G0444-08 7/13/2020 3-5	LSB-26A 108 LSB-26A_20200713 20G0444-08RE1 7/13/2020 3-5	LSB-26A 108 LSB-26A_20200713 20G0444-08RE2 7/13/2020 3-5	LSB-26B 109 LSB-26B_20200713 20G0444-09 7/13/2020 11-13	LSB-26B 110 DUP-2_20200713 20G0444-10 7/13/2020 11-13	LSB-27A 106 LSB-27A_20200713 20G0444-06 7/13/2020 3-5	LSB-27B 107 LSB-27B_20200713 20G0444-07 7/13/2020 11-13	LSB-28A 103 LSB-28A_20200713 20G0444-03 7/13/2020 3-5	LSB-28B 104 LSB-28B_20200713 20G0444-04 7/13/2020 11-13	LSB-28B 105 DUP-1_20200713 20G0444-05 7/13/2020 11-15
Volatile Organic Compounds (mg/kg)																	
1,1,1,2-Tetrachloroethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,1,2,2-Tetrachloroethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.44 JD	0.39 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,1,2-Trichloroethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	2.9 D	0.39 U
1,1-Dichloroethane	0.27	0.27	240	480	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	*0.32* U	0.0019 U	*0.28* U	*0.39* U
1,1-Dichloroethene	0.33	0.33	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	*0.39* U
1,1-Dichloropropene	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
1,2,3-Trichloropropane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	260 D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.13	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.57 JD	0.0019 U	0.28 U	0.39 U
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.33 JD	0.39 U
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,2-Dichloroethane	0.02	0.02	30	60	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	*0.32* U	0.0019 U	*0.28* U	*0.39* U
1,2-Dichloropropane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
1,3-Dichloropropane	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.065 U	NA	NA	0.063 U	NA	NA	0.087 U	0.063 U	0.042 U	*6.5* U	0.038 U	*5.5* U	*7.8* U
2,2-Dichloropropane	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 UJ	0.0019 U	0.28 UJ	0.39 UJ
4-Chlorotoluene	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000	0.0065 U	NA	NA	**0.058**	NA	NA	0.041	**0.088**	0.0042 U	*0.65* UJ	0.016	*0.55* UJ	*0.78* UJ
Acrolein	~	~	~	~	0.0065 U	NA	NA	0.0063 U	NA	NA	0.0087 U	0.0063 U	0.0042 U	0.65 UJ	0.0038 U	0.55 UJ	0.78 UJ
Acrylonitrile	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Benzene	0.06	0.06	44	89	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	**2.6** D	0.0019 U	*0.28* U	*0.39* U
Bromobenzene	~	~	~	~	0.0033 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Bromodichloromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.69 D	0.39 U
Bromoform	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Bromomethane	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Carbon Disulfide	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Carbon Tetrachloride	0.76	0.76	22	44	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Chlorobenzene	1.1	1.1	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Chloroethane	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Chloroform	0.37	0.37	350	700	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	**0.39** JD	*0.39* U
Chloromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	*0.32* U	0.0019 U	*0.28* U	*0.39* U
Cis-1,3-Dichloropropene	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Cyclohexane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.67 D	0.0019 U	0.28 U	0.39 U
Dibromochloromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Dibromomethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Dichlorodifluoromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 UJ	0.0019 U	0.28 UJ	0.39 UJ
Ethylbenzene	1	1	390	780	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.75 D	0.0019 U	0.28 U	0.39 U
Hexachlorobutadiene	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Isopropyl Ether	~	~	~	~	0.0052 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~	NA	44 D	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	1.8 D	0.0029 J	0.41 JD	0.51 JD
M,P-Xylene	~	~	~	~	0.0065 U	NA	NA	0.0063 U	NA	NA	0.0087 U	0.0063 U	0.0042 U	1.8 D	0.0038 U	0.55 U	0.78 U
Methyl Acetate	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 UJ	0.0019 U	0.28 UJ	0.48 J
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	0.0033 U	NA	NA	0.026	NA	NA	0.022	0.029	0.0021 U	**0.33** JD	0.0061	*0.28* U	**0.5** JD
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 UJ	0.0019 U	0.28 UJ	0.39 UJ
Methylcyclohexane	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.079	0.033	0.0021 U	2.5 D	0.022	1.1 D	2.5 D
Methylene Chloride	0.05	0.05	500	1,000	0.0065 U	NA	NA	0.0063 U	NA	NA	0.0087 U	0.0063 U	0.0042 U	*0.65* UJ	0.0038 U	*0.55* UJ	*0.78* UJ
n-Butylbenzene	12	12	500	1,000	NA	**41** D	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.97 D	0.0024 J	0.28 U	0.39 U
n-Propylbenzene	3.9	3.9	500	1,000	NA	NA	**210** D	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	3 D	0.0053	0.34 JD	0.5 JD
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.055 J	0.0081 J	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Sec-Butylbenzene	11	11	500	1,000	NA	**23** D	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.63 JD	0.0024 J	0.38 JD	0.47 JD
Styrene	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
T-Butylbenzene	5.9	5.9	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Tert-Butyl Alcohol	~	~	~	~	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	1.4 D	0.39 U
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	*0.28* U	0.39 U
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Toluene	0.7	0.7	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	**0.71** D	0.0019 U	0.28 U	0.39 U
Total Xylenes	0.26	1.6	500	1,000	0.0098 U	NA	NA	0.0094 U	NA	NA	0.013 U	0.0095 U	0.0064 U	**1.8** JD	0.0057 U	*0.83* U	*1.2* U
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	*0.32* U	0.0019 U	*0.28* U	*0.39* U
Trans-1,3-Dichloropropene	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 U	0.0019 UJ	0.28 U	0.39 U
Trichloroethene (TCE)	0.47	0.47	200	400	0.0033 U	NA	NA	0.0031 U	NA	NA	0.0043 U	0.0032 U	0.0021 U	0.32 U	0.0019 U	0.28 U	0.39 U
Trichlorofluoromethane	~	~	~	~	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	0.32 UJ	0.0019 UJ	0.28 UJ	0.39 UJ
Vinyl Chloride	0.02	0.02	13	27	0.0033 U	NA	NA	0.0031 UJ	NA	NA	0.0043 UJ	0.0032 UJ	0.0021 UJ	*0.32* UJ	0.0019 UJ	*0.28* UJ	*0.39* UJ

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-20B 35 LSB-20B_112018 18K0823-15 11/20/2018 4-6		LSB-20B 35 LSB-20B_112018 18K0823-15RE1 11/20/2018 4-6		LSB-20B 35 LSB-20B_112018 18K0823-15RE2 11/20/2018 4-6		LSB-26A 108 LSB-26A_20200713 20G0444-08 7/13/2020 3-5		LSB-26A 108 LSB-26A_20200713 20G0444-08RE1 7/13/2020 3-5		LSB-26A 108 LSB-26A_20200713 20G0444-08RE2 7/13/2020 3-5		LSB-26B 109 LSB-26B_20200713 20G0444-09 7/13/2020 11-13		LSB-26B 110 DUP-2_20200713 20G0444-10 7/13/2020 11-13		LSB-27A 106 LSB-27A_20200713 20G0444-06 7/13/2020 3-5		LSB-27B 107 LSB-27B_20200713 20G0444-07 7/13/2020 11-13		LSB-28A 103 LSB-28A_20200713 20G0444-03 7/13/2020 3-5		LSB-28B 104 LSB-28B_20200713 20G0444-04 7/13/2020 11-13		LSB-28B 105 DUP-1_20200713 20G0444-05 7/13/2020 11-15	
Semivolatile Organic Compounds (mg/kg)																																
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.109	U	NA		NA		0.1	U	NA		NA		0.143	U	0.128	U	0.0925	U	0.118	U	0.0889	U	0.118	U	0.128	U
1,2,4-Trichlorobenzene	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
1,2-Diphenylhydrazine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA		NA		NA		0.00943	U	NA		NA		0.0098	U	0.00952	U	0.00943	U	0.00962	UJ	0.00971	U	0.0098	U	0.0098	U
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.109	U	NA		NA		0.1	U	NA		NA		0.143	U	0.128	U	0.0925	U	0.118	U	0.0889	U	0.118	U	0.128	U
2,4,5-Trichlorophenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2,4,6-Trichlorophenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2,4-Dichlorophenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2,4-Dimethylphenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2,4-Dinitrophenol	~	~	~	~	0.109	U	NA		NA		0.1	UJ	NA		NA		0.143	UJ	0.128	UJ	0.0925	UJ	0.118	UJ	0.0889	UJ	0.118	U	0.128	UJ
2,4-Dinitrotoluene	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	UJ	0.0445	UJ	0.059	U	0.0644	UJ
2,6-Dinitrotoluene	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	UJ	0.0445	UJ	0.059	U	0.0644	UJ
2-Chloronaphthalene	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2-Chlorophenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2-Methylnaphthalene	~	~	~	~	0.128	D	NA		NA		NA		3.59	D	NA		0.0715	U	0.0642	U	0.0464	U	0.0593	JD	0.0831	JD	0.059	U	0.0644	U
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
2-Nitroaniline	~	~	~	~	0.109	U	NA		NA		0.1	UJ	NA		NA		0.143	UJ	0.128	UJ	0.0925	UJ	0.118	UJ	0.0889	UJ	0.118	U	0.128	UJ
2-Nitrophenol	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	UJ	0.0445	UJ	0.059	U	0.0644	UJ
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0547	U	NA		NA		0.0535	JD	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0753	JD	0.0445	U	0.0837	JD	0.0644	U
3,3'-Dichlorobenzidine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
3-Nitroaniline	~	~	~	~	0.109	U	NA		NA		0.1	UJ	NA		NA		0.143	UJ	0.128	UJ	0.0925	UJ	0.118	UJ	0.0889	UJ	0.118	U	0.128	UJ
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.109	U	NA		NA		0.1	UJ	NA		NA		0.143	UJ	0.128	UJ	0.0925	UJ	0.118	UJ	0.0889	UJ	0.118	U	0.128	UJ
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
4-Chloro-3-Methylphenol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
4-Chloroaniline	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
4-Nitroaniline	~	~	~	~	0.109	U	NA		NA		0.1	UJ	NA		NA		0.143	UJ	0.128	UJ	0.0925	UJ	0.118	UJ	0.0889	UJ	0.118	U	0.128	UJ
4-Nitrophenol	~	~	~	~	0.109	U	NA		NA		0.1	U	NA		NA		0.143	U	0.128	U	0.0925	U	0.118	U	0.0889	U	0.118	U	0.128	U
Acenaphthene	20	98	500	1,000	0.0995	JD	NA		NA		NA		19	D	NA		0.0715	U	0.265	D	0.0464	U	0.108	JD	0.328	D	0.0658	JD	0.21	D
Acenaphthylene	100	107	500	1,000	0.0547	U	NA		NA		0.227	D	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.124	D	0.059	U	0.0644	U
Acetophenone	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.219	U	NA		NA		0.2	U	NA		NA		0.286	U	0.257	U	0.185	U	0.236	U	0.178	U	0.236	U	0.257	U
Anthracene	100	1,000	500	1,000	0.0707	JD	NA		NA		NA		NA		35.7	J	0.161	D	0.856	D	0.0464	U	0.0688	JD	0.183	D	0.16	D	0.22	D
Atrazine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Benzaldehyde	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.073	JD	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.137	D	0.0644	U
Benzidine	~	~	~	~	0.219	U	NA		NA		0.2	U	NA		NA		0.286	U	0.257	UJ	0.185	U	0.236	UJ	0.178	U	0.236	U	0.257	UJ
Benzo(a)anthracene	1	1	5.6	11	0.251	D	NA		NA		NA		NA		**47.1**	J	0.367	D	**1.32**	D	0.0762	JD	0.268	D	0.0445	U	0.532	D	**3.97**	D
Benzo(a)pyrene	1	22	1	1.1	0.348	D	NA		NA		NA		NA		**38.2**	J	0.323	D	**1.18**	D	0.0666	JD	0.208	D	0.0445	U	0.471	D	**3.9**	D
Benzo(b)fluoranthene	1	1.7	5.6	11	0.322	D	NA		NA		NA		**28**	D	NA		0.251	D	0.862	D	0.0599	JD	0.191	D	0.0445	U	0.362	D	**1.41**	D
Benzo(g,h,i)Perylene	100	1,000	500	1,000	0.251	D	NA		NA		NA		20.5	D	NA		0.218	D	0.636	D	0.0464	U	0.137	D	0.0445	U	0.283	D	0.938	D
Benzo(k)fluoranthene	0.8	1.7	56	110	0.254	D	NA		NA		NA		**23.5**	D	NA		0.233	D	**0.81**	D	0.0488	JD	0.167	D	0.0445	U	0.29	D	0.612	D
Benzoic Acid	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	UJ	0.0445	UJ	0.059	U	0.0644	UJ
Benzyl Alcohol	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Benzyl Butyl Phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	U	0.0867	J	0.059	U	0.0644	U
Biphenyl (Diphenyl)	~	~	~	~	0.0547	U	NA		NA		0.872	D	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Bis(2-chloroethoxy) methane	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	U	0.0661	J	0.059	U	0.0644	U
Caprolactam	~	~	~	~	0.109	U	NA		NA		0.1	U	NA		NA		0.143	U	0.128	U	0.0925	U	0.118	U	0.0889	U	0.118	U	0.128	U
Carbazole	~	~	~	~	0.0547	U	NA		NA		NA		5.3	D	NA		0.0715	U	0.157	D	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Chrysene	1	1	56	110	0.315	D	NA		NA		NA		NA		**43.9**	J	0.322	D	**1.12**	D	0.0762	JD	0.187	D	0.0445	U	0.583	D	NA	
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	0.0934	JD	NA		NA		NA		**6.7**	D	NA		0.0753	JD	0.211	D	0.0464	U	0.0591	U	0.0445	U	0.0696	JD	**0.685**	D
Dibenzofuran	7	210	350	1,000	0.0547	U	NA		NA		NA		**7.99**	D	NA		0.0715	U	0.151	D	0.0464	U	0.0591	U	0.158	D	0.059	U	0.0644	U
Dibutyl phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Diethyl phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Dimethyl phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Dioctyl phthalate	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	UJ	0.0445	UJ	0.059	U	0.0644	UJ
Diphenylamine	~	~	~	~	NA		NA		NA		0.1	U	NA		NA		0.143	U	0.128	U	0.0925	U	0.118	U	0.0889	U	0.118	U	0.128	U
Fluoranthene	100	1,000	500	1,000	0.302	D	NA		NA		NA		NA		92.5	J	0.665	D	3.02	D	0.11	D	0.309	D	0.0504	JD	0.731	D	0.805	D
Fluorene	30	386	500	1,000	0.101	JD	NA		NA		NA		19.9	D	NA		0.0715	U	0.31	D	0.0464	U	0.139	D	0.623	D	0.079	JD	0.145	D
Hexachlorobenzene	0.33	3.2	6	12	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Hexachlorobutadiene	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Hexachlorocyclopentadiene	~	~	~	~	0.0547	U	NA		NA		0.0501	UJ	NA		NA		0.0715	UJ	0.0642	UJ	0.0464	UJ	0.0591	U	0.0445	UJ	0.059	U	0.0644	U
Hexachloroethane	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	0.227	D	NA		NA		NA		**18**	D	NA		0.192	D	**0.571**	D	0.0464	U	0.125	D	0.0445	U	0.23	D	0.457	D
Isophorone	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Naphthalene	12	12	500	1,000	0.347	D	NA		NA		NA		4.87	D	NA		0.0715	U	0.0642	U	0.0464	U	0.428	D	0.204	D	0.0621	JD	0.332	D
Nitrobenzene	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
n-Nitrosodimethylamine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
n-Nitrosodiphenylamine	~	~	~	~	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Pentachlorophenol	0.8	0.8	6.7	55	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Phenanthrene	100	1,000	500	1,000	0.247	D	NA		NA		NA		NA		**115**	J	0.561	D	2.74	D	0.166	D	0.271	D	1.32	D	0.555	D	0.443	D
Phenol	0.33	0.33	500	1,000	0.0547	U	NA		NA		0.0501	U	NA		NA		0.0715	U	0.0642	U	0.0464	U	0.0591	U	0.0445	U	0.059	U	0.0644	U
Pyrene	100	1,000	500	1,000	0.414	D	NA		NA		NA		NA		**127**	J	0.716	D	2.68	D	0.128	D	0.383	D	0.148	D	0.884	D	3.78	D
Pyridine	~	~	~	~	0.219	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-20B 35 LSB-20B_112018 18K0823-15 11/20/2018 4-6	LSB-20B 35 LSB-20B_112018 18K0823-15RE1 11/20/2018 4-6	LSB-20B 35 LSB-20B_112018 18K0823-15RE2 11/20/2018 4-6	LSB-26A 108 LSB-26A_20200713 20G0444-08 7/13/2020 3-5	LSB-26A 108 LSB-26A_20200713 20G0444-08RE1 7/13/2020 3-5	LSB-26A 108 LSB-26A_20200713 20G0444-08RE2 7/13/2020 3-5	LSB-26B 109 LSB-26B_20200713 20G0444-09 7/13/2020 11-13	LSB-26B 110 DUP-2_20200713 20G0444-10 7/13/2020 11-13	LSB-27A 106 LSB-27A_20200713 20G0444-06 7/13/2020 3-5	LSB-27B 107 LSB-27B_20200713 20G0444-07 7/13/2020 11-13	LSB-28A 103 LSB-28A_20200713 20G0444-03 7/13/2020 3-5	LSB-28B 104 LSB-28B_20200713 20G0444-04 7/13/2020 11-13	LSB-28B 105 DUP-1_20200713 20G0444-05 7/13/2020 11-15
Petroleum Hydrocarbons (mg/kg)																	
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																	
4,4'-DDD	0.0033	14	92	180	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
4,4'-DDE	0.0033	17	62	120	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
4,4'-DDT	0.0033	136	47	94	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Aldrin	0.005	0.19	0.68	1.4	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Alpha Chlordane	0.094	2.9	24	47	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Alpha Endosulfan	2.4	102	200	920	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Beta Endosulfan	2.4	102	200	920	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Chlordane (alpha and gamma)	~	~	~	~	0.0432 U	NA	NA	0.0396 U	NA	NA	0.0565 U	0.0505 U	0.0366 U	0.0466 U	0.0352 U	0.0466 U	0.0508 UJ
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Dieldrin	0.005	0.1	1.4	2.8	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Endosulfan Sulfate	2.4	1000	200	920	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Endrin	0.014	0.06	89	410	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Endrin Aldehyde	~	~	~	~	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Endrin Ketone	~	~	~	~	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Gamma-Chlordane	~	~	~	~	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Heptachlor	0.042	0.38	15	29	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Heptachlor Epoxide	~	~	~	~	0.00216 U	NA	NA	0.00198 U	NA	NA	0.00282 U	0.00253 U	0.00183 U	0.00233 U	0.00176 U	0.00233 U	0.00254 UJ
Methoxychlor	~	~	~	~	0.0108 U	NA	NA	0.00989 U	NA	NA	0.0141 U	0.0126 U	0.00915 U	0.0117 U	0.00879 U	0.0116 U	0.0127 UJ
Toxaphene	~	~	~	~	0.109 U	NA	NA	0.1 U	NA	NA	0.143 U	0.128 U	0.0926 U	0.118 U	0.089 U	0.118 U	0.129 UJ
Herbicides (mg/kg)																	
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	0.0241 U	NA	NA	0.0341 U	0.0307 U	0.0223 U	0.0287 U	0.0214 U	0.0285 U	0.0308 U
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	0.0241 U	NA	NA	0.0341 U	0.0307 U	0.0223 U	0.0287 U	0.0214 U	0.0285 U	0.0308 U
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	0.0241 U	NA	NA	0.0341 U	0.0307 U	0.0223 U	0.0287 U	0.0214 U	0.0285 U	0.0308 U
Polychlorinated Biphenyls (mg/kg)																	
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
Total PCBs	0.1	3.2	1	25	0.0218 U	NA	NA	0.02 U	NA	NA	0.0285 U	0.0255 U	0.0185 U	0.0235 U	0.0178 U	0.0235 U	0.0256 U
Inorganics (mg/kg)																	
Aluminum	~	~	~	~	3,910	NA	NA	4,230	NA	NA	8,140	10,300	3,370	4,600	5,340	3,750	4,070
Antimony	~	~	~	~	3.27 U	NA	NA	3.05 U	NA	NA	4.32 U	3.85 U	2.82 U	3.61 U	2.72 U	3.57 U	3.91 U
Arsenic	13	16	16	16	6.54	NA	NA	**14.3**	NA	NA	**18.6**	**20.3**	1.69 U	**18.1**	4.03	**35.9**	**21.8**
Barium	350	820	400	10,000	157	NA	NA	116	NA	NA	**539**	**1,020**	70.7	164	38.8	157	222
Beryllium	7.2	47	590	2,700	0.111	NA	NA	0.061 U	NA	NA	0.086 U	0.077 U	0.056 U	0.072 U	0.054 U	0.071 U	0.078 U
Cadmium	2.5	7.5	9.3	60	0.429	NA	NA	0.366 U	NA	NA	0.518 U	0.462 U	0.338 U	0.434 U	0.326 U	0.429 U	0.47 U
Calcium	~	~	~	~	5,960	NA	NA	2,710	NA	NA	19,100	12,500	1,680	5,360	2,570	6,480	8,820
Chromium, Hexavalent	1	19	400	800	0.655 U	NA	NA	0.609 U	NA	NA	0.864 U	0.771 U	0.564 U	0.723 U	0.543 U	0.715 U	0.783 U
Chromium, Total	~	~	~	~	13.7	NA	NA	11.5	NA	NA	27.1	133	7.57	20.3	18.7	15	38.6
Chromium, Trivalent	30	~	1,500	6,800	13.7	NA	NA	11.5	NA	NA	27.1	**133**	7.57	20.3	18.7	15	**38.6**
Cobalt	~	~	~	~	4.66	NA	NA	5.62	NA	NA	11	7.35	8.27	12.9	10.6	11.4	6.86
Copper	50	1,720	270	10,000	**264**	NA	NA	**418**	NA	NA	**184**	**60.3**	**86.3**	**151**	33.4	**206**	**143**
Cyanide	27	40	27	10,000	NA	NA	NA	0.609 U	NA	NA	0.864 U	1.06	0.564 U	0.723 U	1.82	0.715 U	0.783 U
Iron	~	~	~	~	14,000	NA	NA	12,900	NA	NA	20,400	21,900	31,700	25,100	10,700	41,900	26,100
Lead	63	450	1,000	3,900	**1,340**	NA	NA	**303**	NA	NA	**2,800**	**844**	**141**	**454**	38.3	**18,300**	**731**
Magnesium	~	~	~	~	1,110	NA	NA	822	NA	NA	3,950	4,330	477	949	2,230	983	1,150
Manganese	1,600	2,000	10,000	10,000	124	NA	NA	79.4	NA	NA	310	271	72.2	150	84.1	240	249
Mercury	0.18	0.73	2.8	5.7	**8.46**	NA	NA	**3.18**	NA	NA	**5.89**	**2.34**	**0.515**	**2.29**	0.039	**2.91**	**3.25**
Nickel	30	130	310	10,000	12.1	NA	NA	12	NA	NA	27.2	24.7	20.9	**31.7**	**35.2**	**35.1**	19.2
Potassium	~	~	~	~	616	NA	NA	607	NA	NA	1,780	2,320	356	482	895	455	550
Selenium	3.9	4	1,500	6,800	3.27 U	NA	NA	3.05 U	NA	NA	*4.32* U	3.85 U	2.82 U	3.61 U	2.72 U	3.57 U	*3.91* U
Silver	2	8.3	1,500	6,800	**3.65**	NA	NA	1.1	NA	NA	0.864 U	0.771 U	0.564 U	**2.65**	0.543 U	0.715 U	0.783 U
Sodium	~	~	~	~	444	NA	NA	226	NA	NA	1,000	1,230	155	305	255	272	302
Thallium	~	~	~	~	3.27 U	NA	NA	3.05 U	NA	NA	4.32 U	3.85 U	3.16	3.61 U	2.72 U	6.16	3.91 U
Vanadium	~	~	~	~	13.4	NA	NA	12.4	NA	NA	31.5	28.4	15.7	16.1	20.7	14.9	16
Zinc	109	2,480	10,000	10,000	**332**	NA	NA	**190**	NA	NA	**1,410**	**2,150**	**382**	**327**	54.1	**439**	**438**
General Chemistry																	
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Solids, Percent (%)	~	~	~	~	76.4	NA	NA	82.1	NA	NA	57.9	64.9	88.7	69.2	92	70	63.9
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-28B 105 DUP-1_20200713 20G0444-05RE1 7/13/2020 11-15	LSB-29A 101 LSB-29A_20200713 20G0444-01 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE1 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE2 7/13/2020 8-10	LSB-29B 102 LSB-29B_20200713 20G0444-02 7/13/2020 16-18	LSB-30A 112 LSB-30A_20200714 20G0512-01 7/14/2020 6-8	LSB-30B 113 LSB-30B_20200714 20G0512-02 7/14/2020 10.5-12.5	LSB-30B 113 LSB-30B_20200714 20G0512-02RE1 7/14/2020 10.5-12.5	LSB-31A 133 LSB-31A_20200714 20G0580-01 7/14/2020 5-7	LSB-31A 134 DUP-4_20200714 20G0580-02 7/14/2020 5-7	LSB-31B 135 LSB-31B_20200714 20G0580-15 7/14/2020 7-7.5	LSB-31B 135 LSB-31B_20200714 CG35793 7/14/2020 7-7.5	LSB-31C 136 LSB-31C_20200714 20G0580-16 7/14/2020 9.5-10
Volatile Organic Compounds (mg/kg)																	
1,1,1,2-Tetrachloroethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,1,2-Trichloroethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
1,1-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 U	1.6 U	NA	NA	NA
1,2,3-Trichloropropane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	**<u>24</u>** D	1.6 U	NA	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
1,2-Dichloropropane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	6.6 D	1.6 U	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	1.6 U	NA	NA	NA
1,3-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	1.6 U	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	0.043 U	NA	NA	*0.14* U	0.069 U	0.093 U	NA	*51* U	*32* U	NA	NA	NA
2,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
4-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000	NA	**<u>0.1</u>** J	NA	NA	0.041	0.042 J	**<u>0.086</u>** J	NA	*5.1* UJ	*3.2* UJ	NA	NA	NA
Acrolein	~	~	~	~	NA	0.0043 U	NA	NA	0.014 U	0.0069 UJ	0.0093 UJ	NA	5.1 UJ	3.2 UJ	NA	NA	NA
Acrylonitrile	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Benzene	0.06	0.06	44	89	NA	0.02 J	NA	NA	0.011 J	0.0035 U	0.0046 U	NA	**<u>26</u>** D	**<u>6.7</u>** D	NA	NA	NA
Bromobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Bromodichloromethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Bromoform	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 U	1.6 U	NA	NA	NA
Bromomethane	~	~	~	~	NA	0.0021 UJ	NA	NA	0.0069 UJ	0.0035 U	0.0046 U	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Carbon Disulfide	~	~	~	~	NA	0.0021 UJ	NA	NA	0.0069 UJ	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Chlorobenzene	1.1	1.1	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Chloroethane	~	~	~	~	NA	0.0021 UJ	NA	NA	0.0069 UJ	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Chloroform	0.37	0.37	350	700	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Chloromethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Cyclohexane	~	~	~	~	NA	0.026 J	NA	NA	0.013 J	0.0035 U	0.0046 U	NA	16 D	6 D	NA	NA	NA
Dibromochloromethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Dibromomethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Dichlorodifluoromethane	~	~	~	~	NA	0.0021 UJ	NA	NA	0.0069 UJ	0.0035 U	0.0046 U	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Ethylbenzene	1	1	390	780	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	**<u>32</u>** D	**<u>2.1</u>** JD	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Isopropyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~	NA	0.0022 J	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	120 D	44 D	NA	NA	NA
M,P-Xylene	~	~	~	~	NA	0.0096 J	NA	NA	0.014 U	0.0069 U	0.0093 U	NA	60 D	5.3 JD	NA	NA	NA
Methyl Acetate	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	NA	0.034 J	NA	NA	0.0069 UJ	0.0035 U	0.035	NA	*2.6* U	*1.6* U	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Methylcyclohexane	~	~	~	~	NA	0.038 J	NA	NA	0.0083 J	0.0035 U	0.0046 U	NA	170 DE	56 D	NA	NA	NA
Methylene Chloride	0.05	0.05	500	1,000	NA	0.0043 U	NA	NA	0.014 U	0.0069 U	0.0093 U	NA	*5.1* UJ	*3.2* UJ	NA	NA	NA
n-Butylbenzene	12	12	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	**<u>67</u>** D	**<u>16</u>** D	NA	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000	NA	0.0034 J	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	**<u>190</u>** DE	**<u>50</u>** D	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	9.3 D	1.6 U	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	7.3 D	1.8 JD	NA	NA	NA
Sec-Butylbenzene	11	11	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	**<u>28</u>** D	8.4 D	NA	NA	NA
Styrene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000	NA	0.0029 J	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	3.2 JD	1.6 U	NA	NA	NA
Tert-Butyl Alcohol	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300	NA	0.0021 UJ	NA	NA	0.0069 UJ	0.0035 UJ	0.0046 UJ	NA	*2.6* UJ	*1.6* UJ	NA	NA	NA
Toluene	0.7	0.7	500	1,000	NA	0.0029 J	NA	NA	0.0085 J	0.0035 U	0.0046 U	NA	**<u>25</u>** D	**<u>1.8</u>** JD	NA	NA	NA
Total Xylenes	0.26	1.6	500	1,000	NA	0.0096 J	NA	NA	0.021 U	0.01 U	0.014 U	NA	**<u>89</u>** D	**<u>5.3</u>** JD	NA	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	2.6 U	1.6 U	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	NA	0.0021 U	NA	NA	0.0069 U	0.0035 U	0.0046 U	NA	*2.6* U	*1.6* U	NA	NA	NA
Trichlorofluoromethane	~	~	~	~	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	2.6 UJ	1.6 UJ	NA	NA	NA
Vinyl Chloride	0.02	0.02	13	27	NA	0.0021 U	NA	NA	0.0069 U	0.0035 UJ	0.0046 UJ	NA	*2.6* UJ	*1.6* UJ	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-28B 105 DUP-1_20200713 20G0444-05RE1 7/13/2020 11-15	LSB-29A 101 LSB-29A_20200713 20G0444-01 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE1 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE2 7/13/2020 8-10	LSB-29B 102 LSB-29B_20200713 20G0444-02 7/13/2020 16-18	LSB-30A 112 LSB-30A_20200714 20G0512-01 7/14/2020 6-8	LSB-30B 113 LSB-30B_20200714 20G0512-02 7/14/2020 10.5-12.5	LSB-30B 113 LSB-30B_20200714 20G0512-02RE1 7/14/2020 10.5-12.5	LSB-31A 133 LSB-31A_20200714 20G0580-01 7/14/2020 5-7	LSB-31A 134 DUP-4_20200714 20G0580-02 7/14/2020 5-7	LSB-31B 135 LSB-31B_20200714 20G0580-15 7/14/2020 7-7.5	LSB-31B 135 LSB-31B_20200714 CG35793 7/14/2020 7-7.5	LSB-31C 136 LSB-31C_20200714 20G0580-16 7/14/2020 9.5-10
Semivolatile Organic Compounds (mg/kg)																	
1,2,4,5-Tetrachlorobenzene	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 U	0.181 U	NA	0.131 U	0.123 U	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
1,2-Diphenylhydrazine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	0.00952 U	NA	NA	0.00962 U	0.0098 U	0.0098 U	NA	0.00935 U	0.00917 U	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 U	0.181 U	NA	0.131 UJ	0.123 UJ	NA	NA	NA
2,4,5-Trichlorophenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2,4,6-Trichlorophenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2,4-Dichlorophenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2,4-Dimethylphenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2,4-Dinitrophenol	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 UJ	0.181 UJ	NA	0.131 UJ	0.123 UJ	NA	NA	NA
2,4-Dinitrotoluene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
2,6-Dinitrotoluene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
2-Chloronaphthalene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2-Chlorophenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
2-Methylnaphthalene	~	~	~	~	NA	0.905 D	NA	NA	0.174 JD	0.0557 U	0.418 D	NA	0.887 D	0.593 D	NA	NA	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
2-Nitroaniline	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 UJ	0.181 UJ	NA	0.131 UJ	0.123 UJ	NA	NA	NA
2-Nitrophenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
3-Nitroaniline	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 UJ	0.181 UJ	NA	0.131 UJ	0.123 UJ	NA	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 UJ	0.181 UJ	NA	0.131 UJ	0.123 UJ	NA	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
4-Chloroaniline	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
4-Nitroaniline	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 UJ	0.181 UJ	NA	0.131 UJ	0.123 UJ	NA	NA	NA
4-Nitrophenol	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 U	0.181 U	NA	0.131 UJ	0.123 UJ	NA	NA	NA
Acenaphthene	20	98	500	1,000	NA	0.648 D	NA	NA	0.342 D	0.0666 JD	1.79 D	NA	0.171 D	0.149 D	NA	NA	NA
Acenaphthylene	100	107	500	1,000	NA	0.428 D	NA	NA	0.124 U	0.234 D	0.0906 U	NA	0.422 D	0.2 D	NA	NA	NA
Acetophenone	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	NA	0.195 U	NA	NA	0.495 U	0.222 U	0.362 U	NA	0.263 U	0.245 U	NA	NA	NA
Anthracene	100	1,000	500	1,000	NA	NA	6.57 D	NA	1.6 D	0.247 D	3.8 D	NA	0.355 D	0.253 D	NA	NA	NA
Atrazine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Benzaldehyde	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
Benzidine	~	~	~	~	NA	0.195 U	NA	NA	0.495 U	0.222 U	0.362 U	NA	0.263 U	0.245 U	NA	NA	NA
Benzo(a)anthracene	1	1	5.6	11	NA	NA	NA	20.1 J	3.31 D	0.85 D	4.89 D	NA	1.33 D	0.889 D	NA	NA	NA
Benzo(a)pyrene	1	22	1	1.1	NA	NA	NA	17.8 J	2.8 D	1.16 D	4.1 D	NA	2.06 D	1.17 D	NA	NA	NA
Benzo(b)fluoranthene	1	1.7	5.6	11	NA	NA	12.9 D	NA	2 D	0.81 D	3.09 D	NA	1.55 D	0.907 D	NA	NA	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000	NA	NA	8.95 D	NA	1.47 D	1.24 D	2.32 D	NA	1.39 D	0.744 D	NA	NA	NA
Benzo(k)fluoranthene	0.8	1.7	56	110	NA	NA	11.7 D	NA	1.86 D	0.659 D	2.88 D	NA	1.31 D	0.819 D	NA	NA	NA
Benzoic Acid	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
Benzyl Alcohol	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Benzyl Butyl Phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Biphenyl (Diphenyl)	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.134 JD	NA	0.0657 U	0.0614 U	NA	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Caprolactam	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 U	0.181 U	NA	0.131 U	0.123 U	NA	NA	NA
Carbazole	~	~	~	~	NA	0.329 D	NA	NA	0.124 U	0.0557 U	1.01 D	NA	0.0657 U	0.0614 U	NA	NA	NA
Chrysene	1	1	56	110	7.07 D	NA	NA	18.9 J	2.9 D	0.821 D	3.98 D	NA	1.44 D	0.874 D	NA	NA	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	NA	NA	3.41 D	NA	0.511 D	0.256 D	0.733 D	NA	0.399 D	0.252 D	NA	NA	NA
Dibenzofuran	7	210	350	1,000	NA	0.399 D	NA	NA	0.221 JD	0.0557 U	1.01 D	NA	0.0657 U	0.0614 U	NA	NA	NA
Dibutyl phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Diethyl phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Dimethyl phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Dioctyl phthalate	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 U	0.0614 U	NA	NA	NA
Diphenylamine	~	~	~	~	NA	0.0974 U	NA	NA	0.247 U	0.111 U	0.181 U	NA	0.131 U	0.123 U	NA	NA	NA
Fluoranthene	100	1,000	500	1,000	NA	NA	NA	37.4 J	6.34 D	1.46 D	NA	10.8 D	1.34 D	1.31 D	NA	NA	NA
Fluorene	30	386	500	1,000	NA	1.38 D	NA	NA	0.612 D	0.0595 JD	1.81 D	NA	0.285 D	0.203 D	NA	NA	NA
Hexachlorobenzene	0.33	3.2	6	12	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Hexachlorocyclopentadiene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 UJ	0.0906 UJ	NA	0.0657 U	0.0614 U	NA	NA	NA
Hexachloroethane	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	NA	NA	8.71 D	NA	1.26 D	0.719 D	2.09 D	NA	0.191 D	0.671 D	NA	NA	NA
Isophorone	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Naphthalene	12	12	500	1,000	NA	0.59 D	NA	NA	0.182 JD	0.0932 JD	0.448 D	NA	0.387 D	0.281 D	NA	NA	NA
Nitrobenzene	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
n-Nitrosodimethylamine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 UJ	0.0614 UJ	NA	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
n-Nitrosodiphenylamine	~	~	~	~	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Phenanthrene	100	1,000	500	1,000	NA	NA	NA	15.9 J	5.4 D	0.721 D	NA	12.6 D	0.881 D	0.809 D	NA	NA	NA
Phenol	0.33	0.33	500	1,000	NA	0.0488 U	NA	NA	0.124 U	0.0557 U	0.0906 U	NA	0.0657 U	0.0614 U	NA	NA	NA
Pyrene	100	1,000	500	1,000	NA	NA	NA	34.4 J	7.06 D	1.54 D	NA	10.8 D	1.19 D	1.2 D	NA	NA	NA
Pyridine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-28B 105 DUP-1_20200713 20G0444-05RE1 7/13/2020 11-15	LSB-29A 101 LSB-29A_20200713 20G0444-01 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE1 7/13/2020 8-10	LSB-29A 101 LSB-29A_20200713 20G0444-01RE2 7/13/2020 8-10	LSB-29B 102 LSB-29B_20200713 20G0444-02 7/13/2020 16-18	LSB-30A 112 LSB-30A_20200714 20G0512-01 7/14/2020 6-8	LSB-30B 113 LSB-30B_20200714 20G0512-02 7/14/2020 10.5-12.5	LSB-30B 113 LSB-30B_20200714 20G0512-02RE1 7/14/2020 10.5-12.5	LSB-31A 133 LSB-31A_20200714 20G0580-01 7/14/2020 5-7	LSB-31A 134 DUP-4_20200714 20G0580-02 7/14/2020 5-7	LSB-31B 135 LSB-31B_20200714 20G0580-15 7/14/2020 7-7.5	LSB-31B 135 LSB-31B_20200714 CG35793 7/14/2020 7-7.5	LSB-31C 136 LSB-31C_20200714 20G0580-16 7/14/2020 9.5-10
Petroleum Hydrocarbons (mg/kg)																	
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,130 UJ	NA	861 D
Pesticides (mg/kg)																	
4,4'-DDD	0.0033	14	92	180	NA	0.00193 U	NA	NA	*0.00489* U	0.00222 U	*0.00533* U	NA	0.0026 U	0.00239 U	NA	NA	NA
4,4'-DDE	0.0033	17	62	120	NA	0.00193 U	NA	NA	*0.00489* U	0.00222 U	*0.00533* U	NA	0.0026 U	0.00239 U	NA	NA	NA
4,4'-DDT	0.0033	136	47	94	NA	0.00193 U	NA	NA	*0.00489* U	0.00222 U	*0.00533* U	NA	0.0026 U	0.00239 U	NA	NA	NA
Aldrin	0.005	0.19	0.68	1.4	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	*0.00533* U	NA	0.0026 U	0.00239 U	NA	NA	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Alpha Chlordane	0.094	2.9	24	47	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Alpha Endosulfan	2.4	102	200	920	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Beta Endosulfan	2.4	102	200	920	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Chlordane (alpha and gamma)	~	~	~	~	NA	0.0385 U	NA	NA	0.0978 U	0.0444 U	0.107 U	NA	0.0521 U	0.0478 U	NA	NA	NA
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Dieldrin	0.005	0.1	1.4	2.8	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	*0.00533* U	NA	0.0026 U	0.00239 U	NA	NA	NA
Endosulfan Sulfate	2.4	1000	200	920	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Endrin	0.014	0.06	89	410	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Endrin Aldehyde	~	~	~	~	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Endrin Ketone	~	~	~	~	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Gamma-Chlordane	~	~	~	~	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Heptachlor	0.042	0.38	15	29	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Heptachlor Epoxide	~	~	~	~	NA	0.00193 U	NA	NA	0.00489 U	0.00222 U	0.00533 U	NA	0.0026 U	0.00239 U	NA	NA	NA
Methoxychlor	~	~	~	~	NA	0.00964 U	NA	NA	0.0244 U	0.0111 U	0.0267 U	NA	0.013 U	0.012 U	NA	NA	NA
Toxaphene	~	~	~	~	NA	0.0975 U	NA	NA	0.247 U	0.112 U	0.27 U	NA	0.132 U	0.121 U	NA	NA	NA
Herbicides (mg/kg)																	
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	0.0234 U	NA	NA	0.0595 U	0.0267 U	0.0438 U	NA	0.0314 U	0.0294 U	NA	NA	NA
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	0.0234 U	NA	NA	0.0595 U	0.0267 U	0.0438 U	NA	0.0314 U	0.0294 U	NA	NA	NA
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	0.0234 U	NA	NA	0.0595 U	0.0267 U	0.0438 U	NA	0.0314 U	0.0294 U	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)																	
PCB-1016 (Aroclor 1016)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1221 (Aroclor 1221)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1232 (Aroclor 1232)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1242 (Aroclor 1242)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1248 (Aroclor 1248)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1254 (Aroclor 1254)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
PCB-1260 (Aroclor 1260)	~	~	~	~	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
Total PCBs	0.1	3.2	1	25	NA	0.0195 U	NA	NA	0.0494 U	0.0224 U	0.0538 U	NA	0.0263 U	0.0242 U	NA	NA	NA
Inorganics (mg/kg)																	
Aluminum	~	~	~	~	NA	3,480	NA	NA	16,100	7,650	12,800	NA	5,400	6,900	NA	NA	NA
Antimony	~	~	~	~	NA	2.96 U	NA	NA	7.53 U	3.41 UJ	5.49 UJ	NA	3.98 UJ	3.72 UJ	NA	NA	NA
Arsenic	13	16	16	16	NA	23.2	NA	NA	13	16.3	**15.4**	NA	36.9	54	NA	NA	NA
Barium	350	820	400	10,000	NA	170	NA	NA	216	329	137	NA	212	**440**	NA	NA	NA
Beryllium	7.2	47	590	2,700	NA	0.059 U	NA	NA	0.151 U	0.068 UJ	0.11 UJ	NA	0.08 U	0.074 U	NA	NA	NA
Cadmium	2.5	7.5	9.3	60	NA	0.498	NA	NA	1.42	1.12	**35.1**	NA	0.478 U	0.57	NA	NA	NA
Calcium	~	~	~	~	NA	4,320	NA	NA	9,800	17,200	7,660	NA	13,800	11,900	NA	NA	NA
Chromium, Hexavalent	1	19	400	800	NA	0.592 U	NA	NA	*1.51* U	0.682 U	*1.1* U	NA	0.797 U	0.744 U	NA	NA	NA
Chromium, Total	~	~	~	~	NA	12.6	NA	NA	39.5	23.7	38.5	NA	17.8	27.9	NA	NA	NA
Chromium, Trivalent	30	~	1,500	6,800	NA	12.6	NA	NA	**39.5**	23.7	**38.5**	NA	17.8	27.9	NA	NA	NA
Cobalt	~	~	~	~	NA	6.51	NA	NA	15.4	5.58	9.43	NA	7.44	7.03	NA	NA	NA
Copper	50	1,720	270	10,000	NA	**417**	NA	NA	**1,110**	**137**	**105**	NA	**356** J	**307** J	NA	NA	NA
Cyanide	27	40	27	10,000	NA	0.779	NA	NA	1.51 U	1.26	1.1 U	NA	0.797 U	0.744 U	NA	NA	NA
Iron	~	~	~	~	NA	30,600	NA	NA	43,900	16,400	35,300	NA	25,100	24,600	NA	NA	NA
Lead	63	450	1,000	3,900	NA	**768**	NA	NA	**998**	**791**	**718**	NA	**733** B	**1,290** B	NA	NA	NA
Magnesium	~	~	~	~	NA	1,470	NA	NA	7,700	2,100	5,680	NA	1,850 J	1,780 J	NA	NA	NA
Manganese	1,600	2,000	10,000	10,000	NA	199	NA	NA	456	209	196	NA	148 J	411 J	NA	NA	NA
Mercury	0.18	0.73	2.8	5.7	NA	**0.257**	NA	NA	**3.18**	**4.78**	**2.13**	NA	19.6	10.2	NA	NA	NA
Nickel	30	130	310	10,000	NA	19.5	NA	NA	**46**	20.3	24	NA	**30.2**	20.2	NA	NA	NA
Potassium	~	~	~	~	NA	388	NA	NA	3,160	1,170	2,670	NA	1,280	991	NA	NA	NA
Selenium	3.9	4	1,500	6,800	NA	2.96 U	NA	NA	*7.53* U	3.41 UJ	*5.49* UJ	NA	*3.98* UJ	3.72 UJ	NA	NA	NA
Silver	2	8.3	1,500	6,800	NA	0.592 U	NA	NA	1.51 U	0.881	1.1 U	NA	0.797 U	0.744 U	NA	NA	NA
Sodium	~	~	~	~	NA	167	NA	NA	3,480	713	2,060	NA	646	456	NA	NA	NA
Thallium	~	~	~	~	NA	3.11	NA	NA	7.53 U	3.41 U	5.49 U	NA	3.98 U	3.72 U	NA	NA	NA
Vanadium	~	~	~	~	NA	16.7	NA	NA	50.3	24	31.8	NA	17.8	22.6	NA	NA	NA
Zinc	109	2,480	10,000	10,000	NA	**1,070**	NA	NA	**1,830**	**538**	NA	10,100 D	**545**	**1,240**	NA	NA	NA
General Chemistry																	
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA	1.1
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.8	NA	20.2
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16.9	NA	36.4
Solids, Percent (%)	~	~	~	~	NA	84.5	NA	NA	33.2	73.4	45.5	NA	62.8	67.2	83.1	79	63.6
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	404,000	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-31C 136 LSB-31C_20200714 CG35794 7/14/2020 9.5-10	LSB-31D 137 LSB-31D_20200714 20G0580-03 7/14/2020 10-12	LSB-31E 138 LSB-31E_20200714 20G0580-17 7/14/2020 13-13.5	LSB-31E 138 LSB-31E_20200714 CG35795 7/14/2020 13-13.5	LSB-32A 148 LSB-32A_20200714 20G0580-04 7/14/2020 6-8	LSB-32B 149 LSB-32B_20200714 20G0580-05 7/14/2020 11.5-13.5	LSB-33A 122 LSB-33A_20200714 20G0512-10 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11RE1 7/14/2020 6-8	LSB-33B 124 LSB-33B_20200714 20G0512-12 7/14/2020 11-13	LSB-34A 116 LSB-34A_20200714 20G0512-05 7/14/2020 6-8	LSB-34B 117 LSB-34B_20200714 20G0512-06 7/14/2020 12-14	LSB-35A 114 LSB-35A_20200714 20G0512-03 7/14/2020 4-6
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1,1-Trichloroethane	0.68	0.68	500	1,000	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1,2,2-Tetrachloroethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1,2-Trichloroethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1-Dichloroethane	0.27	0.27	240	480	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1-Dichloroethene	0.33	0.33	500	1,000	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,1-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,2,3-Trichlorobenzene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
1,2,3-Trichloropropane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,2,4-Trichlorobenzene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 UJ	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2,4-Trimethylbenzene	3.6	3.6	190	380	NA	0.55 U	NA	NA	0.99 D	0.0039 U	0.64 JD	0.0047 J	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2-Dibromo-3-Chloropropane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2-Dichloroethane	0.02	0.02	30	60	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,2-Dichloropropane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,3-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	0.55 U	NA	NA	0.38 U	0.0039 UJ	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	*11* U	NA	NA	*7.7* U	0.078 U	*7.7* U	0.062 U	NA	0.064 U	0.083 U	0.1 U	0.051 U	
2,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone (MBK)	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
4-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acetone	0.05	0.05	500	1,000	NA	*1.1* UJ	NA	NA	*0.77* UJ	*0.15* U	**1.3** JD	0.037	NA	0.03	0.0083 UJ	**0.36** J	0.0051 UJ	
Acrolein	~	~	~	~	NA	1.1 UJ	NA	NA	0.77 UJ	0.0078 UJ	0.77 U	0.0062 U	NA	0.0064 U	0.0083 UJ	0.01 UJ	0.0051 UJ	
Acrylonitrile	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Benzene	0.06	0.06	44	89	NA	**2.3** D	NA	NA	**0.62** JD	0.0039 U	**1.1** D	**0.082**	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Bromobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Bromochloromethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Bromodichloromethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Bromoform	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Bromomethane	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Carbon Disulfide	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0044 J	0.38 U	0.0031 U	NA	0.0036 J	0.0041 U	0.0052 U	0.0026 U	
Carbon Tetrachloride	0.76	0.76	22	44	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Chlorobenzene	1.1	1.1	500	1,000	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Chloroethane	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Chloroform	0.37	0.37	350	700	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Chloromethane	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Cis-1,3-Dichloropropene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Cyclohexane	~	~	~	~	NA	0.6 JD	NA	NA	0.38 U	0.01	0.38 U	0.0031 U	NA	0.027	0.0041 U	0.0052 U	0.0026 U	
Dibromochloromethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Dibromomethane	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Dichlorodifluoromethane	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 UJ	0.0041 U	0.0052 U	0.0026 U	
Ethylbenzene	1	1	390	780	NA	0.86 JD	NA	NA	0.64 JD	0.0039 UJ	0.74 J	0.0074 J	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Hexachlorobutadiene	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Isopropyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene (Cumene)	~	~	~	~	NA	3.6 D	NA	NA	0.38 U	0.0039 UJ	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
M,P-Xylene	~	~	~	~	NA	1.8 JD	NA	NA	2.3 D	0.0078 U	1.6 D	0.019	NA	0.0064 U	0.0083 U	0.01 U	0.0051 U	
Methyl Acetate	~	~	~	~	NA	0.89 J	NA	NA	0.43 J	0.0039 U	1.5 D	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	NA	*1.4* U	NA	NA	*0.77* U	0.066 U	**0.87** D	0.011	NA	0.0093	0.0041 U	0.11	0.0026 U	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Methylcyclohexane	~	~	~	~	NA	7.4 D	NA	NA	3.1 D	0.069	0.38 U	0.0031 U	NA	0.11	0.0041 U	0.0052 U	0.0026 U	
Methylene Chloride	0.05	0.05	500	1,000	NA	*1.1* UJ	NA	NA	*0.77* UJ	0.0078 U	*0.77* U	0.0062 U	NA	0.0064 U	0.0083 U	0.01 U	0.0051 U	
n-Butylbenzene	12	12	500	1,000	NA	1.5 D	NA	NA	0.55 JD	0.0039 UJ	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
n-Propylbenzene	3.9	3.9	500	1,000	NA	**4** D	NA	NA	0.54 JD	0.0039 UJ	0.53 J	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0035 J	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
p-Cymene (p-Isopropyltoluene)	~	~	~	~	NA	4.1 D	NA	NA	0.38 U	0.0074 J	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Sec-Butylbenzene	11	11	500	1,000	NA	0.89 JD	NA	NA	0.45 JD	0.0039 UJ	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Styrene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
T-Butylbenzene	5.9	5.9	500	1,000	NA	0.55 U	NA	NA	0.38 U	0.0039 UJ	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Tert-Butyl Alcohol	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 UJ	0.38 UJ	0.0031 UJ	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Tetrachloroethene (PCE)	1.3	1.3	150	300	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 UJ	0.38 U	0.0031 U	NA	0.0032 U	0.0055 J	0.0052 UJ	0.0026 UJ	
Toluene	0.7	0.7	500	1,000	NA	**1.8** D	NA	NA	0.7 JD	0.0039 U	**1.2** D	0.037	NA	0.0032 U	0.0081 J	0.0052 U	0.0026 U	
Total Xylenes	0.26	1.6	500	1,000	NA	**1.8** JD	NA	NA	**2.3** JD	0.012 U	**1.6** JD	0.022	NA	0.0096 U	0.012 U	0.016 U	0.0077 U	
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	NA	*0.55* U	NA	NA	*0.38* U	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Trans-1,3-Dichloropropene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	0.55 U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Trichloroethene (TCE)	0.47	0.47	200	400	NA	*0.55* U	NA	NA	0.38 U	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 U	0.0052 U	0.0026 U	
Trichlorofluoromethane	~	~	~	~	NA	0.55 UJ	NA	NA	0.38 UJ	0.0039 U	0.38 U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	
Vinyl Chloride	0.02	0.02	13	27	NA	*0.55* UJ	NA	NA	*0.38* UJ	0.0039 U	*0.38* U	0.0031 U	NA	0.0032 U	0.0041 UJ	0.0052 UJ	0.0026 UJ	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-31C 136 LSB-31C_20200714 CG35794 7/14/2020 9.5-10	LSB-31D 137 LSB-31D_20200714 20G0580-03 7/14/2020 10-12	LSB-31E 138 LSB-31E_20200714 20G0580-17 7/14/2020 13-13.5	LSB-31E 138 LSB-31E_20200714 CG35795 7/14/2020 13-13.5	LSB-32A 148 LSB-32A_20200714 20G0580-04 7/14/2020 6-8	LSB-32B 149 LSB-32B_20200714 20G0580-05 7/14/2020 11.5-13.5	LSB-33A 122 LSB-33A_20200714 20G0512-10 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11RE1 7/14/2020 6-8	LSB-33B 124 LSB-33B_20200714 20G0512-12 7/14/2020 11-13	LSB-34A 116 LSB-34A_20200714 20G0512-05 7/14/2020 6-8	LSB-34B 117 LSB-34B_20200714 20G0512-06 7/14/2020 12-14	LSB-35A 114 LSB-35A_20200714 20G0512-03 7/14/2020 4-6
Semivolatile Organic Compounds (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	~	~	~	~	NA	0.251 U	NA	NA	0.126 U	0.138 U	0.108 U	0.113 U	NA	0.185 U	0.108 U	0.175 U	0.0872 U	
1,2,4-Trichlorobenzene	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
1,2-Diphenylhydrazine	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	0.00952 U	NA	NA	0.00962 U	0.00943 U	0.00962 U	0.00962 U	NA	0.0099 U	0.00962 U	0.00971 U	0.00971 U	
2,3,4,6-Tetrachlorophenol	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 U	0.138 U	0.108 U	0.113 U	NA	0.185 U	0.108 U	0.175 U	0.0872 U	
2,4,5-Trichlorophenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2,4,6-Trichlorophenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2,4-Dichlorophenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2,4-Dimethylphenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2,4-Dinitrophenol	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 UJ	0.138 UJ	0.108 UJ	0.113 UJ	NA	0.185 UJ	0.108 UJ	0.175 UJ	0.0872 UJ	
2,4-Dinitrotoluene	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 UJ	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
2,6-Dinitrotoluene	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 UJ	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
2-Chloronaphthalene	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2-Chlorophenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2-Methylnaphthalene	~	~	~	~	NA	0.343 D	NA	NA	0.0631 U	0.0694 U	0.489 J	0.0768 J	NA	0.0925 U	0.362 D	0.0876 U	0.0437 U	
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	NA	0.126 UJ	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
2-Nitroaniline	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 UJ	0.138 UJ	0.108 UJ	0.113 UJ	NA	0.185 UJ	0.108 UJ	0.175 UJ	0.0872 UJ	
2-Nitrophenol	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 UJ	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	NA	0.126 UJ	NA	NA	0.0631 U	0.112 JD	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
3,3'-Dichlorobenzidine	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
3-Nitroaniline	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 UJ	0.138 UJ	0.108 UJ	0.113 UJ	NA	0.185 UJ	0.108 UJ	0.175 UJ	0.0872 UJ	
4,6-Dinitro-2-Methylphenol	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 UJ	0.138 UJ	0.108 UJ	0.113 UJ	NA	0.185 UJ	0.108 UJ	0.175 UJ	0.0872 UJ	
4-Bromophenyl Phenyl Ether	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
4-Chloro-3-Methylphenol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
4-Chloroaniline	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
4-Chlorophenyl Phenyl Ether	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
4-Nitroaniline	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 UJ	0.138 UJ	0.108 UJ	0.113 UJ	NA	0.185 UJ	0.108 UJ	0.175 UJ	0.0872 UJ	
4-Nitrophenol	~	~	~	~	NA	0.251 UJ	NA	NA	0.126 U	0.138 U	0.108 U	0.113 U	NA	0.185 U	0.108 U	0.175 U	0.0872 U	
Acenaphthene	20	98	500	1,000	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.091 J	0.657 J	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Acenaphthylene	100	107	500	1,000	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0641 JD	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Acetophenone	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	NA	0.503 U	NA	NA	0.252 U	0.277 U	0.217 U	0.226 U	NA	0.37 U	0.216 U	0.35 U	0.175 U	
Anthracene	100	1,000	500	1,000	NA	0.141 JD	NA	NA	0.0631 U	0.0694 U	0.0996 JD	0.266 D	NA	0.0925 U	0.054 U	0.101 JD	0.0437 U	
Atrazine	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Benzaldehyde	~	~	~	~	NA	0.126 UJ	NA	NA	0.132 J	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
Benzidine	~	~	~	~	NA	0.503 U	NA	NA	0.252 UJ	0.277 U	0.217 U	0.226 U	NA	0.37 U	0.216 U	0.35 U	0.175 U	
Benzo(a)anthracene	1	1	5.6	11	NA	0.388 D	NA	NA	0.0734 JD	0.165 D	0.712 J	**1.65** J	NA	0.0925 U	0.054 U	0.347 D	0.0437 U	
Benzo(a)pyrene	1	22	1	1.1	NA	0.376 D	NA	NA	0.0714 JD	0.164 D	0.93 J	**2** J	NA	0.0925 U	0.054 U	0.407 D	0.0437 U	
Benzo(b)fluoranthene	1	1.7	5.6	11	NA	0.339 D	NA	NA	0.0664 JD	0.147 D	0.697 J	**1.55** J	NA	0.0925 U	0.054 U	0.291 D	0.0437 U	
Benzo(g,h,i)Perylene	100	1,000	500	1,000	NA	0.233 JD	NA	NA	0.0654 JD	0.115 JD	0.697 J	1.29 J	NA	0.0925 U	0.054 U	0.233 D	0.0437 U	
Benzo(k)fluoranthene	0.8	1.7	56	110	NA	0.283 D	NA	NA	0.0631 U	0.14 D	0.627 J	**1.26** J	NA	0.0925 U	0.054 U	0.271 D	0.0437 U	
Benzoic Acid	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
Benzyl Alcohol	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Benzyl Butyl Phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 UJ	0.0694 U	0.0543 UJ	0.0566 UJ	NA	0.0925 U	0.054 UJ	0.0876 UJ	0.0437 UJ	
Biphenyl (Diphenyl)	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Bis(2-chloroethoxy) methane	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Bis(2-chloroisopropyl) ether	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Bis(2-ethylhexyl) phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 UJ	0.0694 UJ	0.0814 J	0.2 J	NA	0.0925 U	0.054 UJ	0.0876 UJ	0.0437 UJ	
Caprolactam	~	~	~	~	NA	0.251 U	NA	NA	0.126 U	0.138 U	0.108 U	0.113 U	NA	0.185 U	0.108 U	0.175 U	0.0872 U	
Carbazole	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Chrysene	1	1	56	110	NA	0.39 D	NA	NA	0.0664 JD	0.153 D	0.702 J	**1.45** J	NA	0.0925 U	0.054 U	0.341 D	0.0437 U	
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.279 D	**0.399** D	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Dibenzofuran	7	210	350	1,000	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Dibutyl phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Diethyl phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Dimethyl phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Dioctyl phthalate	~	~	~	~	NA	0.126 U	NA	NA	0.0631 UJ	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
Diphenylamine	~	~	~	~	NA	0.251 U	NA	NA	0.126 U	0.138 U	0.108 U	0.113 U	NA	0.185 U	0.108 U	0.175 U	0.0872 U	
Fluoranthene	100	1,000	500	1,000	NA	0.57 D	NA	NA	0.0996 JD	0.259 D	0.615 J	2.71 J	NA	0.0925 U	0.054 U	0.527 D	0.0437 U	
Fluorene	30	386	500	1,000	NA	0.169 JD	NA	NA	0.0631 U	0.0694 U	0.0684 JD	0.0659 JD	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Hexachlorobenzene	0.33	3.2	6	12	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Hexachlorobutadiene	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Hexachlorocyclopentadiene	~	~	~	~	NA	0.126 U	NA	NA	0.0631 UJ	0.0694 UJ	0.0543 UJ	0.0566 UJ	NA	0.0925 UJ	0.054 UJ	0.0876 UJ	0.0437 UJ	
Hexachloroethane	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	NA	0.203 JD	NA	NA	0.0631 U	0.0962 JD	**0.597** J	**1.12** J	NA	0.0925 U	0.054 U	0.204 D	0.0437 U	
Isophorone	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Naphthalene	12	12	500	1,000	NA	0.187 JD	NA	NA	0.0631 U	0.0694 U	0.687 J	0.0966 J	NA	0.0925 U	0.306 D	0.0876 U	0.0437 U	
Nitrobenzene	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
n-Nitrosodimethylamine	~	~	~	~	NA	0.126 UJ	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
n-Nitrosodi-N-Propylamine	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
n-Nitrosodiphenylamine	~	~	~	~	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Pentachlorophenol	0.8	0.8	6.7	55	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Phenanthrene	100	1,000	500	1,000	NA	0.524 D	NA	NA	0.0631 U	0.167 D	0.207 D	0.355 D	NA	0.0925 U	0.0568 JD	0.382 D	0.0437 U	
Phenol	0.33	0.33	500	1,000	NA	0.126 U	NA	NA	0.0631 U	0.0694 U	0.0543 U	0.0566 U	NA	0.0925 U	0.054 U	0.0876 U	0.0437 U	
Pyrene	100	1,000	500	1,000	NA	0.548 D	NA	NA	0.0966 JD	0.242 D	0.768 J	NA	3.74 J	0.0925 U	0.054 U	0.635 D	0.0437 U	
Pyridine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-31C 136 LSB-31C_20200714 CG35794 7/14/2020 9.5-10	LSB-31D 137 LSB-31D_20200714 20G0580-03 7/14/2020 10-12	LSB-31E 138 LSB-31E_20200714 20G0580-17 7/14/2020 13-13.5	LSB-31E 138 LSB-31E_20200714 CG35795 7/14/2020 13-13.5	LSB-32A 148 LSB-32A_20200714 20G0580-04 7/14/2020 6-8	LSB-32B 149 LSB-32B_20200714 20G0580-05 7/14/2020 11.5-13.5	LSB-33A 122 LSB-33A_20200714 20G0512-10 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11 7/14/2020 6-8	LSB-33A 123 DUP-3_20200714 20G0512-11RE1 7/14/2020 6-8	LSB-33B 124 LSB-33B_20200714 20G0512-12 7/14/2020 11-13	LSB-34A 116 LSB-34A_20200714 20G0512-05 7/14/2020 6-8	LSB-34B 117 LSB-34B_20200714 20G0512-06 7/14/2020 12-14	LSB-35A 114 LSB-35A_20200714 20G0512-03 7/14/2020 4-6
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	84.7 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	NA	*0.00333* U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	*0.00376* U	0.00316 U	*0.00506* U	0.0017 U	
4,4'-DDE	0.0033	17	62	120	NA	*0.00333* U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	*0.00376* U	0.00316 U	*0.00506* U	0.0017 U	
4,4'-DDT	0.0033	136	47	94	NA	*0.00333* U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	*0.00376* U	0.00316 U	*0.00506* U	0.0017 U	
Aldrin	0.005	0.19	0.68	1.4	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	*0.00506* U	0.0017 U	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Alpha Chlordane	0.094	2.9	24	47	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Alpha Endosulfan	2.4	102	200	920	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Beta Endosulfan	2.4	102	200	920	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Chlordane (alpha and gamma)	~	~	~	~	NA	0.0666 U	NA	NA	0.05 U	0.0549 U	0.0425 UJ	0.0449 UJ	NA	0.0752 U	0.0632 U	0.101 U	0.0339 U	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Dieldrin	0.005	0.1	1.4	2.8	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	*0.00506* U	0.0017 U	
Endosulfan Sulfate	2.4	1000	200	920	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Endrin	0.014	0.06	89	410	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Endrin Aldehyde	~	~	~	~	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Endrin Ketone	~	~	~	~	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Gamma-Chlordane	~	~	~	~	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Heptachlor	0.042	0.38	15	29	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Heptachlor Epoxide	~	~	~	~	NA	0.00333 U	NA	NA	0.0025 U	0.00275 U	0.00212 UJ	0.00224 UJ	NA	0.00376 U	0.00316 U	0.00506 U	0.0017 U	
Methoxychlor	~	~	~	~	NA	0.0166 U	NA	NA	0.0125 U	0.0137 U	0.0106 UJ	0.0112 UJ	NA	0.0188 U	0.0158 U	0.0253 U	0.00848 U	
Toxaphene	~	~	~	~	NA	0.168 U	NA	NA	0.126 U	0.139 U	0.107 UJ	0.113 UJ	NA	0.19 U	0.16 U	0.256 U	0.0859 U	
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	0.0414 U	NA	NA	0.0304 U	0.0336 U	0.0262 U	0.0271 U	NA	0.0307 U	0.026 U	0.0422 U	0.021 U	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	0.0414 U	NA	NA	0.0304 U	0.0336 U	0.0262 U	0.0271 U	NA	0.0307 U	0.026 U	0.0422 U	0.021 U	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	0.0414 U	NA	NA	0.0304 U	0.0336 U	0.0262 U	0.0271 U	NA	0.0307 U	0.026 U	0.0422 U	0.021 U	
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1221 (Aroclor 1221)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1232 (Aroclor 1232)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1242 (Aroclor 1242)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1248 (Aroclor 1248)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1254 (Aroclor 1254)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
PCB-1260 (Aroclor 1260)	~	~	~	~	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
Total PCBs	0.1	3.2	1	25	NA	0.0336 U	NA	NA	0.0252 U	0.0277 U	0.0214 U	0.0226 U	NA	0.038 U	0.0319 U	0.0511 U	0.0171 U	
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	NA	7,200	NA	NA	4,340	5,770	9,270	7,540	NA	20,000	2,270	11,900	2,500	
Antimony	~	~	~	~	NA	5.2 UJ	NA	NA	3.84 UJ	4.22 UJ	3.3 UJ	3.42 UJ	NA	3.86 UJ	3.27 UJ	5.31 UJ	2.63 UJ	
Arsenic	13	16	16	16	NA	12.4	NA	NA	**45.4**	**41.6**	**28.7**	**19.2**	NA	2.31 U	5.43	**26.5**	**16**	
Barium	350	820	400	10,000	NA	73.3	NA	NA	264	300	**545**	**521**	NA	52.3	33.6	**454**	18.4	
Beryllium	7.2	47	590	2,700	NA	0.104 U	NA	NA	0.077 U	0.084 U	0.066 UJ	0.068 UJ	NA	0.077 UJ	0.065 UJ	0.106 UJ	0.053 UJ	
Cadmium	2.5	7.5	9.3	60	NA	0.624 U	NA	NA	0.932	0.506 U	0.396 U	0.925	NA	0.463 U	0.393 U	1.59	0.316 U	
Calcium	~	~	~	~	NA	5,200	NA	NA	4,800	31,200	9,860	9,990	NA	3,100	1,410	37,300	6,980	
Chromium, Hexavalent	1	19	400	800	NA	*1.04* U	NA	NA	0.767 U	0.844 U	0.661 U	0.684 U	NA	0.771 U	0.654 U	*1.06* U	0.526 U	
Chromium, Total	~	~	~	~	NA	15.2	NA	NA	19.5	18.4	54.2	48	NA	36.1	9.22	28.2	8.37	
Chromium, Trivalent	30	~	1,500	6,800	NA	15.2	NA	NA	19.5	18.4	**54.2**	**48**	NA	**36.1**	9.22	28.2	8.37	
Cobalt	~	~	~	~	NA	5.27	NA	NA	8.6	14.6	11.2	10.9	NA	14	4.53	14.5	3.92	
Copper	50	1,720	270	10,000	NA	44.1 J	NA	NA	**541** J	**713** J	**286** J	**501** J	NA	18.2	**270**	**555**	5.43	
Cyanide	27	40	27	10,000	NA	1.04 U	NA	NA	1.2	2.95	0.971	0.684 UJ	NA	0.771 UJ	0.654 U	1.06 U	0.526 U	
Iron	~	~	~	~	NA	18,000	NA	NA	20,200	33,600	20,900	31,100	NA	39,800	13,300	24,300	11,000	
Lead	63	450	1,000	3,900	NA	**157** B	NA	NA	**1,050** B	**873** B	**781**	**1,100**	NA	26.2 J	**81.8**	**1,010**	25.1	
Magnesium	~	~	~	~	NA	3,080 J	NA	NA	1,030 J	9,220 J	2,440	2,110	NA	7,960	234	3,980	2,350	
Manganese	1,600	2,000	10,000	10,000	NA	174 J	NA	NA	198 J	284 J	152	249	NA	559	25.2	355	311	
Mercury	0.18	0.73	2.8	5.7	NA	**7.01**	NA	NA	**7.35**	**8.43**	**3.72**	**5.48**	NA	0.0984	**0.266**	**6.83**	0.0717	
Nickel	30	130	310	10,000	NA	15	NA	NA	22.2	**33.2**	**45.9**	**63.5**	NA	**32.6**	10.3	28.4	7.69	
Potassium	~	~	~	~	NA	1,730	NA	NA	391	772	1,010	664	NA	4,250	249	1,610	398	
Selenium	3.9	4	1,500	6,800	NA	*5.2* UJ	NA	NA	3.84 UJ	*4.22* UJ	3.3 UJ	3.42 UJ	NA	3.86 UJ	3.27 UJ	*5.31* UJ	2.63 UJ	
Silver	2	8.3	1,500	6,800	NA	1.04 U	NA	NA	**4.15**	0.844 U	1.01	0.937	NA	0.771 U	0.654 U	1.06 U	0.526 U	
Sodium	~	~	~	~	NA	1,380	NA	NA	315	450	280	373	NA	1,810	168	1,120	145	
Thallium	~	~	~	~	NA	5.2 U	NA	NA	3.84 U	4.22 U	3.3 U	3.42 U	NA	3.86 U	3.27 U	5.31 U	2.63 U	
Vanadium	~	~	~	~	NA	30.5	NA	NA	22.3	22.4	21.1	22.4	NA	43.7	13.8	32.6	12.2	
Zinc	109	2,480	10,000	10,000	NA	**133**	NA	NA	**1,520**	**378**	**476** J	**971** J	NA	93.7	95	**874**	58.4	
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	NA	NA	0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Loss On Ignition (%)	~	~	~	~	NA	NA	22.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Moisture, Percent (%)	~	~	~	~	NA	NA	43.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Solids, Percent (%)	~	~	~	~	60	48.1	56.2	33	65.2	59.3	75.7	73.1	NA	64.8	76.4	47.1	95	
Total Organic Carbon (mg/kg)	~	~	~	~	112,000	NA	NA	88,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

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Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-35B 115 LSB-35B_20200714 20G0512-04 7/14/2020 11.5-13.5		LSB-35B 115 LSB-35B_20200714 20G0512-04RE1 7/14/2020 11.5-13.5		LSB-36A 119 LSB-36A_20200714 20G0512-07 7/14/2020 7.5-9.5		LSB-36B 120 LSB-36B_20200714 20G0512-08 7/14/2020 11-13		LSB-36B 120 LSB-36B_20200714 20G0512-08RE1 7/14/2020 11-13		LSB-36C 121 LSB-36C_20200714 20G0512-09 7/14/2020 13-15		LSB-36C 121 LSB-36C_20200714 20G0512-09RE1 7/14/2020 13-15		LSB-37A 128 LSB-37A_20200714 20G0512-13 7/14/2020 8-10		LSB-37B 129 LSB-37B_20200714 20G0512-14 7/14/2020 12-14		LSB-38A 090 LSB-38A_20200709 20G0356-06 7/9/2020 7-9		LSB-38A 090 LSB-38A_20200709 20G0356-06RE1 7/9/2020 7-9		LSB-38B 091 LSB-38B_20200709 20G0356-07 7/9/2020 10-12		LSB-38B 091 LSB-38B_20200709 20G0356-07RE1 7/9/2020 10-12	
Volatile Organic Compounds (mg/kg)																														
1,1,1,2-Tetrachloroethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
1,1,2,2-Tetrachloroethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,1,2-Trichloroethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,1-Dichloroethane	0.27	0.27	240	480	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		0.25	U	NA	
1,1-Dichloroethene	0.33	0.33	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		0.25	U	NA	
1,1-Dichloropropene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,3-Trichlorobenzene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,2,3-Trichloropropane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-Trichlorobenzene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	U	NA	
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	UJ	NA	
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	U	NA	
1,2-Dichloroethane	0.02	0.02	30	60	0.0039	U	NA		0.0021	U	*0.22*	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		*0.25*	U	NA	
1,2-Dichloropropane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	U	NA	
1,3-Dichloropropane	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	U	NA	
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.078	U	NA		0.043	U	*4.5*	U	NA		0.054	U	NA		0.041	U	*7.8*	U	0.073	U	NA		*4.9*	U	NA	
2,2-Dichloropropane	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Chlorotoluene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Hexanone (MBK)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
4-Chlorotoluene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Acetone	0.05	0.05	500	1,000	**0.2**	J	NA		0.033		*0.45*	U	NA		**0.12**	J	NA		0.0041	U	*0.78*	U	*0.14*	U	NA		*0.49*	UJ	NA	
Acrolein	~	~	~	~	0.0078	U	NA		0.0043	U	0.45	U	NA		0.0054	UJ	NA		0.0041	U	0.78	U	0.0073	U	NA		0.49	UJ	NA	
Acrylonitrile	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Benzene	0.06	0.06	44	89	0.0039	U	NA		0.0021	U	*0.22*	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		*0.25*	U	NA	
Bromobenzene	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromochloromethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Bromodichloromethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Bromoform	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Bromomethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Carbon Disulfide	~	~	~	~	0.01		NA		0.0021	U	0.22	U	NA		0.0032	J	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Carbon Tetrachloride	0.76	0.76	22	44	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
Chlorobenzene	1.1	1.1	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Chloroethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Chloroform	0.37	0.37	350	700	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		0.25	U	NA	
Chloromethane	~	~	~	~	0.0039	UJ	NA		0.0021	UJ	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	UJ	NA	
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		0.25	U	NA	
Cis-1,3-Dichloropropene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
Cyclohexane	~	~	~	~	0.017		NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Dibromochloromethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Dibromomethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Dichlorodifluoromethane	~	~	~	~	0.0039	UJ	NA		0.0021	UJ	0.22	U	NA		0.0027	U	NA		0.002	UJ	0.39	U	0.0036	U	NA		0.25	UJ	NA	
Ethylbenzene	1	1	390	780	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
Hexachlorobutadiene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	U	NA	
Isopropyl Ether	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Isopropylbenzene (Cumene)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
M,P-Xylene	~	~	~	~	0.0078	U	NA		0.0043	U	0.45	U	NA		0.0054	U	NA		0.0041	U	0.78	U	0.0073	U	NA		0.49	UJ	NA	
Methyl Acetate	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.45	JD	NA	
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	**0.14**		NA		0.014		*0.22*	U	NA		0.037		NA		0.002	U	*0.39*	U	0.0073	U	NA		*0.49*	U	NA	
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	UJ	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
Methylcyclohexane	~	~	~	~	0.32	J	NA		0.0021	U	0.22	U	NA		0.0028	J	NA		0.002	U	0.39	U	0.0036	U	NA		0.46	JD	NA	
Methylene Chloride	0.05	0.05	500	1,000	0.0078	U	NA		0.0043	U	*0.45*	U	NA		0.0054	U	NA		0.0041	U	*0.78*	U	0.0073	U	NA		*0.49*	U	NA	
n-Butylbenzene	12	12	500	1,000	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.44	JD	NA	
n-Propylbenzene	3.9	3.9	500	1,000	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Sec-Butylbenzene	11	11	500	1,000	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.26	JD	NA	
Styrene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
T-Butylbenzene	5.9	5.9	500	1,000	0.012		NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Tert-Butyl Alcohol	~	~	~	~	0.0039	UJ	NA		0.0021	UJ	0.22	UJ	NA		0.0027	U	NA		0.002	U	0.39	UJ	0.0036	U	NA		0.25	U	NA	
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	UJ	NA		0.25	UJ	NA	
Toluene	0.7	0.7	500	1,000	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Total Xylenes	0.26	1.6	500	1,000	0.012	U	NA		0.0064	U	*0.67*	U	NA		0.008	U	NA		0.0061	U	*1.2*	U	0.011	U	NA		*0.74*	U	NA	
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	0.0039	U	NA		0.0021	U	*0.22*	U	NA		0.0027	U	NA		0.002	U	*0.39*	U	0.0036	U	NA		*0.25*	U	NA	
Trans-1,3-Dichloropropene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Trans-1,4-Dichloro-2-Butene	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Trichloroethene (TCE)	0.47	0.47	200	400	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	U	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Trichlorofluoromethane	~	~	~	~	0.0039	U	NA		0.0021	U	0.22	U	NA		0.0027	UJ	NA		0.002	U	0.39	U	0.0036	U	NA		0.25	U	NA	
Vinyl Chloride	0.02	0.02	13	27	0.0039	UJ	NA		0.0021	UJ	*0.22*	U	NA		0.0027	UJ	NA		0.002	U	*0.39*	U	0.0036	U	NA		*0.25*	U	NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-35B 115 LSB-35B_20200714 20G0512-04 7/14/2020 11.5-13.5		LSB-35B 115 LSB-35B_20200714 20G0512-04RE1 7/14/2020 11.5-13.5		LSB-36A 119 LSB-36A_20200714 20G0512-07 7/14/2020 7.5-9.5		LSB-36B 120 LSB-36B_20200714 20G0512-08 7/14/2020 11-13		LSB-36B 120 LSB-36B_20200714 20G0512-08RE1 7/14/2020 11-13		LSB-36C 121 LSB-36C_20200714 20G0512-09 7/14/2020 13-15		LSB-36C 121 LSB-36C_20200714 20G0512-09RE1 7/14/2020 13-15		LSB-37A 128 LSB-37A_20200714 20G0512-13 7/14/2020 8-10		LSB-37B 129 LSB-37B_20200714 20G0512-14 7/14/2020 12-14		LSB-38A 090 LSB-38A_20200709 20G0356-06 7/9/2020 7-9		LSB-38A 090 LSB-38A_20200709 20G0356-06RE1 7/9/2020 7-9		LSB-38B 091 LSB-38B_20200709 20G0356-07 7/9/2020 10-12		LSB-38B 091 LSB-38B_20200709 20G0356-07RE1 7/9/2020 10-12	
Semivolatile Organic Compounds (mg/kg)																														
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.137	U	NA		0.0861	U	0.15	U	NA		0.104	U	NA		0.0904	U	0.15	U	0.461	U	NA		0.108	U	NA	
1,2,4-Trichlorobenzene	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
1,2-Diphenylhydrazine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.0098	U	NA		0.00971	U	0.0099	U	NA		0.00952	U	NA		0.00943	U	0.0098	UJ	0.00971	U	NA		0.0099	U	NA	
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.137	U	NA		0.0861	U	0.15	U	NA		0.104	U	NA		0.0904	U	0.15	U	0.461	UJ	NA		0.108	UJ	NA	
2,4,5-Trichlorophenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2,4,6-Trichlorophenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2,4-Dichlorophenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2,4-Dimethylphenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2,4-Dinitrophenol	~	~	~	~	0.137	UJ	NA		0.0861	UJ	0.15	UJ	NA		0.104	UJ	NA		0.0904	UJ	0.15	UJ	0.461	UJ	NA		0.108	UJ	NA	
2,4-Dinitrotoluene	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
2,6-Dinitrotoluene	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	U	NA		0.0539	U	NA	
2-Chloronaphthalene	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2-Chlorophenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2-Methylnaphthalene	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	2.07	D	NA		2.33	J	NA	
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
2-Nitroaniline	~	~	~	~	0.137	UJ	NA		0.0861	UJ	0.15	UJ	NA		0.104	UJ	NA		0.0904	UJ	0.15	UJ	0.461	U	NA		0.108	U	NA	
2-Nitrophenol	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	U	NA		0.0539	U	NA	
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
3,3'-Dichlorobenzidine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
3-Nitroaniline	~	~	~	~	0.137	UJ	NA		0.0861	UJ	0.15	UJ	NA		0.104	UJ	NA		0.0904	UJ	0.15	UJ	0.461	U	NA		0.108	U	NA	
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.137	UJ	NA		0.0861	UJ	0.15	UJ	NA		0.104	UJ	NA		0.0904	UJ	0.15	UJ	0.461	UJ	NA		0.108	UJ	NA	
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
4-Chloro-3-Methylphenol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
4-Chloroaniline	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
4-Nitroaniline	~	~	~	~	0.137	UJ	NA		0.0861	UJ	0.15	UJ	NA		0.104	UJ	NA		0.0904	UJ	0.15	UJ	0.461	U	NA		0.108	U	NA	
4-Nitrophenol	~	~	~	~	0.137	U	NA		0.0861	U	0.15	U	NA		0.104	U	NA		0.0904	U	0.15	U	0.461	U	NA		0.108	U	NA	
Acenaphthene	20	98	500	1,000	0.115	JD	NA		0.0432	U	0.62	D	NA		0.39	D	NA		0.0453	U	0.132	JD	0.231	U	NA		1.69	J	NA	
Acenaphthylene	100	107	500	1,000	0.0686	U	NA		0.0432	U	0.15	D	NA		0.0523	U	NA		0.0453	U	0.085	JD	0.269	JD	NA		0.0539	U	NA	
Acetophenone	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.274	U	NA		0.172	U	0.301	U	NA		0.209	U	NA		0.181	U	0.3	U	0.924	U	NA		0.215	U	NA	
Anthracene	100	1,000	500	1,000	0.252	D	NA		0.0432	U	0.916	D	NA		0.685	D	NA		0.0453	U	0.225	D	1.24	D	NA		2.45	J	NA	
Atrazine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Benzaldehyde	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
Benzidine	~	~	~	~	0.274	U	NA		0.172	U	0.301	U	NA		0.209	U	NA		0.181	U	0.3	U	0.924	UJ	NA		0.215	UJ	NA	
Benzo(a)anthracene	1	1	5.6	11	0.558	D	NA		0.0922	D	**2.54**	D	NA		**1.47**	D	NA		0.0499	JD	0.254	D	**5.53**	D	NA		**1.88**	J	NA	
Benzo(a)pyrene	1	22	1	1.1	0.491	D	NA		0.0737	JD	**2.37**	D	NA		**1.53**	D	NA		0.0578	JD	0.236	D	**4.08**	D	NA		**1.11**	J	NA	
Benzo(b)fluoranthene	1	1.7	5.6	11	0.39	D	NA		0.0468	JD	**1.45**	D	NA		0.97	D	NA		0.0477	JD	0.136	JD	**3.99**	D	NA		0.581	J	NA	
Benzo(g,h,i)Perylene	100	1,000	500	1,000	0.248	D	NA		0.0523	JD	1.18	D	NA		0.815	D	NA		0.0453	U	0.156	D	2.79	D	NA		0.725	J	NA	
Benzo(k)fluoranthene	0.8	1.7	56	110	0.37	D	NA		0.0432	U	**1.33**	D	NA		**0.884**	D	NA		0.0453	U	0.139	JD	**2.65**	D	NA		0.436	J	NA	
Benzoic Acid	~	~	~	~	0.0686	UJ	NA		0.0432	U	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
Benzyl Alcohol	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Benzyl Butyl Phthalate	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	U	NA		0.0539	U	NA	
Biphenyl (Diphenyl)	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Bis(2-chloroethoxy) methane	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
Caprolactam	~	~	~	~	0.137	U	NA		0.0861	U	0.15	U	NA		0.104	U	NA		0.0904	U	0.15	U	0.461	U	NA		0.108	U	NA	
Carbazole	~	~	~	~	0.118	JD	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Chrysene	1	1	56	110	0.519	D	NA		0.0978	D	**2.33**	D	NA		**1.34**	D	NA		0.0453	U	0.276	D	**5.28**	D	NA		**1.96**	J	NA	
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	0.0996	JD	NA		0.0432	U	**0.369**	D	NA		0.241	D	NA		0.0453	U	0.075	U	**0.885**	D	NA		0.0653	J	NA	
Dibenzofuran	7	210	350	1,000	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0634	JD	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Dibutyl phthalate	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Diethyl phthalate	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Dimethyl phthalate	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Dioctyl phthalate	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
Diphenylamine	~	~	~	~	0.137	U	NA		0.0861	U	0.15	U	NA		0.104	U	NA		0.0904	U	0.15	U	0.461	U	NA		0.108	U	NA	
Fluoranthene	100	1,000	500	1,000	1.19	D	NA		0.238	D	4.09	D	NA		2.2	D	NA		0.0453	U	0.346	D	9.02	D	NA		1.63	J	NA	
Fluorene	30	386	500	1,000	0.119	JD	NA		0.0432	U	0.202	D	NA		0.247	D	NA		0.0453	U	0.121	JD	0.231	U	NA		3.28	J	NA	
Hexachlorobenzene	0.33	3.2	6	12	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Hexachlorobutadiene	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Hexachlorocyclopentadiene	~	~	~	~	0.0686	UJ	NA		0.0432	UJ	0.0754	UJ	NA		0.0523	UJ	NA		0.0453	UJ	0.075	UJ	0.231	UJ	NA		0.0539	UJ	NA	
Hexachloroethane	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	0.229	D	NA		0.0432	U	**0.952**	D	NA		**0.681**	D	NA		0.0453	U	0.0945	JD	**2.57**	D	NA		0.464	J	NA	
Isophorone	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Naphthalene	12	12	500	1,000	0.0799	JD	NA		0.0432	U	0.0754	U	NA		0.0692	JD	NA		0.0453	U	0.075	U	1.02	D	NA		0.606	J	NA	
Nitrobenzene	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
n-Nitrosodimethylamine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
n-Nitrosodiphenylamine	~	~	~	~	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Pentachlorophenol	0.8	0.8	6.7	55	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Phenanthrene	100	1,000	500	1,000	1.16	D	NA		0.0432	U	1.16	D	NA		1.59	D	NA		0.0453	U	0.126	JD	4.71	D	NA		2.9	J	NA	
Phenol	0.33	0.33	500	1,000	0.0686	U	NA		0.0432	U	0.0754	U	NA		0.0523	U	NA		0.0453	U	0.075	U	0.231	U	NA		0.0539	U	NA	
Pyrene	100	1,000	500	1,000	1.11	D	NA		0.488	D	NA		7.39	D	NA		3.23	D	0.0557	JD	0.97	D	NA		12.2	D	NA		7.21	D
Pyridine	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-35B 115 LSB-35B_20200714 20G0512-04 7/14/2020 11.5-13.5	LSB-35B 115 LSB-35B_20200714 20G0512-04RE1 7/14/2020 11.5-13.5	LSB-36A 119 LSB-36A_20200714 20G0512-07 7/14/2020 7.5-9.5	LSB-36B 120 LSB-36B_20200714 20G0512-08 7/14/2020 11-13	LSB-36B 120 LSB-36B_20200714 20G0512-08RE1 7/14/2020 11-13	LSB-36C 121 LSB-36C_20200714 20G0512-09 7/14/2020 13-15	LSB-36C 121 LSB-36C_20200714 20G0512-09RE1 7/14/2020 13-15	LSB-37A 128 LSB-37A_20200714 20G0512-13 7/14/2020 8-10	LSB-37B 129 LSB-37B_20200714 20G0512-14 7/14/2020 12-14	LSB-38A 090 LSB-38A_20200709 20G0356-06 7/9/2020 7-9	LSB-38A 090 LSB-38A_20200709 20G0356-06RE1 7/9/2020 7-9	LSB-38B 091 LSB-38B_20200709 20G0356-07 7/9/2020 10-12	LSB-38B 091 LSB-38B_20200709 20G0356-07RE1 7/9/2020 10-12
Petroleum Hydrocarbons (mg/kg)																	
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																	
4,4'-DDD	0.0033	14	92	180	*0.00393* U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
4,4'-DDE	0.0033	17	62	120	*0.00393* U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
4,4'-DDT	0.0033	136	47	94	*0.00393* U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Aldrin	0.005	0.19	0.68	1.4	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Alpha Chlordane	0.094	2.9	24	47	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Alpha Endosulfan	2.4	102	200	920	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Beta Endosulfan	2.4	102	200	920	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Chlordane (alpha and gamma)	~	~	~	~	0.0785 U	NA	0.0345 U	0.0404 U	NA	0.0414 U	NA	0.0358 U	0.0586 U	0.0366 U	NA	0.0637 UJ	NA
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Dieldrin	0.005	0.1	1.4	2.8	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 UJ	NA	0.00319 UJ	NA
Endosulfan Sulfate	2.4	1000	200	920	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Endrin	0.014	0.06	89	410	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Endrin Aldehyde	~	~	~	~	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Endrin Ketone	~	~	~	~	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Gamma-Chlordane	~	~	~	~	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Heptachlor	0.042	0.38	15	29	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Heptachlor Epoxide	~	~	~	~	0.00393 U	NA	0.00173 U	0.00202 U	NA	0.00207 U	NA	0.00179 U	0.00293 U	0.00183 U	NA	0.00319 UJ	NA
Methoxychlor	~	~	~	~	0.0196 U	NA	0.00863 U	0.0101 U	NA	0.0104 U	NA	0.00894 U	0.0147 U	0.00916 U	NA	0.0159 UJ	NA
Toxaphene	~	~	~	~	0.199 U	NA	0.0874 U	0.102 U	NA	0.105 U	NA	0.0905 U	0.148 U	0.0927 U	NA	0.161 UJ	NA
Herbicides (mg/kg)																	
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	0.0325 U	NA	0.0209 U	0.0242 U	NA	0.025 U	NA	0.022 U	0.0354 U	0.0223 U	NA	0.0258 U	NA
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	0.0325 U	NA	0.0209 U	0.0242 U	NA	0.025 U	NA	0.022 U	0.0354 U	0.0223 U	NA	0.0258 U	NA
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	0.0325 U	NA	0.0209 U	0.0242 U	NA	0.025 U	NA	0.022 U	0.0354 U	0.0223 U	NA	0.0258 U	NA
Polychlorinated Biphenyls (mg/kg)																	
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
Total PCBs	0.1	3.2	1	25	0.0396 U	NA	0.0174 U	0.0204 U	NA	0.0209 U	NA	0.0181 U	0.0296 U	0.0185 U	NA	0.0322 U	NA
Inorganics (mg/kg)																	
Aluminum	~	~	~	~	6,040	NA	2,040	5,380	NA	8,840	NA	11,200	12,000	4,600	NA	5,720	NA
Antimony	~	~	~	~	4.14 UJ	NA	2.65 UJ	3.09 UJ	NA	3.15 UJ	NA	2.78 UJ	4.52 UJ	2.82 UJ	NA	3.23 UJ	NA
Arsenic	13	16	16	16	3.35	NA	**19.3**	**29.8**	NA	10.8	NA	1.67 U	4.94	**13.1**	NA	**19.5**	NA
Barium	350	820	400	10,000	188	NA	11.4	55.7	NA	101	NA	56.8	112	76.9	NA	267	NA
Beryllium	7.2	47	590	2,700	0.083 UJ	NA	0.053 UJ	0.062 UJ	NA	0.063 UJ	NA	0.056 UJ	0.09 UJ	0.056 UJ	NA	0.065 UJ	NA
Cadmium	2.5	7.5	9.3	60	0.497 U	NA	0.318 U	0.371 U	NA	0.378 U	NA	0.334 U	0.542 U	0.45	NA	0.765	NA
Calcium	~	~	~	~	11,600	NA	1,580	24,800	NA	59,100	NA	3,690	6,220	49,200 J	NA	17,400	NA
Chromium, Hexavalent	1	19	400	800	0.829 U	NA	0.53 U	0.619 U	NA	0.629 U	NA	0.557 U	0.903 U	0.564 UJ	NA	0.647 UJ	NA
Chromium, Total	~	~	~	~	23.8	NA	5.16	16.2	NA	15.5	NA	21.2	24.6	19.1 J	NA	23.6 J	NA
Chromium, Trivalent	30	~	1,500	6,800	23.8	NA	5.16	16.2	NA	15.5	NA	21.2	24.6	19.1	NA	23.6	NA
Cobalt	~	~	~	~	11.4	NA	3.86	6.45	NA	6.17	NA	9.09	10.8	6	NA	7.9	NA
Copper	50	1,720	270	10,000	**129**	NA	6.74	**60.6**	NA	37.9	NA	17.4	**137**	**109** J	NA	**378** J	NA
Cyanide	27	40	27	10,000	0.829 U	NA	0.53 U	0.638	NA	0.629 U	NA	0.557 UJ	0.903 UJ	0.564 U	NA	0.647 U	NA
Iron	~	~	~	~	43,200	NA	10,200	20,100	NA	12,000	NA	18,000	24,900	10,600	NA	27,000	NA
Lead	63	450	1,000	3,900	NA	**37,200** D	24.5	**159**	NA	**89.8**	NA	**94**	**1,030**	**102** J	NA	**868** J	NA
Magnesium	~	~	~	~	1,830	NA	1,150	3,050	NA	9,480	NA	3,090	4,910	24,600 J	NA	1,740	NA
Manganese	1,600	2,000	10,000	10,000	447	NA	253	321	NA	582	NA	359	263	217	NA	334	NA
Mercury	0.18	0.73	2.8	5.7	**2.78**	NA	0.0376	**1.14**	NA	**4.29**	NA	0.125	**1.11**	**0.241**	NA	**3.82**	NA
Nickel	30	130	310	10,000	20.3	NA	8.06	22.6	NA	14.3	NA	**36.6**	26.3	21.7 J	NA	20.4 J	NA
Potassium	~	~	~	~	1,210	NA	372	879	NA	767	NA	1,240	2,650	826	NA	786	NA
Selenium	3.9	4	1,500	6,800	*4.14* UJ	NA	2.65 UJ	3.09 UJ	NA	3.15 UJ	NA	2.78 UJ	*4.52* UJ	**9.02** J	NA	3.23 UJ	NA
Silver	2	8.3	1,500	6,800	0.829 U	NA	0.53 U	0.619 U	NA	0.629 U	NA	0.557 U	0.903 U	0.564 U	NA	0.647 U	NA
Sodium	~	~	~	~	708	NA	97.6	254	NA	503	NA	156	2,520	164 J	NA	343 J	NA
Thallium	~	~	~	~	4.14 U	NA	2.65 U	3.09 U	NA	3.15 U	NA	2.78 U	4.52 U	2.82 U	NA	3.23 U	NA
Vanadium	~	~	~	~	22.9	NA	11.5	24.4	NA	20.1	NA	31	34.5	20.5	NA	21.1	NA
Zinc	109	2,480	10,000	10,000	**316**	NA	57.1	**143**	NA	**120**	NA	57.9	**198**	**114** J	NA	**854** J	NA
General Chemistry																	
Bulk Density (g/mL)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Loss On Ignition (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moisture, Percent (%)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Solids, Percent (%)	~	~	~	~	60.3	NA	94.3	80.8	NA	79.4	NA	89.8	55.3	88.6	NA	77.3	NA
Total Organic Carbon (mg/kg)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location					LSB-38C	LSB-39A	LSB-39B	LSB-40A	LSB-40B	LSB-41A	LSB-41B	LSB-41B	LSB-42A	LSB-42B	LSB-43A	LSB-43B	LSB-43B	LSB-43B
Sample ID	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	092 LSB-38C_20200709	099 LSB-39A_20200710	100 LSB-39B_20200710	096 LSB-40A_20200710	097 LSB-40B_20200710	076 LSB-41A_20200708	077 LSB-41B_20200708	077 LSB-41B_20200708	072 LSB-42A_20200707	073 LSB-42B_20200707	157 LSB-43A_20200715	158 LSB-43B_20200715	158 LSB-43B_20200715	158 LSB-43B_20200715
Laboratory ID					20G0356-08	20G0402-06	20G0402-07	20G0402-03	20G0402-04	20G0293-01	20G0293-02	20G0293-02RE1	20G0228-64	20G0228-65	20G0580-27	20G0580-28	20G0580-28RE1	20G0580-28RE2
Sample Date					7/9/2020	7/10/2020	7/10/2020	7/10/2020	7/10/2020	7/8/2020	7/8/2020	7/8/2020	7/7/2020	7/7/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
Sample Depth (feet bgs)					13-15	3.5-5.5	13-15	5.5-7.5	18.5-20.5	6-8	8-10	8-10	3-5	13-15	6-8	11.5-13.5	11.5-13.5	11.5-13.5
Volatile Organic Compounds (mg/kg)																		
1,1,1,2-Tetrachloroethane	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 UJ	0.0085 U	0.0024 U	0.022 J	NA	0.0021 UJ	0.0035 U	0.0048 U	0.01	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	0.34 UJ	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
1,1,2-Trichloroethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 UJ	0.0056 U	NA	0.0021 UJ	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,1-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,2,3-Trichloropropane	~	~	~	~	0.34 UJ	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 UJ	0.0056 UJ	NA	0.0021 U	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 U	0.0048 UJ	0.0035 UJ	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.048 J	NA	0.0021 U	0.0035 U	0.0048 U	0.11	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.015 J	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60	*0.34* UJ	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
1,2-Dichloropropane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.052 J	NA	0.0021 U	0.0035 U	0.0048 U	0.041	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 UJ	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
1,3-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 UJ	0.0035 UJ	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	*6.8* U	0.071 U	*7.7* U	0.057 U	0.085 U	0.048 UJ	*0.11* UJ	NA	0.043 U	0.07 U	0.095 U	0.07 U	NA	NA
2,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
4-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000	*0.68* U	0.0071 UJ	*0.77* UJ	0.011 U	0.026 U	0.0048 U	*0.1* U	NA	0.0043 U	0.007 U	0.0095 U	*0.11* U	NA	NA
Acrolein	~	~	~	~	0.68 UJ	0.0071 UJ	0.77 UJ	0.0057 U	0.0085 UJ	0.0048 U	0.011 UJ	NA	0.0043 UJ	0.007 UJ	0.0095 UJ	0.007 UJ	NA	NA
Acrylonitrile	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Benzene	0.06	0.06	44	89	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.01 J	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Bromobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Bromodichloromethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Bromoform	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 UJ	0.0035 U	0.0048 U	0.0035 U	NA	NA
Bromomethane	~	~	~	~	0.34 UJ	0.0035 U	0.38 U	0.0028 UJ	0.0043 U	0.0024 UJ	0.0056 UJ	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
Carbon Disulfide	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 UJ	0.0085 U	0.0024 U	0.022 J	NA	0.0021 UJ	0.0035 U	0.0048 U	0.01	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Chlorobenzene	1.1	1.1	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Chloroethane	~	~	~	~	0.34 UJ	0.0035 U	0.38 U	0.0028 UJ	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
Chloroform	0.37	0.37	350	700	0.34 UJ	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 UJ	0.0056 U	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
Chloromethane	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Cyclohexane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.068 J	NA	0.0021 U	0.0035 U	0.0048 U	0.01	NA	NA
Dibromochloromethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Dibromomethane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Dichlorodifluoromethane	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 UJ	0.0043 UJ	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Ethylbenzene	1	1	390	780	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.039 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.052 J	NA	NA
Hexachlorobutadiene	~	~	~	~	0.34 U	0.0035 UJ	0.38 UJ	0.0028 U	0.0043 UJ	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Isopropyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 UJ	0.067 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.027 J	NA	NA
M,P-Xylene	~	~	~	~	0.68 UJ	0.0071 U	0.77 U	0.0057 U	0.0085 U	0.0048 U	0.04 J	NA	0.0043 U	0.007 UJ	0.0095 U	0.053	NA	NA
Methyl Acetate	~	~	~	~	0.38 JD	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	*0.34* U	0.0035 U	*0.38* U	0.0028 UJ	0.0043 U	0.0024 UJ	0.044 J	NA	0.0021 U	0.0035 U	0.0048 U	0.051 U	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Methylcyclohexane	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.086	NA	NA
Methylene Chloride	0.05	0.05	500	1,000	*0.68* U	0.0071 U	*0.77* U	0.0057 U	0.0085 U	0.0048 U	0.011 U	NA	0.0043 U	0.007 U	0.0095 U	0.007 U	NA	NA
n-Butylbenzene	12	12	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.027 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.013 J	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.071 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.018 J	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.011 J	NA	0.0021 U	0.0035 U	0.0048 U	0.051	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.064	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.06	NA	NA
Sec-Butylbenzene	11	11	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.031 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.0053 J	NA	NA
Styrene	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 UJ	0.019 J	NA	0.0021 U	0.0035 U	0.0048 UJ	0.0035 UJ	NA	NA
Tert-Butyl Alcohol	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 UJ	0.0035 UJ	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 UJ	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300	0.34 U	0.0035 UJ	0.38 UJ	0.014 U	0.0043 UJ	0.0024 UJ	0.0056 UJ	NA	0.0021 UJ	0.0035 U	0.0057 J	0.0035 UJ	NA	NA
Toluene	0.7	0.7	500	1,000	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0074 J	NA	0.0021 U	0.0035 U	0.0048 U	0.0039 J	NA	NA
Total Xylenes	0.26	1.6	500	1,000	*1* U	0.011 U	*1.2* U	0.0085 U	0.013 U	0.0073 U	0.051 J	NA	0.0064 U	0.011 U	0.014 U	0.1	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 UJ	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	0.34 U	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 UJ	0.019 J	NA	0.0021 U	0.0035 U	0.0048 U	0.0035 U	NA	NA
Trichlorofluoromethane	~	~	~	~	0.34 UJ	0.0035 U	0.38 U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 UJ	0.0048 U	0.0035 U	NA	NA
Vinyl Chloride	0.02	0.02	13	27	*0.34* U	0.0035 U	*0.38* U	0.0028 U	0.0043 U	0.0024 U	0.0056 U	NA	0.0021 UJ	0.0035 U	0.0048 U	0.0035 U	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-38C 092 LSB-38C_20200709 20G0356-08 7/9/2020 13-15	LSB-39A 099 LSB-39A_20200710 20G0402-06 7/10/2020 3.5-5.5	LSB-39B 100 LSB-39B_20200710 20G0402-07 7/10/2020 13-15	LSB-40A 096 LSB-40A_20200710 20G0402-03 7/10/2020 5.5-7.5	LSB-40B 097 LSB-40B_20200710 20G0402-04 7/10/2020 18.5-20.5	LSB-41A 076 LSB-41A_20200708 20G0293-01 7/8/2020 6-8	LSB-41B 077 LSB-41B_20200708 20G0293-02 7/8/2020 8-10	LSB-41B 077 LSB-41B_20200708 20G0293-02RE1 7/8/2020 8-10	LSB-42A 072 LSB-42A_20200707 20G0228-64 7/7/2020 3-5	LSB-42B 073 LSB-42B_20200707 20G0228-65 7/7/2020 13-15	LSB-43A 157 LSB-43A_20200715 20G0580-27 7/15/2020 6-8	LSB-43B 158 LSB-43B_20200715 20G0580-28 7/15/2020 11.5-13.5	LSB-43B 158 LSB-43B_20200715 20G0580-28RE1 7/15/2020 11.5-13.5	LSB-43B 158 LSB-43B_202007 20G0580-28RE2 7/15/2020 11.5-13.5
Semivolatile Organic Compounds (mg/kg)																			
1,2,4,5-Tetrachlorobenzene	~	~	~	~	0.14 U	0.103 U	0.296 U	0.0917 U	0.112 U	0.0928 U	0.434 U	NA	0.0909 U	0.116 U	0.106 U	0.104 U	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
1,2-Diphenylhydrazine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 UJ	0.0583 UJ	0.0531 U	0.052 U	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	0.0099 UJ	0.0098 U	0.00962 U	0.0098 U	0.0098 U	0.00962 U	0.0099 U	NA	0.00971 U	0.00971 U	0.00935 U	0.0098 U	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	0.14 U	0.103 U	0.296 U	0.0917 U	0.112 U	0.0928 U	0.434 U	NA	0.0909 U	0.116 U	0.106 U	0.104 U	NA	NA
2,4,5-Trichlorophenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 UJ	0.218 UJ	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2,4,6-Trichlorophenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2,4-Dichlorophenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2,4-Dimethylphenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2,4-Dinitrophenol	~	~	~	~	0.14 U	0.103 UJ	0.296 UJ	0.0917 UJ	0.112 UJ	0.0928 UJ	0.434 UJ	NA	0.0909 UJ	0.116 UJ	0.106 UJ	0.104 UJ	NA	NA
2,4-Dinitrotoluene	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 U	0.218 U	NA	0.0456 UJ	0.0583 UJ	0.0531 UJ	0.052 UJ	NA	NA
2,6-Dinitrotoluene	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 UJ	0.218 UJ	NA	0.0456 UJ	0.0583 UJ	0.0531 UJ	0.052 UJ	NA	NA
2-Chloronaphthalene	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2-Chlorophenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2-Methylnaphthalene	~	~	~	~	0.0805 JD	0.0517 U	0.148 U	0.046 U	0.102 JD	0.0465 U	0.337 JD	NA	0.0456 U	0.0632 JD	0.197 D	NA	15.3 J	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
2-Nitroaniline	~	~	~	~	0.14 U	0.103 UJ	0.296 UJ	0.0917 UJ	0.112 UJ	0.0928 U	0.434 U	NA	0.0909 UJ	0.116 UJ	0.106 UJ	0.104 UJ	NA	NA
2-Nitrophenol	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 U	0.218 U	NA	0.0456 UJ	0.0583 UJ	0.0531 UJ	0.052 UJ	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
3-Nitroaniline	~	~	~	~	0.14 U	0.103 UJ	0.296 UJ	0.0917 UJ	0.112 UJ	0.0928 U	0.434 U	NA	0.0909 UJ	0.116 UJ	0.106 UJ	0.104 UJ	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~	0.14 U	0.103 UJ	0.296 UJ	0.0917 UJ	0.112 UJ	0.0928 UJ	0.434 UJ	NA	0.0909 UJ	0.116 UJ	0.106 UJ	0.104 UJ	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
4-Chloroaniline	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
4-Nitroaniline	~	~	~	~	0.14 U	0.103 UJ	0.296 UJ	0.0917 UJ	0.112 UJ	0.0928 U	0.434 U	NA	0.0909 UJ	0.116 UJ	0.106 UJ	0.104 UJ	NA	NA
4-Nitrophenol	~	~	~	~	0.14 U	0.103 U	0.296 U	0.0917 U	0.112 U	0.0928 U	0.434 U	NA	0.0909 U	0.116 U	0.106 U	0.104 U	NA	NA
Acenaphthene	20	98	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.237 D	0.0512 JD	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	NA	13.5 J	NA
Acenaphthylene	100	107	500	1,000	0.0701 U	0.0517 U	0.315 D	0.046 U	0.135 D	0.138 D	0.229 JD	NA	0.105 D	0.157 D	0.0531 U	0.958 D	NA	NA
Acetophenone	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	0.28 U	0.206 U	0.593 U	0.184 U	0.225 U	0.186 U	0.869 U	NA	0.182 U	0.233 U	0.212 U	0.208 U	NA	NA
Anthracene	100	1,000	500	1,000	0.0701 U	0.0517 U	0.324 D	0.046 U	0.622 D	0.258 D	0.527 D	NA	0.12 D	0.101 JD	0.0531 U	NA	28.2 J	NA
Atrazine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Benzaldehyde	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 UJ	0.218 UJ	NA	0.0456 U	0.0583 U	0.0531 UJ	0.052 UJ	NA	NA
Benzidine	~	~	~	~	0.28 U	0.206 U	0.593 U	0.184 U	0.225 U	0.186 UJ	0.869 UJ	NA	0.182 U	0.233 U	0.212 UJ	0.208 U	NA	NA
Benzo(a)anthracene	1	1	5.6	11	0.0701 U	0.132 D	0.476 D	0.0652 JD	**1.45** D	0.819 D	0.906 D	NA	0.521 D	0.141 D	0.0531 U	NA	**26.6** J	NA
Benzo(a)pyrene	1	22	1	1.1	0.0701 U	0.17 D	0.774 D	0.0696 JD	**1.24** D	0.787 D	0.826 D	NA	0.569 D	0.227 D	0.0531 U	NA	**22.5** J	NA
Benzo(b)fluoranthene	1	1.7	5.6	11	0.0701 U	0.116 D	0.632 D	0.046 U	0.994 D	0.743 D	0.69 D	NA	0.539 D	0.179 D	0.0531 U	NA	**16.7** J	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000	0.0701 U	0.178 D	1.35 D	0.0836 JD	0.613 D	0.513 D	0.514 D	NA	0.403 D	0.125 D	0.0531 U	NA	12.2 J	NA
Benzo(k)fluoranthene	0.8	1.7	56	110	0.0701 U	0.0517 U	0.298 D	0.046 U	**0.857** D	0.609 D	0.684 D	NA	0.453 D	0.138 D	0.0531 U	NA	**14.4** J	NA
Benzoic Acid	~	~	~	~	0.0701 UJ	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 UJ	0.218 UJ	NA	0.0456 UJ	0.0583 UJ	0.0531 U	0.052 U	NA	NA
Benzyl Alcohol	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Benzyl Butyl Phthalate	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Biphenyl (Diphenyl)	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0575 JD	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	2.09 D	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 UJ	NA	19.6 J	0.0456 U	0.0583 U	0.0805 J	0.052 UJ	NA	NA
Caprolactam	~	~	~	~	0.14 U	0.103 U	0.296 U	0.0917 U	0.112 U	0.0928 U	0.434 U	NA	0.0909 U	0.116 U	0.106 U	0.104 U	NA	NA
Carbazole	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.239 D	0.0838 JD	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	NA	0.52 U	NA
Chrysene	1	1	56	110	0.0701 U	0.246 D	0.665 D	0.145 D	**1.3** D	0.756 D	**1.05** D	NA	0.541 D	0.215 D	0.061 JD	NA	**23.3** J	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	0.0701 U	0.0948 JD	**0.367** D	0.0477 JD	0.258 D	0.179 J	0.218 UJ	NA	0.156 D	0.0583 U	0.0531 U	NA	**3.83** J	NA
Dibenzofuran	7	210	350	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.212 D	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	NA	**11.1** J	NA
Dibutyl phthalate	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.119 D	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Diethyl phthalate	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Dimethyl phthalate	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Dioctyl phthalate	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 UJ	0.218 UJ	NA	0.0456 U	0.0583 U	0.0531 UJ	0.052 UJ	NA	NA
Diphenylamine	~	~	~	~	0.14 U	0.103 U	0.296 U	0.0917 U	0.112 U	0.0928 U	0.434 U	NA	0.0909 U	0.116 U	0.106 U	0.104 U	NA	NA
Fluoranthene	100	1,000	500	1,000	0.0701 U	0.0692 JD	0.611 D	0.046 U	3.14 D	1.8 D	2 D	NA	0.696 D	0.361 D	0.0531 U	NA	NA	73.5
Fluorene	30	386	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.346 D	0.0772 JD	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	NA	19.2 J	NA
Hexachlorobenzene	0.33	3.2	6	12	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Hexachlorobutadiene	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Hexachlorocyclopentadiene	~	~	~	~	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 UJ	0.218 UJ	NA	0.0456 UJ	0.0583 UJ	0.0531 UJ	0.052 UJ	NA	NA
Hexachloroethane	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	0.0701 U	0.0717 JD	0.476 D	0.046 U	**0.591** D	**0.603** J	0.479 J	NA	0.341 D	0.0994 JD	0.0531 U	NA	**11.1** J	NA
Isophorone	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Naphthalene	12	12	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.251 U	0.0465 U	0.434 U	NA	0.0456 U	0.13 D	0.262 D	NA	**20.8** J	NA
Nitrobenzene	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
n-Nitrosodimethylamine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 UJ	0.0583 UJ	0.0531 U	0.052 U	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
n-Nitrosodiphenylamine	~	~	~	~	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55	0.0701 U	0.0517 UJ	0.148 UJ	0.046 UJ	0.0564 UJ	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Phenanthrene	100	1,000	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	2.78 D	1.03 D	0.795 D	NA	0.205 D	0.158 D	0.0531 U	NA	NA	**110**
Phenol	0.33	0.33	500	1,000	0.0701 U	0.0517 U	0.148 U	0.046 U	0.0564 U	0.0465 U	0.218 U	NA	0.0456 U	0.0583 U	0.0531 U	0.052 U	NA	NA
Pyrene	100	1,000	500	1,000	0.14 D	0.137 D	1.64 D	0.046 U	3.08 D	1.41 D	2.69 D	NA	0.645 D	0.417 D	0.0531 U	NA	NA	63.1
Pyridine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-38C 092 LSB-38C_20200709 20G0356-08 7/9/2020 13-15		LSB-39A 099 LSB-39A_20200710 20G0402-06 7/10/2020 3.5-5.5		LSB-39B 100 LSB-39B_20200710 20G0402-07 7/10/2020 13-15		LSB-40A 096 LSB-40A_20200710 20G0402-03 7/10/2020 5.5-7.5		LSB-40B 097 LSB-40B_20200710 20G0402-04 7/10/2020 18.5-20.5		LSB-41A 076 LSB-41A_20200708 20G0293-01 7/8/2020 6-8		LSB-41B 077 LSB-41B_20200708 20G0293-02 7/8/2020 8-10		LSB-41B 077 LSB-41B_20200708 20G0293-02RE1 7/8/2020 8-10		LSB-42A 072 LSB-42A_20200707 20G0228-64 7/7/2020 3-5		LSB-42B 073 LSB-42B_20200707 20G0228-65 7/7/2020 13-15		LSB-43A 157 LSB-43A_20200715 20G0580-27 7/15/2020 6-8		LSB-43B 158 LSB-43B_20200715 20G0580-28 7/15/2020 11.5-13.5		LSB-43B 158 LSB-43B_20200715 20G0580-28RE1 7/15/2020 11.5-13.5		LSB-43B 158 LSB-43B_20200 20G0580-28RE2 7/15/2020 11.5-13.5	
Petroleum Hydrocarbons (mg/kg)																																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Pesticides (mg/kg)																																		
4,4'-DDD	0.0033	14	92	180	*0.00409*	UJ	0.00299	U	*0.00392*	U	0.00181	U	*0.00334*	U	0.0028	U	**0.0429**	J	NA		0.00181	UJ	*0.00334*	U	0.00211	U	0.00304	U	NA		NA	
4,4'-DDE	0.0033	17	62	120	*0.00409*	UJ	0.00299	U	*0.00392*	U	0.00181	U	*0.00334*	U	0.0028	U	*0.00434*	UJ	NA		0.00181	UJ	*0.00334*	U	0.00211	U	0.00304	U	NA		NA	
4,4'-DDT	0.0033	136	47	94	*0.00409*	UJ	0.00299	U	*0.00392*	U	0.00181	U	*0.00334*	U	0.0028	U	**0.0857**	J	NA		0.00181	UJ	*0.00334*	U	0.00211	U	0.00304	U	NA		NA	
Aldrin	0.005	0.19	0.68	1.4	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Alpha Chlordane	0.094	2.9	24	47	0.00409	UJ	0.00299	U	0.0165	DP	0.00181	U	0.00334	U	0.0028	U	**0.0956**	J	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Alpha Endosulfan	2.4	102	200	920	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Beta Endosulfan	2.4	102	200	920	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Chlordane (alpha and gamma)	~	~	~	~	0.0818	UJ	0.0598	U	0.0784	U	0.0363	U	0.0669	U	0.0559	U	2.13	J	NA		0.0361	UJ	0.0668	U	0.0422	U	0.0608	U	NA		NA	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Dieldrin	0.005	0.1	1.4	2.8	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	UJ	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Endosulfan Sulfate	2.4	1000	200	920	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Endrin	0.014	0.06	89	410	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Endrin Aldehyde	~	~	~	~	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Endrin Ketone	~	~	~	~	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Gamma-Chlordane	~	~	~	~	0.00409	UJ	0.00299	U	0.015	D	0.00181	U	0.00334	U	0.0028	U	0.0963	J	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Heptachlor	0.042	0.38	15	29	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Heptachlor Epoxide	~	~	~	~	0.00409	UJ	0.00299	U	0.00392	U	0.00181	U	0.00334	U	0.0028	U	0.00434	UJ	NA		0.00181	UJ	0.00334	U	0.00211	U	0.00304	U	NA		NA	
Methoxychlor	~	~	~	~	0.0204	UJ	0.0149	U	0.0196	U	0.00907	U	0.0167	U	0.014	U	0.0217	UJ	NA		0.00903	UJ	0.0167	U	0.0106	U	0.0152	U	NA		NA	
Toxaphene	~	~	~	~	0.207	UJ	0.151	U	0.198	U	0.0918	U	0.169	U	0.141	U	0.219	UJ	NA		0.0913	UJ	0.169	U	0.107	U	0.154	U	NA		NA	
Herbicides (mg/kg)																																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	0.0336	UJ	0.0242	U	0.0475	U	0.0217	U	0.0267	U	0.0224	U	0.0353	U	NA		0.0219	U	0.0278	U	0.0256	U	0.025	U	NA		NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	0.0336	UJ	0.0242	U	0.0475	U	0.0217	U	0.0267	U	0.0224	U	0.0353	U	NA		0.0219	U	0.0278	U	0.0256	U	0.025	U	NA		NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	0.0336	UJ	0.0242	U	0.0475	U	0.0217	U	0.0267	U	0.0224	U	0.0353	U	NA		0.0219	U	0.0278	U	0.0256	U	0.025	U	NA		NA	
Polychlorinated Biphenyls (mg/kg)																																		
PCB-1016 (Aroclor 1016)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.619		NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1221 (Aroclor 1221)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.0438	U	NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1232 (Aroclor 1232)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.0438	U	NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1242 (Aroclor 1242)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.0438	U	NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1248 (Aroclor 1248)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.0438	U	NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1254 (Aroclor 1254)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.0438	U	NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
PCB-1260 (Aroclor 1260)	~	~	~	~	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	0.73		NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
Total PCBs	0.1	3.2	1	25	0.0413	UJ	0.0302	U	0.0396	U	0.0183	U	0.0338	U	0.0282	U	**1.35**		NA		0.0182	U	0.0337	U	0.0213	U	0.0307	U	NA		NA	
Inorganics (mg/kg)																																		
Aluminum	~	~	~	~	13,100		2,150		29,700		1,520		1,980		9,690		11,800		NA		1,730	B	2,650	B	1,410		1,750		NA		NA	
Antimony	~	~	~	~	4.23	UJ	3.11	UJ	5.98	UJ	2.76	UJ	3.39	UJ	2.84	UJ	22	J	NA		2.75	U	3.51	U	3.21	UJ	3.16	UJ	NA		NA	
Arsenic	13	16	16	16	16.4		16.3		53.3		**14.2**		8.04		3.91	J	37.1		NA		4.02		68.4		5.48		19.1	J	NA		NA	
Barium	350	820	400	10,000	164		37		290		33.8		35.6		176	J	**823**	J	NA		17.6		45.5		15.8		10.5		NA		NA	
Beryllium	7.2	47	590	2,700	0.085	UJ	0.062	UJ	0.12	UJ	0.055	UJ	0.068	UJ	0.057	UJ	0.088	UJ	NA		0.055	U	0.07	U	0.064	U	0.063	U	NA		NA	
Cadmium	2.5	7.5	9.3	60	0.608		0.373	U	0.717	U	0.331	U	0.407	U	**7.99**	J	183	J	NA		0.33	U	2.36		0.385	U	0.379	U	NA		NA	
Calcium	~	~	~	~	9,600		9,260		6,840		2,180		6,790		19,300	J	18,100		NA		990		4,590		1,170		691	J	NA		NA	
Chromium, Hexavalent	1	19	400	800	0.847	UJ	0.622	UJ	*1.2*	UJ	0.552	U	0.679	U	0.568	UJ	0.885	UJ	NA		0.551	U	0.702	U	0.642	U	0.632	U	NA		NA	
Chromium, Total	~	~	~	~	32.2	J	7.08	J	87.3		7.7		7.5		32.2		708		NA		8.16		76.7		11.9		6.8		NA		NA	
Chromium, Trivalent	30	~	1,500	6,800	6.82		7.08		**87.3**		7.7		7.5		**32.2**		**708**		NA		8.16		**76.7**		11.9		6.8		NA		NA	
Cobalt	~	~	~	~	13.8		4.93		42		5.32		3.87		12.1		104		NA		4.27		13.1		2.84		8.05		NA		NA	
Copper	50	1,720	270	10,000	**122**	J	27		277		23.3		23.7		48.7		**1,460**		NA		12.4		**115**		**93.2**	J	24.6	J	NA		NA	
Cyanide	27	40	27	10,000	0.847	U	0.622	U	1.2	U	0.604		0.679	U	0.568	U	0.885	U	NA		0.551	U	3.3		0.642	U	0.632	U	NA		NA	
Iron	~	~	~	~	34,000		6,980		70,800		4,730		6,790		24,100		34,500		NA		11,800		15,700		3,640		13,500		NA		NA	
Lead	63	450	1,000	3,900	**350**	J	42.2		**106**		34.4		36		**252**		1,100		NA		17.1		**133**		10.1	B	10.3	B	NA		NA	
Magnesium	~	~	~	~	4,630		634	J	17,300		488		2,740		5,180	J	10,000		NA		693		2,460		456	J	339	J	NA		NA	
Manganese	1,600	2,000	10,000	10,000	381		55.7	J	485	J	45	J	38.9	J	326		246		NA		160		385		9.71	J	27.8	J	NA		NA	
Mercury	0.18	0.73	2.8	5.7	2.13		**0.186**		0.941		0.0855		0.119		**0.239**		2.55		NA		0.131		**0.205**		**0.317**		**0.207**		NA		NA	
Nickel	30	130	310	10,000	**31.5**	J	11		169		11.1		13.1		23.8	J	513	J	NA		28.1	J	134	J	15.1		**68.9**	J	NA		NA	
Potassium	~	~	~	~	2,660		601	J	16,400	B	347	B	365	B	1,330		2,650		NA		324		1,070		213		197		NA		NA	
Selenium	3.9	4	1,500	6,800	*4.23*	UJ	3.11	U	*5.98*	U	2.76	U	3.39	U	2.84	U	*4.42*	U	NA		2.75	U	3.51	U	3.21	UJ	3.16	UJ	NA		NA	
Silver	2	8.3	1,500	6,800	0.847	U	0.622	U	1.2	U	0.552	U	0.679	U	0.568	U	21.4		NA		0.551	U	0.702	U	0.642	U	0.632	U	NA		NA	
Sodium	~	~	~	~	1,060	J	397	J	3,470	J	647	J	1,780	J	1,730		11,000		NA		938		2,730		1,980		1,910		NA		NA	
Thallium	~	~	~	~	4.23	U	3.11	U	5.98	U	2.76	U	3.39	U	2.84	U	4.42	U	NA		2.75	U	3.51	U	3.21	U	3.16	U	NA		NA	
Vanadium	~	~	~	~	39.3		9.88		70		15.8		16.5		30.5		121		NA		44.8		16.7		11.9		10.9		NA		NA	
Zinc	109	2,480	10,000	10,000	**477**	J	39.5		**360**		29.2		32.4		**367**		**2,760**		NA		67.7		**185**		28		82.5		NA		NA	
General Chemistry																																		
Bulk Density (g/mL)	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Loss On Ignition (%)	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Moisture, Percent (%)	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Solids, Percent (%)	~	~	~	~	59.1		80.4		41.8		90.6		73.7		88.1		56.5		NA		90.8		71.3		77.9		79.1		NA		NA	
Total Organic Carbon (mg/kg)	~	~	~	~	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	15	LSB-44A		LSB-44B		LSB-44B	LSB-44C		LSB-45A		LSB-45B		LSB-45C		LSB-46A		LSB-46A	LSB-46B		LSB-47E	LSB-47G	LSB-48F	LSB-49F
Sample ID						086 LSB-44A_20200709		087 LSB-44B_20200709		087 LSB-44B_20200709	088 LSB-44C_20200709		080 LSB-45A_20200708		081 LSB-45B_20200708		082 LSB-45C_20200708		078 LSB-46A_20200708		078 LSB-46A_20200708	079 LSB-46B_20200708		013 LSB-47E_20200707	015 LSB-47G_20200707	063 LSB-48F_20200707	035 LSB-49F_20200707
Laboratory ID						20G0356-02		20G0356-03		20G0356-03RE1	20G0356-04		20G0293-05		20G0293-06		20G0293-07		20G0293-03		20G0293-03RE1	20G0293-04		20G0228-05	20G0228-07	20G0228-55	20G0228-27
Sample Date						7/9/2020		7/9/2020		7/9/2020	7/9/2020		7/8/2020		7/8/2020		7/8/2020		7/8/2020		7/8/2020	7/8/2020		7/7/2020	7/7/2020	7/7/2020	7/7/2020
Sample Depth (feet bgs)						4-6		8-10		8-10	15-17		4.5-6.5		9-11		18-20		7-9		7-9	9-11		8-10	12-14	10-12	10-12
Volatile Organic Compounds (mg/kg)																											
1,1,1,2-Tetrachloroethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,1,2-Trichloroethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480		0.0027	U	*0.35*	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000		0.0027	U	*0.35*	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
1,1-Dichloropropene	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,2,3-Trichloropropane	~	~	~	~		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.55	U	0.0026	U	0.0023	U	NA	1.1	U	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60		0.0027	U	*0.35*	UJ	NA	*0.25*	UJ	0.0029	U	*0.27*	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
1,2-Dichloropropane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
1,3-Dichloropropane	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250		0.055	U	*7.1*	U	NA	*5*	U	0.057	U	*5.5*	U	0.052	U	0.046	U	NA	*11*	U	NA	NA	NA	NA
2,2-Dichloropropane	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
4-Chlorotoluene	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000		0.0055	U	*0.71*	U	NA	*0.5*	U	0.0057	U	*0.55*	UJ	0.022	U	0.0091	U	NA	*1.1*	UJ	NA	NA	NA	NA
Acrolein	~	~	~	~		0.0055	U	0.71	UJ	NA	0.5	UJ	0.0057	UJ	0.55	UJ	0.0052	UJ	0.0046	UJ	NA	1.1	UJ	NA	NA	NA	NA
Acrylonitrile	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Benzene	0.06	0.06	44	89		0.0027	U	**0.71**	J	NA	*0.25*	U	0.0029	U	*0.27*	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
Bromobenzene	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
Bromochloromethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Bromodichloromethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Bromoform	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
Bromomethane	~	~	~	~		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
Carbon Disulfide	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0062		0.0023	U	NA	0.55	U	NA	NA	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Chlorobenzene	1.1	1.1	500	1,000		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Chloroethane	~	~	~	~		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Chloroform	0.37	0.37	350	700		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
Chloromethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	UJ	0.0026	U	0.0023	U	NA	0.55	UJ	NA	NA	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000		0.0027	U	*0.35*	U	NA	0.25	U	0.0029	U	*0.27*	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Cyclohexane	~	~	~	~		0.0027	U	0.83	J	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Dibromochloromethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Dibromomethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Dichlorodifluoromethane	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	UJ	0.0026	U	0.0023	U	NA	0.55	UJ	NA	NA	NA	NA
Ethylbenzene	1	1	390	780		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
Isopropyl Ether	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~		0.0027	U	3.4	J	NA	0.25	U	0.0029	UJ	0.27	U	0.0026	UJ	0.0023	UJ	NA	0.55	U	NA	NA	NA	NA
M,P-Xylene	~	~	~	~		0.0055	U	0.71	UJ	NA	0.5	UJ	0.0057	U	0.55	UJ	0.0052	U	0.0046	U	NA	1.1	UJ	NA	NA	NA	NA
Methyl Acetate	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.79	JD	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000		0.0027	UJ	*0.35*	U	NA	*0.25*	U	0.0029	UJ	**0.91**	D	0.0085	J	0.0023	UJ	NA	*0.55*	U	NA	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Methylcyclohexane	~	~	~	~		0.0027	U	NA		33	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Methylene Chloride	0.05	0.05	500	1,000		0.0055	U	*0.71*	U	NA	*0.5*	U	0.0057	U	*0.55*	U	0.0052	U	0.0046	U	NA	*1.1*	U	NA	NA	NA	NA
n-Butylbenzene	12	12	500	1,000		0.0027	U	1.8	J	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000		0.0027	U	3.7	J	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~		0.0027	U	0.35	U	NA	0.32	JD	0.0029	U	1	D	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Sec-Butylbenzene	11	11	500	1,000		0.0027	U	3.2	J	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Styrene	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000		0.0027	U	0.68	J	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Tert-Butyl Alcohol	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300		0.0027	UJ	0.35	U	NA	0.25	U	0.0029	UJ	0.27	UJ	0.0026	UJ	0.0023	UJ	NA	0.55	UJ	NA	NA	NA	NA
Toluene	0.7	0.7	500	1,000		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Total Xylenes	0.26	1.6	500	1,000		0.0082	U	*1.1*	U	NA	*0.75*	U	0.0086	U	*0.82*	U	0.0078	U	0.0068	U	NA	*1.6*	U	NA	NA	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000		0.0027	U	*0.35*	U	NA	*0.25*	U	0.0029	U	*0.27*	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400		0.0027	U	0.35	U	NA	0.25	U	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA
Trichlorofluoromethane	~	~	~	~		0.0027	U	0.35	UJ	NA	0.25	UJ	0.0029	U	0.27	U	0.0026	U	0.0023	U	NA	0.55	U	NA	NA	NA	NA
Vinyl Chloride	0.02	0.02	13	27		0.0027	U	*0.35*	U	NA	*0.25*	U	0.0029	U	*0.27*	U	0.0026	U	0.0023	U	NA	*0.55*	U	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs		LSB-44A		LSB-44B		LSB-44B	LSB-44C		LSB-45A		LSB-45B		LSB-45C		LSB-46A		LSB-46A	LSB-46B		LSB-47E	LSB-47G	LSB-48F	LSB-49F
Sample ID					15	086 LSB-44A_20200709		087 LSB-44B_20200709		087 LSB-44B_20200709	088 LSB-44C_20200709		080 LSB-45A_20200708		081 LSB-45B_20200708		082 LSB-45C_20200708		078 LSB-46A_20200708		078 LSB-46A_20200708	079 LSB-46B_20200708		013 LSB-47E_20200707	015 LSB-47G_20200707	063 LSB-48F_20200707	035 LSB-49F_20200707
Laboratory ID						20G0356-02		20G0356-03		20G0356-03RE1	20G0356-04		20G0293-05		20G0293-06		20G0293-07		20G0293-03		20G0293-03RE1	20G0293-04		20G0228-05	20G0228-07	20G0228-55	20G0228-27
Sample Date						7/9/2020		7/9/2020		7/9/2020	7/9/2020		7/8/2020		7/8/2020		7/8/2020		7/8/2020		7/8/2020	7/8/2020		7/7/2020	7/7/2020	7/7/2020	7/7/2020
Sample Depth (feet bgs)						4-6		8-10		8-10	15-17		4.5-6.5		9-11		18-20		7-9		7-9	9-11		8-10	12-14	10-12	10-12
Semivolatile Organic Compounds (mg/kg)																											
1,2,4,5-Tetrachlorobenzene	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
1,2-Diphenylhydrazine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250		0.0099	U	0.0098	U	NA	0.0099	U	0.0099	U	0.00962	U	0.00971	U	0.00971	U	NA	0.00952	U	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~		0.0946	UJ	0.182	UJ	NA	0.18	UJ	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
2,4,5-Trichlorophenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
2,4,6-Trichlorophenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2,4-Dichlorophenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2,4-Dimethylphenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2,4-Dinitrophenol	~	~	~	~		0.0946	UJ	0.182	UJ	NA	0.18	UJ	0.126	UJ	0.169	UJ	0.0981	UJ	0.0985	UJ	NA	0.356	UJ	NA	NA	NA	NA
2,4-Dinitrotoluene	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2,6-Dinitrotoluene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
2-Chloronaphthalene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2-Chlorophenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2-Methylnaphthalene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.683	D	NA	0.179	U	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
2-Nitroaniline	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
2-Nitrophenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
3-Nitroaniline	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~		0.0946	UJ	0.182	UJ	NA	0.18	UJ	0.126	UJ	0.169	UJ	0.0981	UJ	0.0985	UJ	NA	0.356	UJ	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
4-Chloroaniline	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
4-Nitroaniline	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
4-Nitrophenol	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
Acenaphthene	20	98	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.767	D	NA	0.179	U	NA	NA	NA	NA
Acenaphthylene	100	107	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.217	D	NA	0.179	U	NA	NA	NA	NA
Acetophenone	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~		0.189	U	0.364	U	NA	0.359	U	0.252	U	0.339	U	0.196	U	0.197	U	NA	0.713	U	NA	NA	NA	NA
Anthracene	100	1,000	500	1,000		0.0474	U	0.829	J	NA	0.164	JD	0.063	U	0.0849	U	0.0492	U	1.28	D	NA	0.179	U	NA	NA	NA	NA
Atrazine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Benzaldehyde	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
Benzidine	~	~	~	~		0.189	UJ	0.364	UJ	NA	0.359	UJ	0.252	UJ	0.339	UJ	0.196	UJ	0.197	UJ	NA	0.713	UJ	NA	NA	NA	NA
Benzo(a)anthracene	1	1	5.6	11		0.206	D	**2.38**	J	NA	0.227	D	0.0744	JD	0.188	D	0.0492	U	**1.96**	D	NA	**1.17**	D	NA	NA	NA	NA
Benzo(a)pyrene	1	22	1	1.1		0.218	D	**2.13**	J	NA	0.201	D	0.063	U	0.173	D	0.0492	U	**1.6**	D	NA	0.937	D	NA	NA	NA	NA
Benzo(b)fluoranthene	1	1.7	5.6	11		0.15	D	**2.25**	J	NA	0.146	JD	0.063	U	0.0921	JD	0.0492	U	**1.34**	D	NA	0.811	D	NA	NA	NA	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000		0.154	D	0.736	J	NA	0.121	JD	0.063	U	0.0948	JD	0.0492	U	0.581	D	NA	0.663	D	NA	NA	NA	NA
Benzo(k)fluoranthene	0.8	1.7	56	110		0.138	D	**1.28**	J	NA	0.132	JD	0.063	U	0.103	JD	0.0492	U	**1.15**	D	NA	0.419	D	NA	NA	NA	NA
Benzoic Acid	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
Benzyl Alcohol	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Benzyl Butyl Phthalate	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Biphenyl (Diphenyl)	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.154	D	NA	0.179	U	NA	NA	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.0754	J	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	7.25	J	NA	NA	NA	NA
Caprolactam	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
Carbazole	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.757	D	NA	0.179	U	NA	NA	NA	NA
Chrysene	1	1	56	110		0.174	D	**2.27**	J	NA	0.258	D	0.0784	JD	0.202	D	0.0492	U	**1.78**	D	NA	0.737	D	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1		0.0474	U	0.0912	U	NA	0.09	U	0.063	UJ	0.0849	UJ	0.0492	UJ	0.301	J	NA	0.302	J	NA	NA	NA	NA
Dibenzofuran	7	210	350	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.872	D	NA	0.179	U	NA	NA	NA	NA
Dibutyl phthalate	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Diethyl phthalate	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Dimethyl phthalate	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Dioctyl phthalate	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
Diphenylamine	~	~	~	~		0.0946	U	0.182	U	NA	0.18	U	0.126	U	0.169	U	0.0981	U	0.0985	U	NA	0.356	U	NA	NA	NA	NA
Fluoranthene	100	1,000	500	1,000	J	0.246	D	3.16	J	NA	0.453	D	0.0864	JD	0.303	D	0.0492	U	NA		5.38	D	2.2	D	NA	NA	NA	NA
Fluorene	30	386	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.891	D	NA	0.179	U	NA	NA	NA	NA
Hexachlorobenzene	0.33	3.2	6	12		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Hexachlorocyclopentadiene	~	~	~	~		0.0474	UJ	0.0912	UJ	NA	0.09	UJ	0.063	UJ	0.0849	UJ	0.0492	UJ	0.0494	UJ	NA	0.179	UJ	NA	NA	NA	NA
Hexachloroethane	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11		0.123	D	**1.01**	J	NA	0.135	JD	0.063	UJ	0.104	J	0.0492	UJ	**0.893**	J	NA	0.45	J	NA	NA	NA	NA
Isophorone	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Naphthalene	12	12	500	1,000		0.0474	U	1.29	J	NA	0.185	D	0.063	U	0.0849	U	0.0492	U	1.58	U	NA	0.179	U	NA	NA	NA	NA
Nitrobenzene	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
n-Nitrosodimethylamine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
n-Nitrosodiphenylamine	~	~	~	~		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Phenanthrene	100	1,000	500	1,000	J	0.0877	JD	3.12	J	NA	0.488	D	0.0633	JD	0.0849	U	0.0492	U	NA		7.49	D	0.179	U	NA	NA	NA	NA
Phenol	0.33	0.33	500	1,000		0.0474	U	0.0912	U	NA	0.09	U	0.063	U	0.0849	U	0.0492	U	0.0494	U	NA	0.179	U	NA	NA	NA	NA
Pyrene	100	1,000	500	1,000	J	0.372	D	4.82	J	NA	0.492	D	0.0975	JD	0.464	D	0.0492	U	NA		4.2	D	3.78	D	NA	NA	NA	NA
Pyridine	~	~	~	~		NA		NA		NA	NA		NA		NA		NA		NA		NA	NA		NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	15	LSB-44A 086 LSB-44A_20200709 20G0356-02 7/9/2020 4-6	LSB-44B 087 LSB-44B_20200709 20G0356-03 7/9/2020 8-10	LSB-44B 087 LSB-44B_20200709 20G0356-03RE1 7/9/2020 8-10	LSB-44C 088 LSB-44C_20200709 20G0356-04 7/9/2020 15-17	LSB-45A 080 LSB-45A_20200708 20G0293-05 7/8/2020 4.5-6.5	LSB-45B 081 LSB-45B_20200708 20G0293-06 7/8/2020 9-11	LSB-45C 082 LSB-45C_20200708 20G0293-07 7/8/2020 18-20	LSB-46A 078 LSB-46A_20200708 20G0293-03 7/8/2020 7-9	LSB-46A 078 LSB-46A_20200708 20G0293-03RE1 7/8/2020 7-9	LSB-46B 079 LSB-46B_20200708 20G0293-04 7/8/2020 9-11	LSB-47E 013 LSB-47E_20200707 20G0228-05 7/7/2020 8-10	LSB-47G 015 LSB-47G_20200707 20G0228-07 7/7/2020 12-14	LSB-48F 063 LSB-48F_20200707 20G0228-55 7/7/2020 10-12	LSB-49F 035 LSB-49F_20200 20G0228-27 7/7/2020 10-12
Petroleum Hydrocarbons (mg/kg)																			
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (mg/kg)																			
4,4'-DDD	0.0033	14	92	180		0.00188 U	*0.00358* U	NA	*0.00364* U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	**0.0485** J	NA	NA	NA	NA
4,4'-DDE	0.0033	17	62	120		0.00188 U	*0.00358* U	NA	*0.00364* U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	**0.0105** J	NA	NA	NA	NA
4,4'-DDT	0.0033	136	47	94		0.00188 U	*0.00358* U	NA	*0.00364* U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	**0.029** J	NA	NA	NA	NA
Aldrin	0.005	0.19	0.68	1.4		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Alpha Chlordane	0.094	2.9	24	47		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0119 J	NA	NA	NA	NA
Alpha Endosulfan	2.4	102	200	920		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Beta Endosulfan	2.4	102	200	920		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Chlordane (alpha and gamma)	~	~	~	~		0.0375 U	0.0717 U	NA	0.0728 U	0.0339 UJ	0.0455 UJ	0.0383 U	0.0394 U	NA	0.124 J	NA	NA	NA	NA
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Dieldrin	0.005	0.1	1.4	2.8		0.00188 UJ	0.00358 UJ	NA	0.00364 UJ	0.00169 UJ	0.00227 UJ	0.00192 UJ	0.00197 UJ	NA	0.0037 UJ	NA	NA	NA	NA
Endosulfan Sulfate	2.4	1000	200	920		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Endrin	0.014	0.06	89	410		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Endrin Aldehyde	~	~	~	~		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Endrin Ketone	~	~	~	~		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Gamma Bhc (Lindane)	0.1	0.1	9.2	23		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Gamma-Chlordane	~	~	~	~		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0137 J	NA	NA	NA	NA
Heptachlor	0.042	0.38	15	29		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Heptachlor Epoxide	~	~	~	~		0.00188 U	0.00358 U	NA	0.00364 U	0.00169 UJ	0.00227 UJ	0.00192 U	0.00197 U	NA	0.0037 UJ	NA	NA	NA	NA
Methoxychlor	~	~	~	~		0.00939 U	0.0179 U	NA	0.0182 U	0.00847 UJ	0.0114 UJ	0.00958 U	0.00984 U	NA	0.0185 UJ	NA	NA	NA	NA
Toxaphene	~	~	~	~		0.095 U	0.181 U	NA	0.184 U	0.0857 UJ	0.115 UJ	0.097 U	0.0996 U	NA	0.187 UJ	NA	NA	NA	NA
Herbicides (mg/kg)																			
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~		0.0225 U	0.0296 U	NA	0.0294 U	0.0209 U	0.0276 U	0.0237 U	0.0238 U	NA	0.0302 U	NA	NA	NA	NA
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~		0.0225 U	0.0296 U	NA	0.0294 U	0.0209 U	0.0276 U	0.0237 U	0.0238 U	NA	0.0302 U	NA	NA	NA	NA
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000		0.0225 U	0.0296 U	NA	0.0294 U	0.0209 U	0.0276 U	0.0237 U	0.0238 U	NA	0.0302 U	NA	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)																			
PCB-1016 (Aroclor 1016)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.109	0.0205 U	0.0206 U	0.0201 U	0.0394
PCB-1221 (Aroclor 1221)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.0373 U	0.0205 U	0.0206 U	0.0201 U	0.0225
PCB-1232 (Aroclor 1232)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.0373 U	0.0205 U	0.0206 U	0.0201 U	0.0225
PCB-1242 (Aroclor 1242)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.0373 U	0.0205 U	0.0206 U	0.0201 U	0.0225
PCB-1248 (Aroclor 1248)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.0373 U	0.0205 U	0.0206 U	0.0201 U	0.0225
PCB-1254 (Aroclor 1254)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.0373 U	0.0205 U	0.0206 U	0.0201 U	0.0225
PCB-1260 (Aroclor 1260)	~	~	~	~		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	0.234	0.0205 U	0.0206 U	0.0201 U	0.146
Total PCBs	0.1	3.2	1	25		0.019 U	0.0362 U	NA	0.0368 U	0.0171 U	0.023 U	0.0193 U	0.0199 U	NA	**0.343**	0.0205 U	0.0206 U	0.0201 U	**0.185**
Inorganics (mg/kg)																			
Aluminum	~	~	~	~		5,880	6,630	NA	8,410	4,810	4,130	7,140	12,300	NA	7,500	NA	NA	NA	NA
Antimony	~	~	~	~		2.88 UJ	3.75 UJ	NA	3.7 UJ	2.63 UJ	3.47 UJ	2.97 UJ	2.99 UJ	NA	3.81 UJ	NA	NA	NA	NA
Arsenic	13	16	16	16		8.34	**16.1**	NA	5.69	**14**	**13.3**	1.78 U	8.54	NA	**49.6**	NA	NA	NA	NA
Barium	350	820	400	10,000		115	**394**	NA	74.5	112 J	166 J	36.4 J	118 J	NA	**457** J	NA	NA	NA	NA
Beryllium	7.2	47	590	2,700		0.058 UJ	0.075 UJ	NA	0.074 UJ	0.053 UJ	0.069 UJ	0.059 UJ	0.06 UJ	NA	0.076 UJ	NA	NA	NA	NA
Cadmium	2.5	7.5	9.3	60		0.346 U	0.45 U	NA	0.443 U	0.455 J	0.416 UJ	0.356 UJ	0.574 J	NA	**13.8** J	NA	NA	NA	NA
Calcium	~	~	~	~		18,800	12,000	NA	8,960	13,500	8,410	1,040	11,800	NA	3,230	NA	NA	NA	NA
Chromium, Hexavalent	1	19	400	800		0.576 UJ	0.749 UJ	NA	0.739 UJ	0.525 UJ	0.694 UJ	0.594 UJ	0.598 UJ	NA	0.762 UJ	NA	NA	NA	NA
Chromium, Total	~	~	~	~		15.3 J	15.3 J	NA	20.2 J	29.7	23.1	15.6	24.1	NA	134	NA	NA	NA	NA
Chromium, Trivalent	30	~	1,500	6,800		15.3	15.3	NA	20.2	29.7	23.1	15.6	24.1	NA	**134**	NA	NA	NA	NA
Cobalt	~	~	~	~		6.82	7.43	NA	8.44	7.08	6.12	5.79	8.01	NA	14.8	NA	NA	NA	NA
Copper	50	1,720	270	10,000		**244** J	**91.3** J	NA	**70.3** J	**56.5**	**78.5**	7.36	35	NA	**629**	NA	NA	NA	NA
Cyanide	27	40	27	10,000		0.576 U	0.749 U	NA	0.739 U	0.525 UJ	0.694 UJ	0.594 UJ	0.598 UJ	NA	0.762 UJ	NA	NA	NA	NA
Iron	~	~	~	~		11,500	18,500	NA	18,600	17,600	16,900	14,900	14,700	NA	45,500	NA	NA	NA	NA
Lead	63	450	1,000	3,900		**205** J	**515** J	NA	**180** J	**217**	**526**	5.26	**171**	NA	**350**	NA	NA	NA	NA
Magnesium	~	~	~	~		2,800	1,820	NA	3,070	5,580	2,040	2,450	24,300	NA	3,600	NA	NA	NA	NA
Manganese	1,600	2,000	10,000	10,000		122	184	NA	176	136	155	120	989	NA	293	NA	NA	NA	NA
Mercury	0.18	0.73	2.8	5.7		**1.01**	**3.77**	NA	**0.73**	**0.392**	12.5	0.0356 U	**0.224**	NA	**0.904**	NA	NA	NA	NA
Nickel	30	130	310	10,000		20.6 J	19 J	NA	19.2 J	22.2 J	16 J	12.2 J	27.6 J	NA	**198** J	NA	NA	NA	NA
Potassium	~	~	~	~		862	1,040	NA	1,570	953	855	1,360	1,560	NA	2,790	NA	NA	NA	NA
Selenium	3.9	4	1,500	6,800		2.88 UJ	3.75 UJ	NA	3.7 UJ	2.63 U	3.47 U	2.97 U	**6.51**	NA	3.81 U	NA	NA	NA	NA
Silver	2	8.3	1,500	6,800		0.576 U	0.749 U	NA	0.739 U	0.525 U	0.694 U	0.594 U	0.598 U	NA	**3.28**	NA	NA	NA	NA
Sodium	~	~	~	~		365 J	1,060 J	NA	795 J	858	2,630	405	3,540	NA	3,900	NA	NA	NA	NA
Thallium	~	~	~	~		2.88 U	3.75 U	NA	3.7 U	2.63 U	3.47 U	2.97 U	2.99 U	NA	3.81 U	NA	NA	NA	NA
Vanadium	~	~	~	~		16.5	21.8	NA	23.9	23.4	16.6	24.4	26.8	NA	39.2	NA	NA	NA	NA
Zinc	109	2,480	10,000	10,000		**160** J	**159** J	NA	107 J	**152**	**357**	25.5	**472**	NA	**462**	NA	NA	NA	NA
General Chemistry																			
Bulk Density (g/mL)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Loss On Ignition (%)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moisture, Percent (%)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Solids, Percent (%)	~	~	~	~		86.7	66.7	NA	67.7	95.2	72.1	84.2	83.6	NA	65.6	80.4	79.7	81.1	72.8
Total Organic Carbon (mg/kg)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	07	LSB-50F 021 LSB-50F_20200707 20G0228-13 7/7/2020 10-12	LSB-51E 048 LSB-51E_20200707 20G0228-40 7/7/2020 8-10	LSB-51F 049 LSB-51F_20200707 20G0228-41 7/7/2020 10-12	LSB-51G 050 LSB-51G_20200707 20G0228-42 7/7/2020 12-14	LSB-55F 056 LSB-55F_20200707 20G0228-48 7/7/2020 10-12	LSB-57B 186 LSB-57B_20200716 20G0630-13 7/16/2020 10-10.5	LSB-57B 186 LSB-57B_20200716 CG35808 7/16/2020 10-10.5	LSB-57C 187 LSB-57C_20200716 20G0630-14 7/16/2020 12-12.5	LSB-57C 187 LSB-57C_20200716 CG35809 7/16/2020 12-12.5	LSB-57D 188 LSB-57D_20200716 20G0630-15 7/16/2020 14.5-15	LSB-57D 188 LSB-57D_20200716 CG35810 7/16/2020 14.5-15	LSB-59A 139 LSB-59A_20200714 20G0580-18 7/14/2020 8-8.5	LSB-59A 139 LSB-59A_20200714 CG35796 7/14/2020 8-8.5
Volatile Organic Compounds (mg/kg)																			
1,1,1,2-Tetrachloroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrolein	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	0.06	44	89		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	1.1	1.1	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.37	0.37	350	700		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	1	390	780		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl Ether	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
M,P-Xylene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	0.05	0.05	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	12	12	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sec-Butylbenzene	11	11	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Alcohol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	0.7	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	0.26	1.6	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	0.02	0.02	13	27		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
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Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	07	LSB-50F 021 LSB-50F_20200707 20G0228-13 7/7/2020 10-12	LSB-51E 048 LSB-51E_20200707 20G0228-40 7/7/2020 8-10	LSB-51F 049 LSB-51F_20200707 20G0228-41 7/7/2020 10-12	LSB-51G 050 LSB-51G_20200707 20G0228-42 7/7/2020 12-14	LSB-55F 056 LSB-55F_20200707 20G0228-48 7/7/2020 10-12	LSB-57B 186 LSB-57B_20200716 20G0630-13 7/16/2020 10-10.5	LSB-57B 186 LSB-57B_20200716 CG35808 7/16/2020 10-10.5	LSB-57C 187 LSB-57C_20200716 20G0630-14 7/16/2020 12-12.5	LSB-57C 187 LSB-57C_20200716 CG35809 7/16/2020 12-12.5	LSB-57D 188 LSB-57D_20200716 20G0630-15 7/16/2020 14.5-15	LSB-57D 188 LSB-57D_20200716 CG35810 7/16/2020 14.5-15	LSB-59A 139 LSB-59A_20200714 20G0580-18 7/14/2020 8-8.5	LSB-59A 139 LSB-59A_20200714 CG35796 7/14/2020 8-8.5
Semivolatile Organic Compounds (mg/kg)																			
1,2,4,5-Tetrachlorobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20	98	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	100	107	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	100	1,000	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	5.6	11		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1	22	1	1.1		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1	1.7	5.6	11		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.8	1.7	56	110		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Butyl Phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (Diphenyl)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	1	1	56	110		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	210	350	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibutyl phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioctyl phthalate	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diphenylamine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	1,000	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	30	386	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	0.33	3.2	6	12		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	12	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	1,000	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	0.33	0.33	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	100	1,000	500	1,000		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	~	~	~	~		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	97	LSB-50F 021 LSB-50F_20200707 20G0228-13 7/7/2020 10-12		LSB-51E 048 LSB-51E_20200707 20G0228-40 7/7/2020 8-10		LSB-51F 049 LSB-51F_20200707 20G0228-41 7/7/2020 10-12		LSB-51G 050 LSB-51G_20200707 20G0228-42 7/7/2020 12-14		LSB-55F 056 LSB-55F_20200707 20G0228-48 7/7/2020 10-12		LSB-57B 186 LSB-57B_20200716 20G0630-13 7/16/2020 10-10.5		LSB-57B 186 LSB-57B_20200716 CG35808 7/16/2020 10-10.5		LSB-57C 187 LSB-57C_20200716 20G0630-14 7/16/2020 12-12.5		LSB-57C 187 LSB-57C_20200716 CG35809 7/16/2020 12-12.5		LSB-57D 188 LSB-57D_20200716 20G0630-15 7/16/2020 14.5-15		LSB-57D 188 LSB-57D_20200716 CG35810 7/16/2020 14.5-15		LSB-59A 139 LSB-59A_20200714 20G0580-18 7/14/2020 8-8.5		LSB-59A 139 LSB-59A_20200714 CG35796 7/14/2020 8-8.5	
Petroleum Hydrocarbons (mg/kg)																																	
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~		NA		NA		NA		NA		NA		9,720	J	NA		10,700	J	NA		81.8	UJ	NA		2,330	D	NA	
Pesticides (mg/kg)																																	
4,4'-DDD	0.0033	14	92	180		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,4'-DDE	0.0033	17	62	120		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
4,4'-DDT	0.0033	136	47	94		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Aldrin	0.005	0.19	0.68	1.4		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Alpha Chlordane	0.094	2.9	24	47		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Alpha Endosulfan	2.4	102	200	920		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beta Endosulfan	2.4	102	200	920		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chlordane (alpha and gamma)	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dieldrin	0.005	0.1	1.4	2.8		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endosulfan Sulfate	2.4	1000	200	920		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endrin	0.014	0.06	89	410		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endrin Aldehyde	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Endrin Ketone	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Gamma-Chlordane	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor	0.042	0.38	15	29		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Heptachlor Epoxide	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methoxychlor	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Toxaphene	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Herbicides (mg/kg)																																	
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Polychlorinated Biphenyls (mg/kg)																																	
PCB-1016 (Aroclor 1016)	~	~	~	~		0.194		0.021	U	0.825		0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1221 (Aroclor 1221)	~	~	~	~	U	0.0286	U	0.021	U	0.0262	U	0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1232 (Aroclor 1232)	~	~	~	~	U	0.0286	U	0.021	U	0.0262	U	0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1242 (Aroclor 1242)	~	~	~	~	U	0.0286	U	0.021	U	0.0262	U	0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1248 (Aroclor 1248)	~	~	~	~	U	0.0286	U	0.021	U	0.0262	U	0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1254 (Aroclor 1254)	~	~	~	~	U	0.0286	U	0.021	U	0.0262	U	0.0318	U	0.0227	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
PCB-1260 (Aroclor 1260)	~	~	~	~		0.652		0.021	U	1.52	J	0.089		0.0298		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Total PCBs	0.1	3.2	1	25		**0.846**		0.021	U	**2.34**		0.089		0.0298		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Inorganics (mg/kg)																																	
Aluminum	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Antimony	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Arsenic	13	16	16	16		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Barium	350	820	400	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Beryllium	7.2	47	590	2,700		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cadmium	2.5	7.5	9.3	60		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Calcium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent	1	19	400	800		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium, Total	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Chromium, Trivalent	30	~	1,500	6,800		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cobalt	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Copper	50	1,720	270	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Cyanide	27	40	27	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Iron	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Lead	63	450	1,000	3,900		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Magnesium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manganese	1,600	2,000	10,000	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Mercury	0.18	0.73	2.8	5.7		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Nickel	30	130	310	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Potassium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Selenium	3.9	4	1,500	6,800		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Silver	2	8.3	1,500	6,800		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Sodium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Thallium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vanadium	~	~	~	~		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Zinc	109	2,480	10,000	10,000		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
General Chemistry																																	
Bulk Density (g/mL)	~	~	~	~		NA		NA		NA		NA		NA		1.4		NA		1.6		NA		1.1		NA		0.1	U	NA	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~		NA		NA		NA		NA		NA		510		NA		2,700	D	NA		NA		NA		590		NA	
Loss On Ignition (%)	~	~	~	~		NA		NA		NA		NA		NA		11.3		NA		12.7		NA		6.4		NA		9.8		NA	
Moisture, Percent (%)	~	~	~	~		NA		NA		NA		NA		NA		19.5		NA		31.8		NA		41.8		NA		23.5		NA	
Solids, Percent (%)	~	~	~	~		57.6		78.9		63.1		52		71.6		80.5		92		68.2		67		58.2		58		76.5		78	
Total Organic Carbon (mg/kg)	~	~	~	~		NA		NA		NA		NA		NA		NA		59,700		NA		66,400		NA		17,800		NA		126,000	

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-59C 141 LSB-59C_20200714 20G0580-19 7/14/2020 11-12	LSB-59C 141 LSB-59C_20200714 CG35797 7/14/2020 11-12	LSB-59D 142 LSB-59D_20200714 20G0580-20 7/14/2020 13-14	LSB-59D 142 LSB-59D_20200714 CG35798 7/14/2020 13-14	LSB-63C 145 LSB-63C_20200714 20G0580-21 7/14/2020 10-10.5	LSB-63C 145 LSB-63C_20200714 CG35799 7/14/2020 10-10.5	LSB-63D 146 LSB-63D_20200714 20G0580-22 7/14/2020 13-13.5	LSB-63D 146 LSB-63D_20200714 CG35800 7/14/2020 13-13.5	LSB-63E 147 LSB-63E_20200714 20G0580-23 7/14/2020 14.5-15	LSB-63E 147 LSB-63E_20200714 CG35801 7/14/2020 14.5-15	LSB-64B 151 LSB-64B_20200714 20G0580-24 7/14/2020 8-9	LSB-64B 151 LSB-64B_20200714 CG35802 7/14/2020 8-9	LSB-64C 152 LSB-64C_20200714 20G0580-25 7/14/2020 12-12.5
Volatile Organic Compounds (mg/kg)																	
1,1,1,2-Tetrachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrolein	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	0.06	44	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.37	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	1	390	780	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
M,P-Xylene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	0.05	0.05	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	12	12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sec-Butylbenzene	11	11	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Alcohol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	0.7	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	0.26	1.6	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	0.02	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-59C 141 LSB-59C_20200714 20G0580-19 7/14/2020 11-12	LSB-59C 141 LSB-59C_20200714 CG35797 7/14/2020 11-12	LSB-59D 142 LSB-59D_20200714 20G0580-20 7/14/2020 13-14	LSB-59D 142 LSB-59D_20200714 CG35798 7/14/2020 13-14	LSB-63C 145 LSB-63C_20200714 20G0580-21 7/14/2020 10-10.5	LSB-63C 145 LSB-63C_20200714 CG35799 7/14/2020 10-10.5	LSB-63D 146 LSB-63D_20200714 20G0580-22 7/14/2020 13-13.5	LSB-63D 146 LSB-63D_20200714 CG35800 7/14/2020 13-13.5	LSB-63E 147 LSB-63E_20200714 20G0580-23 7/14/2020 14.5-15	LSB-63E 147 LSB-63E_20200714 CG35801 7/14/2020 14.5-15	LSB-64B 151 LSB-64B_20200714 20G0580-24 7/14/2020 8-9	LSB-64B 151 LSB-64B_20200714 CG35802 7/14/2020 8-9	LSB-64C 152 LSB-64C_20200714 20G0580-25 7/14/2020 12-12.5
Semivolatile Organic Compounds (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20	98	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	100	107	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1	22	1	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1	1.7	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.8	1.7	56	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Butyl Phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (Diphenyl)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	1	1	56	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	210	350	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibutyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioctyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	30	386	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	0.33	3.2	6	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-59C 141 LSB-59C_20200714 20G0580-19 7/14/2020 11-12	LSB-59C 141 LSB-59C_20200714 CG35797 7/14/2020 11-12	LSB-59D 142 LSB-59D_20200714 20G0580-20 7/14/2020 13-14	LSB-59D 142 LSB-59D_20200714 CG35798 7/14/2020 13-14	LSB-63C 145 LSB-63C_20200714 20G0580-21 7/14/2020 10-10.5	LSB-63C 145 LSB-63C_20200714 CG35799 7/14/2020 10-10.5	LSB-63D 146 LSB-63D_20200714 20G0580-22 7/14/2020 13-13.5	LSB-63D 146 LSB-63D_20200714 CG35800 7/14/2020 13-13.5	LSB-63E 147 LSB-63E_20200714 20G0580-23 7/14/2020 14.5-15	LSB-63E 147 LSB-63E_20200714 CG35801 7/14/2020 14.5-15	LSB-64B 151 LSB-64B_20200714 20G0580-24 7/14/2020 8-9	LSB-64B 151 LSB-64B_20200714 CG35802 7/14/2020 8-9	LSB-64C 152 LSB-64C_20200714 20G0580-25 7/14/2020 12-12.5
Petroleum Hydrocarbons (mg/kg)																		
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	627 J	NA	212	NA	70.8 U	NA	120	NA	78.9 U	NA	336 U	NA	101	
Pesticides (mg/kg)																		
4,4'-DDD	0.0033	14	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4,4'-DDE	0.0033	17	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
4,4'-DDT	0.0033	136	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aldrin	0.005	0.19	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Alpha Chlordane	0.094	2.9	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Alpha Endosulfan	2.4	102	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Beta Endosulfan	2.4	102	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chlordane (alpha and gamma)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dieldrin	0.005	0.1	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Endosulfan Sulfate	2.4	1000	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Endrin	0.014	0.06	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Endrin Aldehyde	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Endrin Ketone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Gamma-Chlordane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Heptachlor	0.042	0.38	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Heptachlor Epoxide	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Methoxychlor	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Toxaphene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Herbicides (mg/kg)																		
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Polychlorinated Biphenyls (mg/kg)																		
PCB-1016 (Aroclor 1016)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1221 (Aroclor 1221)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1232 (Aroclor 1232)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1242 (Aroclor 1242)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1248 (Aroclor 1248)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1254 (Aroclor 1254)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCB-1260 (Aroclor 1260)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total PCBs	0.1	3.2	1	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Inorganics (mg/kg)																		
Aluminum	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Antimony	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Arsenic	13	16	16	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Barium	350	820	400	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Beryllium	7.2	47	590	2,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cadmium	2.5	7.5	9.3	60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Calcium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium, Hexavalent	1	19	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium, Total	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium, Trivalent	30	~	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cobalt	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Copper	50	1,720	270	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Lead	63	450	1,000	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Magnesium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Manganese	1,600	2,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury	0.18	0.73	2.8	5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Nickel	30	130	310	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Potassium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Selenium	3.9	4	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silver	2	8.3	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Sodium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Thallium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Vanadium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Zinc	109	2,480	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
General Chemistry																		
Bulk Density (g/mL)	~	~	~	~	1.5	NA	1.6	NA	1.1	NA	1.4	NA	0.6	NA	1.1	NA	1.3	
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Loss On Ignition (%)	~	~	~	~	22.3	NA	10.7	NA	9.2	NA	15.2	NA	15.4	NA	11.8	NA	18.1	
Moisture, Percent (%)	~	~	~	~	30.3	NA	27.4	NA	31.4	NA	41.1	NA	38.5	NA	27.1	NA	34.6	
Solids, Percent (%)	~	~	~	~	69.7	75	72.6	72	68.6	60	58.9	52	61.5	48	72.9	54	62.9	
Total Organic Carbon (mg/kg)	~	~	~	~	NA	111,000	NA	75,400	NA	116,000	NA	39,800	NA	41,500	NA	69,300	NA	

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28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-64C 152 LSB-64C_20200714 CG35803 7/14/2020 12-12.5	LSB-64D 153 LSB-64D_20200714 20G0580-26 7/14/2020 14.5-15	LSB-64D 153 LSB-64D_20200714 CG35804 7/14/2020 14.5-15	LSB-70B 170 LSB-70B_20200715 20G0630-03 7/15/2020 10-10.5	LSB-70B 170 LSB-70B_20200715 CG35805 7/15/2020 10-10.5	LSB-70C 171 LSB-70C_20200715 20G0630-04 7/15/2020 17.5-18	LSB-70C 171 LSB-70C_20200715 CG35806 7/15/2020 17.5-18	LSB-70D 172 LSB-70D_20200715 20G0630-05 7/15/2020 20-20.5	LSB-70D 172 LSB-70D_20200715 CG35807 7/15/2020 20-20.5
Volatile Organic Compounds (mg/kg)													
1,1,1,2-Tetrachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.68	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	0.27	0.27	240	480	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	3.6	190	380	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-Chloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.02	30	60	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	8.4	8.4	190	380	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	0.05	0.05	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrolein	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.06	0.06	44	89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Tetrachloride	0.76	0.76	22	44	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	0.37	0.37	350	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	0.25	0.25	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,3-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	1	390	780	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
M,P-Xylene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	0.12	0.12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	0.05	0.05	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	12	12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	3.9	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sec-Butylbenzene	11	11	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-Butylbenzene	5.9	5.9	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Alcohol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tert-Butyl Methyl Ether	0.93	0.93	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	1.3	1.3	150	300	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.7	0.7	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	0.26	1.6	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,2-Dichloroethene	0.19	0.19	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,3-Dichloropropene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trans-1,4-Dichloro-2-Butene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene (TCE)	0.47	0.47	200	400	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	0.02	0.02	13	27	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-64C 152 LSB-64C_20200714 CG35803 7/14/2020 12-12.5	LSB-64D 153 LSB-64D_20200714 20G0580-26 7/14/2020 14.5-15	LSB-64D 153 LSB-64D_20200714 CG35804 7/14/2020 14.5-15	LSB-70B 170 LSB-70B_20200715 20G0630-03 7/15/2020 10-10.5	LSB-70B 170 LSB-70B_20200715 CG35805 7/15/2020 10-10.5	LSB-70C 171 LSB-70C_20200715 20G0630-04 7/15/2020 17.5-18	LSB-70C 171 LSB-70C_20200715 CG35806 7/15/2020 17.5-18	LSB-70D 172 LSB-70D_20200715 20G0630-05 7/15/2020 20-20.5	LSB-70D 172 LSB-70D_20200715 CG35807 7/15/2020 20-20.5
Semivolatile Organic Compounds (mg/kg)													
1,2,4,5-Tetrachlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	1.1	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	2.4	280	560	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	1.8	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane (P-Dioxane)	0.1	0.1	130	250	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
3 & 4 Methylphenol (m&p Cresol)	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20	98	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	100	107	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetophenone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aniline (Phenylamine, Aminobenzene)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Atrazine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzaldehyde	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzidine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	1	1	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	1	22	1	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	1	1.7	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.8	1.7	56	110	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Butyl Phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Biphenyl (Diphenyl)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy) methane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether (2-chloroethyl ether)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	1	1	56	110	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.33	1,000	0.56	1.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	7	210	350	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibutyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioctyl phthalate	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	30	386	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	0.33	3.2	6	12	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.5	8.2	5.6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	12	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodi-N-Propylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	0.8	0.8	6.7	55	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	0.33	0.33	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	100	1,000	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyridine	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 40.
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Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Restricted Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-64C 152 LSB-64C_20200714 CG35803 7/14/2020 12-12.5	LSB-64D 153 LSB-64D_20200714 20G0580-26 7/14/2020 14.5-15	LSB-64D 153 LSB-64D_20200714 CG35804 7/14/2020 14.5-15	LSB-70B 170 LSB-70B_20200715 20G0630-03 7/15/2020 10-10.5	LSB-70B 170 LSB-70B_20200715 CG35805 7/15/2020 10-10.5	LSB-70C 171 LSB-70C_20200715 20G0630-04 7/15/2020 17.5-18	LSB-70C 171 LSB-70C_20200715 CG35806 7/15/2020 17.5-18	LSB-70D 172 LSB-70D_20200715 20G0630-05 7/15/2020 20-20.5	LSB-70D 172 LSB-70D_20200715 CG35807 7/15/2020 20-20.5
Petroleum Hydrocarbons (mg/kg)													
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	~	~	~	NA	72.8 U	NA	9,000 J	NA	101 J	NA	55.4 UJ	NA
Pesticides (mg/kg)													
4,4'-DDD	0.0033	14	92	180	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	0.0033	17	62	120	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.0033	136	47	94	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	0.005	0.19	0.68	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha BHC (Alpha Hexachlorocyclohexane)	0.02	0.02	3.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha Chlordane	0.094	2.9	24	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alpha Endosulfan	2.4	102	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.09	3	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beta Endosulfan	2.4	102	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane (alpha and gamma)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Delta Bhc (Delta Hexachlorocyclohexane)	0.04	0.25	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.005	0.1	1.4	2.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	2.4	1000	200	920	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	0.014	0.06	89	410	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma Bhc (Lindane)	0.1	0.1	9.2	23	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.042	0.38	15	29	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides (mg/kg)													
2,4,5-T (Trichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-D (Dichlorophenoxyacetic Acid)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silvex (2,4,5-Tp)	3.8	3.8	500	1,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (mg/kg)													
PCB-1016 (Aroclor 1016)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221 (Aroclor 1221)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232 (Aroclor 1232)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242 (Aroclor 1242)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248 (Aroclor 1248)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254 (Aroclor 1254)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260 (Aroclor 1260)	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	0.1	3.2	1	25	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (mg/kg)													
Aluminum	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	13	16	16	16	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	350	820	400	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7.2	47	590	2,700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	2.5	7.5	9.3	60	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Hexavalent	1	19	400	800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Trivalent	30	~	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	50	1,720	270	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	27	40	27	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	63	450	1,000	3,900	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	1,600	2,000	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.18	0.73	2.8	5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	30	130	310	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	3.9	4	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	2	8.3	1,500	6,800	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	~	~	~	~	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	109	2,480	10,000	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
General Chemistry													
Bulk Density (g/mL)	~	~	~	~	NA	1.1	NA	1.6 D	NA	1.9	NA	2.2	NA
COD-Chemical Oxygen Demand (mg/kg)	~	~	~	~	NA	NA	NA	1,900 D	NA	350	NA	NA	NA
Loss On Ignition (%)	~	~	~	~	NA	14.9	NA	12.6	NA	2.1	NA	1.5	NA
Moisture, Percent (%)	~	~	~	~	NA	22.1	NA	35.9	NA	13.6	NA	14	NA
Solids, Percent (%)	~	~	~	~	48	65.4	62	64.1	64	86.4	81	86	79
Total Organic Carbon (mg/kg)	~	~	~	~	61,900	NA	12,100	NA	274,000	NA	2,700	NA	952

Notes provided on Page 40.
Concentrations above UU SCOs are bolded.
Concentrations above PGW SCOs are shaded.
Concentrations above RUC SCOs are underlined.
Concentrations above RUI SCOs are red.

Table 1A
Remedial Action Work Plan
Soil Sample Analytical Results

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

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, Protection of Groundwater, Restricted Use Commercial, and Restricted Use Industrial Soil Cleanup Objectives (SCO).
2. Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and 4-methylphenol (p-cresol).
3. Detected analytical results above Unrestricted Use SCOs are bolded.
4. Detected analytical results above Protection of GW SCOs are underlined.
5. Detected analytical results above Restricted Use Commercial SCOs are shaded.
6. Detected analytical results above Restricted Use Industrial SCOs are red.
7. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
8. Sample 49 DUP-2_112118 is a duplicate sample of 48 LSB-4B_112118, sample DUP-1_111918 is a duplicate sample of LSB-14B_111918, sample 110 DUP-2_20200713 is a duplicate sample of 109 LSB-26B_20200713, sample 105 DUP-1_20200713 is a duplicate sample of 104 LSB-28B_20200713, sample 134 DUP-4_20200714 is a duplicate sample of 133 LSB-31A_20200714, and sample 123 DUP-3_20200714 is a dupliucate sample of 122 LSB-33A_20200714.
9. ~ = Regulatory limit for this analyte does not exist
10. bgs = below grade surface
11. mg/kg = milligrams per kilogram
12. % = percent
13. 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 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 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-26A 108 LSB-26A_20200713 20G0444-08 7/13/2020 3-5		LSB-26B 109 LSB-26B_20200713 20G0444-09 7/13/2020 11-13		LSB-26B 110 DUP-2_20200713 20G0444-10 7/13/2020 11-13		LSB-27A 106 LSB-27A_20200713 20G0444-06 7/13/2020 3-5		LSB-27B 107 LSB-27B_20200713 20G0444-07 7/13/2020 11-13		LSB-28A 103 LSB-28A_20200713 20G0444-03 7/13/2020 3-5		LSB-28B 104 LSB-28B_20200713 20G0444-04 7/13/2020 11-13		LSB-28B 105 DUP-1_20200713 20G0444-05 7/13/2020 11-15		LSB-29A 101 LSB-29A_20200713 20G0444-01 7/13/2020 8-10	
Per and Polyfluoroalkyl Substances (ppb)																								
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.117	U	0.166	U	0.152	U	0.107	U	0.137	U	0.108	U	0.142	U	0.156	U	0.114	U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.117	U	0.167	U	0.153	U	0.107	U	0.139	J	0.108	U	0.142	U	0.156	U	0.115	U
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	0.392	U	0.559	U	0.512	U	0.358	U	0.461	U	0.361	U	0.477	U	0.524	U	0.384	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	1.78	U	2.98		10.3		0.512	U	13.3		0.516	U	3.72		3.02		1.26	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.0573	U	0.0817	U	0.0749	U	0.0524	U	0.0825	J	0.0529	U	0.0698	U	0.0767	U	0.0562	U
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.0573	U	0.0817	U	0.0749	U	0.0524	U	0.121	J	0.0529	U	0.09	J	0.0767	U	0.0562	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.0839	U	0.12	U	0.11	U	0.0768	U	0.1	J	0.0775	U	0.102	U	0.112	U	0.0824	U
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.0552	U	0.0787	U	0.0721	U	0.0505	U	0.065	U	0.0509	U	0.0672	U	0.0739	U	0.0541	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.0509	U	0.0804	J	0.0812	J	0.0466	U	0.119	J	0.047	U	0.0902	J	0.072	J	0.05	U
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.0347	U	0.0495	U	0.0454	U	0.0317	U	0.0577	J	0.032	U	0.0422	U	0.0465	U	0.034	U
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.0738	U	0.105	U	0.0964	U	0.0675	U	0.163	J	0.0681	U	0.167	J	0.127	J	0.117	J
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.0669	U	0.0955	U	0.0875	U	0.0612	U	0.0788	U	0.0618	U	0.0815	U	0.0896	U	0.0657	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.0523	U	0.0746	U	0.0683	U	0.0478	U	0.0865	J	0.0482	U	0.0636	U	0.07	U	0.0513	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.0524	J	0.0699	U	0.0679	J	0.215	J	0.101	J	0.0452	U	**1.08**		0.877		0.329	J
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.0864	U	0.123	U	0.113	U	0.131	J	0.13	J	0.0797	U	0.105	U	0.116	U	0.0848	U
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.175	J	0.319	J	0.201	J	0.0941	U	0.223	J	0.106	J	0.265	J	0.251	J	0.677	
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.0836	U	0.119	U	0.109	U	0.0765	U	0.0984	U	0.0771	U	0.102	U	0.112	U	0.082	U
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.0487	U	0.0694	U	0.0637	U	0.0445	U	0.0573	U	0.0449	U	0.0593	U	0.0652	U	0.0478	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.13	U	0.186	U	0.17	U	0.119	U	0.161	J	0.12	U	0.158	U	0.174	U	0.128	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.0287	U	0.0409	U	0.0375	U	0.0262	U	0.0337	U	0.0264	U	0.0349	U	0.0384	U	0.0281	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.0739	U	0.105	U	0.0966	U	0.0676	U	0.087	U	0.0682	U	0.0899	U	0.0989	U	0.0725	U

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Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-29B 102 LSB-29B_20200713 20G0444-02 7/13/2020 16-18		LSB-30A 112 LSB-30A_20200714 20G0512-01 7/14/2020 6-8		LSB-30B 113 LSB-30B_20200714 20G0512-02 7/14/2020 10.5-12.5		LSB-31A 133 LSB-31A_20200714 20G0580-01 7/14/2020 5-7		LSB-31A 134 DUP-4_20200714 20G0580-02 7/14/2020 5-7		LSB-31D 137 LSB-31D_20200714 20G0580-03 7/14/2020 10-12		LSB-32A 148 LSB-32A_20200714 20G0580-04 7/14/2020 6-8		LSB-32B 149 LSB-32B_20200714 20G0580-05 7/14/2020 11.5-13.5		LSB-33A 122 LSB-33A_20200714 20G0512-10 7/14/2020 6-8	
Per and Polyfluoroalkyl Substances (ppb)																						
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.298	U	0.136	U	0.203	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.135	UJ
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.299	U	0.136	U	0.204	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.135	UJ
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	1	U	0.456	U	0.683	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.453	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	4.23		1.88		2.94		0.841		1.56		3.7		2.5		2.18		0.647	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.147	U	0.0667	U	0.0999	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0662	U
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.147	U	0.0667	U	0.0999	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0662	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.215	U	0.0977	U	0.146	UJ	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.097	UJ
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.141	U	0.0642	U	0.0962	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0638	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.13	U	0.186	J	0.148	J	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0588	U
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.09	J	0.0404	U	0.0605	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0401	U
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.189	U	0.113	J	0.202	J	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0852	U
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.171	U	0.0779	U	0.117	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0773	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.134	U	0.0608	U	0.0911	UJ	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0604	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.161	J	0.0571	U	0.0854	U	0.743	U	0.691	U	*0.911*	U	**2.88**		0.757	U	0.203	J
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.221	U	0.577	J	0.151	U	*0.743*	U	*0.691*	U	*0.911*	U	*0.675*	U	*0.757*	U	0.0998	U
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.41	J	0.173	J	0.383	J	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.393	J
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.214	U	0.0973	U	0.146	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0966	UJ
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.124	U	0.0567	U	0.0848	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0563	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.333	U	0.152	U	0.227	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.15	UJ
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.0733	U	0.0334	U	0.0499	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0331	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.189	U	0.086	U	0.129	U	0.743	U	0.691	U	0.911	U	0.675	U	0.757	U	0.0854	U

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Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-33A 123 DUP-3_20200714 20G0512-11 7/14/2020 6-8		LSB-33B 124 LSB-33B_20200714 20G0512-12 7/14/2020 11-13		LSB-34A 116 LSB-34A_20200714 20G0512-05 7/14/2020 6-8		LSB-34B 117 LSB-34B_20200714 20G0512-06 7/14/2020 12-14		LSB-35A 114 LSB-35A_20200714 20G0512-03 7/14/2020 4-6		LSB-35B 115 LSB-35B_20200714 20G0512-04 7/14/2020 11.5-13.5		LSB-36A 119 LSB-36A_20200714 20G0512-07 7/14/2020 7.5-9.5		LSB-36B 120 LSB-36B_20200714 20G0512-08 7/14/2020 11-13		LSB-36C 121 LSB-36C_20200714 20G0512-09 7/14/2020 13-15	
Per and Polyfluoroalkyl Substances (ppb)																						
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.141	U	0.151	U	0.13	U	0.194	U	0.104	U	0.172	U	0.103	U	0.119	U	0.121	U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.141	U	0.151	U	0.13	U	0.194	U	0.104	U	0.172	U	0.103	U	0.12	U	0.121	U
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	0.473	U	0.507	U	0.437	U	0.65	U	0.349	U	0.578	U	0.347	U	0.401	U	0.406	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	0.676	U	0.724	U	0.624	U	2.62		0.498	U	3.05		0.495	U	1.17	U	0.799	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.0693	U	0.0741	U	0.0639	U	0.0951	U	0.051	U	0.0845	U	0.0507	U	0.0587	U	0.0594	U
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.0693	U	0.0741	U	0.0639	U	0.0951	U	0.051	U	0.0845	U	0.0507	U	0.0587	U	0.0594	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.101	U	0.109	UJ	0.0936	U	0.139	U	0.0747	U	0.124	U	0.0743	U	0.0859	UJ	0.087	U
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.0667	U	0.0714	U	0.0615	U	0.0916	U	0.0491	U	0.0814	U	0.0488	U	0.0565	U	0.0572	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.0615	U	0.0659	U	0.0592	J	0.0845	U	0.0453	U	0.0822	J	0.0451	U	0.0521	U	0.097	J
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.0419	U	0.0449	U	0.0387	U	0.0576	U	0.0309	U	0.0512	U	0.0307	U	0.0355	U	0.036	U
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.0891	U	0.0954	U	0.114	J	0.13	J	0.0656	U	0.109	U	0.0653	U	0.0755	U	0.0764	U
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.0809	U	0.0866	U	0.0746	U	0.111	U	0.0595	U	0.0987	U	0.0592	U	0.0685	U	0.0694	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.0632	U	0.0676	U	0.0583	U	0.0868	U	0.0465	U	0.0771	UJ	0.0463	U	0.0535	U	0.0542	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.0921	J	0.0634	U	**1.05**		0.0814	U	0.0846	J	0.0723	U	0.268	J	0.0533	J	0.0508	U
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.104	U	0.112	U	0.298	J	0.228	J	0.2	J	0.17	J	0.125	J	0.119	J	0.12	J
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.314	J	0.133	U	0.243	J	0.278	J	0.0915	U	0.23	J	0.091	U	0.181	J	0.199	J
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.101	U	0.108	UJ	0.0932	U	0.139	U	0.0744	U	0.123	U	0.074	U	0.0856	U	0.0867	U
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.0588	U	0.063	U	0.0543	U	0.0808	U	0.0433	U	0.0718	U	0.0431	U	0.0498	U	0.0505	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.157	U	0.168	UJ	0.145	U	0.216	U	0.116	U	0.192	U	0.115	U	0.133	U	0.135	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.0346	U	0.0371	U	0.032	U	0.0476	U	0.0255	U	0.0422	U	0.0254	U	0.0293	U	0.0297	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.0893	U	0.0956	U	0.0824	U	0.123	U	0.0657	U	0.109	U	0.0654	U	0.0756	U	0.0766	U

Notes provided on Page 7.

Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-37A 128 LSB-37A_20200714 20G0512-13 7/14/2020 8-10		LSB-37B 129 LSB-37B_20200714 20G0512-14 7/14/2020 12-14		LSB-38A 090 LSB-38A_20200709 20G0356-06 7/9/2020 7-9		LSB-38B 091 LSB-38B_20200709 20G0356-07 7/9/2020 10-12		LSB-38C 092 LSB-38C_20200709 20G0356-08 7/9/2020 13-15		LSB-39A 099 LSB-39A_20200710 20G0402-06 7/10/2020 3.5-5.5		LSB-39B 100 LSB-39B_20200710 20G0402-07 7/10/2020 13-15		LSB-40A 096 LSB-40A_20200710 20G0402-03 7/10/2020 5.5-7.5		LSB-40B 097 LSB-40B_20200710 20G0402-04 7/10/2020 18.5-20.5	
Per and Polyfluoroalkyl Substances (ppb)																								
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.115	U	0.171	U	0.116	U	0.125	U	0.168	U	0.119	U	0.46	J	0.108	U	0.134	U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.115	U	0.172	U	0.116	U	0.125	U	0.169	U	0.12	U	0.227	U	0.108	U	0.134	U
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	0.387	U	0.575	U	0.389	U	0.42	U	0.566	U	0.401	U	0.76	U	0.363	U	0.449	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	0.552	U	1.14	U	0.555	U	0.674	U	0.808	U	0.573	U	1.95	U	0.518	U	0.642	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.0565	U	0.0842	U	0.0569	U	0.0614	U	0.0828	U	0.0587	U	0.122	J	0.053	U	0.0657	U
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.0565	U	0.0842	U	0.0569	U	0.0614	U	0.0828	U	0.0587	U	0.111	U	0.053	U	0.0657	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.0828	U	0.123	U	0.0833	U	0.09	U	0.121	U	0.086	U	0.163	U	0.0777	U	0.0962	U
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.0544	U	0.0811	U	0.0547	U	0.0591	U	0.0797	U	0.0565	U	0.107	U	0.0511	U	0.0633	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.0502	U	0.0748	U	0.0505	U	0.0888	J	0.0736	U	0.0646	J	0.142	J	0.0661	J	0.0584	U
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.0342	U	0.051	U	0.0344	U	0.0372	U	0.0501	U	0.0356	U	0.0674	U	0.0448	J	0.0398	U
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.0728	U	0.108	U	0.0732	U	0.0943	J	0.107	U	0.0767	J	0.266	J	0.0829	J	0.0846	U
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.066	U	0.0983	U	0.0664	U	0.0717	U	0.0967	U	0.0686	U	0.13	U	0.062	U	0.0767	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.0516	U	0.0768	U	0.0519	U	0.056	U	0.0755	U	0.0536	U	0.101	U	0.0484	U	0.0599	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.0484	U	0.0995	J	0.555	U	0.0525	U	0.0708	U	0.407	J	0.763	J	0.809		0.513	J
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.0853	U	0.128	J	0.0857	U	0.236	J	0.174	J	0.17	J	0.206	J	0.189	J	0.163	J
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.101	U	0.27	J	0.555	U	0.6	U	0.149	U	0.573	U	1.09	U	0.518	U	0.642	U
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.0825	U	0.123	U	0.0829	U	0.0896	U	0.121	U	0.0857	U	0.162	U	0.0774	U	0.0959	U
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.048	U	0.0715	U	0.0483	U	0.0522	U	0.0703	U	0.0499	U	0.0945	U	0.0451	U	0.0558	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.128	U	0.191	U	0.129	U	0.139	U	0.188	U	0.133	U	0.253	U	0.121	U	0.149	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.0283	U	0.0421	U	0.0284	U	0.0307	U	0.0414	U	0.0294	U	0.0556	U	0.0265	U	0.0329	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.0729	U	0.109	U	0.0733	U	0.0792	U	0.107	U	0.0757	U	0.143	U	0.0684	U	0.0847	U

Notes provided on Page 7.

Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-41A 076 LSB-41A_20200708 20G0293-01 7/8/2020 6-8		LSB-41B 077 LSB-41B_20200708 20G0293-02 7/8/2020 8-10		LSB-42A 072 LSB-42A_20200707 20G0228-64 7/7/2020 3-5		LSB-42B 073 LSB-42B_20200707 20G0228-65 7/7/2020 13-15		LSB-43A 157 LSB-43A_20200715 20G0580-27 7/15/2020 6-8		LSB-43B 158 LSB-43B_20200715 20G0580-28 7/15/2020 11.5-13.5		LSB-44A 086 LSB-44A_20200709 20G0356-02 7/9/2020 4-6		LSB-44B 087 LSB-44B_20200709 20G0356-03 7/9/2020 8-10		LSB-44C 088 LSB-44C_20200709 20G0356-04 7/9/2020 15-17	
Per and Polyfluoroalkyl Substances (ppb)																								
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.11	U	3.29	J	0.105	U	0.143	U	0.638	U	0.565	U	0.111	U	0.143	U	0.154	U
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.11	U	0.396	J	0.105	U	0.144	U	0.638	U	0.565	U	0.111	U	0.143	U	0.154	U
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	0.37	U	0.545	U	0.353	U	0.481	U	0.638	U	0.565	U	0.373	U	0.48	U	0.516	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	0.739	U	2.39	U	0.209	J	0.788		0.65		0.565	U	0.533	U	0.895	U	0.737	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.18	J	0.0797	U	0.07	J	0.174	J	0.638	U	0.565	U	0.0546	U	0.0702	U	0.0755	U
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.104	J	0.0797	U	0.0516	U	0.121	J	0.638	U	0.565	U	0.0546	U	0.0702	U	0.0755	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.0792	U	0.117	U	0.0756	U	0.113	J	0.638	UJ	0.565	U	0.0799	U	0.103	U	0.111	U
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.0521	U	0.406	J	0.0497	U	0.0678	U	0.638	U	0.565	U	0.0525	U	0.073	J	0.0727	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.166	J	0.0708	U	0.0573	J	0.121	J	0.638	U	0.565	U	0.144	J	0.0624	U	0.0671	U
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.0352	J	0.141	J	0.0593	J	0.0426	U	0.638	U	0.565	U	0.033	U	0.105	J	0.119	J
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.31	J	0.103	U	0.0664	U	0.183	J	0.638	U	0.565	U	0.178	J	0.0904	U	0.0972	U
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.117	J	0.093	U	0.0602	U	0.107	J	0.638	U	0.565	U	0.0637	U	0.082	U	0.0882	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.0493	U	0.0727	U	0.047	U	0.0642	U	0.638	U	0.565	U	0.0498	U	0.0641	U	0.0689	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.527	J	0.204	J	0.461	J	0.663	J	**1.21**		0.565	U	0.533	U	0.0601	U	0.0646	U
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.416	J	0.12	U	0.347	J	0.357	J	**0.663**		0.565	U	0.329	J	0.106	U	0.114	U
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.528	U	2.11	U	0.163	J	0.345	J	0.719		0.565	U	0.533	U	0.686	U	0.737	U
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.0789	U	0.116	U	0.0752	U	0.103	U	0.638	U	0.565	U	0.0796	U	0.102	U	0.11	U
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.0459	U	0.0677	U	0.0438	U	0.118	J	0.638	U	0.565	U	0.0464	U	0.0597	U	0.0642	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.142	J	0.181	UJ	0.117	U	0.169	J	0.638	U	0.565	U	0.124	U	0.16	U	0.172	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.027	U	0.0398	U	0.0258	U	0.0352	U	0.638	U	0.565	U	0.0273	U	0.0351	U	0.0378	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.0697	U	0.103	U	0.0665	U	0.0907	U	0.638	U	0.565	U	0.0703	U	0.0906	U	0.0973	U

Notes provided on Page 7.

Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date Sample Depth (feet bgs)	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Protection of Groundwater SCOs	NYSDEC Part 375 Protection Use Commercial SCOs	NYSDEC Part 375 Restricted Use Industrial SCOs	LSB-45A 080 LSB-45A_20200708 20G0293-05 7/8/2020 4.5-6.5		LSB-45B 081 LSB-45B_20200708 20G0293-06 7/8/2020 9-11		LSB-45C 082 LSB-45C_20200708 20G0293-07 7/8/2020 18-20		LSB-46A 078 LSB-46A_20200708 20G0293-03 7/8/2020 7-9		LSB-46B 079 LSB-46B_20200708 20G0293-04 7/8/2020 9-11	
Per and Polyfluoroalkyl Substances (ppb)														
N-ethyl perfluorooctane- sulfonamidoacetic Acid (NEtFOSAA)	~	~	~	~	0.0973	U	0.141	U	0.121	U	0.116	U	0.452	J
N-methyl perfluorooctane- sulfonamidoacetic Acid (NMeFOSAA)	~	~	~	~	0.0975	U	0.141	U	0.122	U	0.116	U	0.153	U
Perfluorobutanesulfonic Acid (PFBS)	~	~	~	~	0.327	U	0.473	U	0.408	U	0.389	U	0.514	U
Perfluorobutanoic acid (PFBA)	~	~	~	~	0.467	U	0.675	U	0.213	U	0.556	U	0.735	U
Perfluorodecanesulfonic Acid (PFDS)	~	~	~	~	0.0478	U	0.0691	U	0.0597	U	0.057	U	0.175	J
Perfluorodecanoic Acid (PFDA)	~	~	~	~	0.0478	U	0.0691	U	0.0597	U	0.0681	J	0.0752	U
Perfluorododecanoic Acid (PFDoA)	~	~	~	~	0.07	U	0.101	U	0.0874	U	0.0835	U	0.11	U
Perfluoroheptanesulfonic Acid (PFHpS)	~	~	~	~	0.046	U	0.0666	U	0.0575	U	0.0549	U	0.0724	U
Perfluoroheptanoic acid (PFHpA)	~	~	~	~	0.0833	J	0.0614	U	0.053	U	0.154	J	0.0668	U
Perfluorohexanesulfonic Acid (PFHxS)	~	~	~	~	0.0289	U	0.0419	U	0.0361	U	0.0345	U	0.0628	J
Perfluorohexanoic Acid (PFHxA)	~	~	~	~	0.096	J	0.089	U	0.0768	U	0.246	J	0.13	J
Perfluorononanoic Acid (PFNA)	~	~	~	~	0.0558	U	0.0807	U	0.0697	U	0.07	J	0.0879	U
Perfluorooctanesulfonamide (FOSA)	~	~	~	~	0.0436	U	0.063	U	0.0544	U	0.052	U	0.0686	U
Perfluorooctanesulfonic Acid (PFOS)	0.88	3.7	440	440	0.263	J	0.306	J	0.0511	U	0.731		0.586	J
Perfluorooctanoic Acid (PFOA)	0.66	1.1	500	600	0.274	J	0.107	J	0.09	U	0.33	J	0.113	U
Perfluoropentanoic Acid (PFPeA)	~	~	~	~	0.467	U	0.675	U	0.107	U	0.556	U	0.735	U
Perfluorotetradecanoic Acid (PFTA)	~	~	~	~	0.0697	U	0.101	U	0.0871	U	0.0831	U	0.11	U
Perfluorotridecanoic Acid (PFTrDA)	~	~	~	~	0.0406	U	0.0587	U	0.0507	U	0.0484	U	0.0639	U
Perfluoroundecanoic Acid (PFUnA)	~	~	~	~	0.109	U	0.157	U	0.136	U	0.129	U	0.171	U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	~	~	~	~	0.0239	U	0.0346	U	0.0298	U	0.0285	U	0.0376	U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	~	~	0.0616	U	0.0891	U	0.0769	U	0.0734	U	0.097	U

Notes provided on Page 7.

Table 1B
Remedial Action Work Plan
Soil Sample Analytical Results - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100652601

Notes:
1. Soil sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) Unrestricted Use, Protevction of Groundwater, Restricted Use Commercial, and Restricted Use Industrial Guidance Values (June 2021).
2. Detected analytical results above Unrestricted Use Guidance Values are bolded.
3. Detected analytical results above Protection of GW Guidance Values are underlined.
4. Detected analytical results above Restricted Use Commercial Guidance Values are shaded.
5. Detected analytical results above Restricted Use Industrial Guidance Values are red.
6. Analytical results with reporting limits (RL) above the lowest applicable criteria are italicized.
7. Sample 110 DUP-2_20200713 is a duplicate sample of 109 LSB-26B_20200713, Sample 105 DUP-1_20200713 is a duplicate sample of 104 LSB-28B_20200713, sample 134 DUP-4_20200714 is a duplicate sample of 133 LSB-31A_20200714, and sample 123 DUP-3_20200714 is a duplicate sample of 122 LSB-33A_20200714.
8. ~ = Regulatory limit for this analyte does not exist
9. bgs = below grade surface
10. ppb = parts per billion

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 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 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-1	LMW-2	LMW-3	LMW-3	LMW-4	LMW-4	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10
Sample ID	SGVs	LMW-1	LMW-2	LMW-3	Dup-3	LMW-4	210 LMW-4	217_LMW-4-COD	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10
Laboratory ID		18K0979-08	18K0979-09	18K0979-07	18K0979-12	18K0979-04	20H0041-05	20H0202-02	18K1020-02	18K0979-06	18K0979-05	18K0979-02	18K0979-03	18K1020-01
Sample Date		11/26/2018	11/26/2018	11/26/2018	11/26/2018	11/26/2018	8/3/2020	8/6/2020	11/27/2018	11/26/2018	11/26/2018	11/26/2018	11/26/2018	11/27/2018
Volatile Organic Compounds (µg/L)														
1,2,4,5-Tetramethylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.81	0.2 U	0.99	**6.04** D	0.2 U	1.08
1,2,4-Trimethylbenzene	5	0.23 J	0.2 U	0.2 U	0.2 U	0.26 J	NA	NA	**11.4**	0.2 U	0.2 U	1.48 D	0.61	4.68
1,3,5-Trimethylbenzene (Mesitylene)	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	4.24	0.2 U	0.2 U	0.58 JD	0.2 U	1.01
Acetone	50	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U	1 U	2 U	1 U	1 U
Benzene	1	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	**1.95**	0.2 U	0.2 U	**1.64** D	0.2 U	0.97
Carbon Disulfide	60	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Chloroform	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Cyclohexane	~	0.2 U	0.2 U	0.2 U	0.2 U	0.3 J	NA	NA	17.6	0.2 U	0.2 U	4.28 D	0.2 U	0.47 J
Ethylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	**5.18**	0.2 U	0.2 U	0.88 JD	0.2 U	1.21
Isopropylbenzene (Cumene)	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	1.46	0.2 U	1.17	**6.24** D	0.2 U	0.2 U
M,P-Xylene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	**37.4**	0.5 U	0.5 U	2.4 D	0.66 J	4.79
Methyl Acetate	~	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Methyl Ethyl Ketone (2-Butanone)	50	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Methylcyclohexane	~	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	19.2	0.2 U	0.49 J	11.8 D	0.2 U	0.46 J
n-Butylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.24 J	0.2 U	0.2 U	1.04 D	0.2 U	0.2 U
n-Propylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	1.74	0.2 U	0.59	**6.66** D	0.2 U	0.51
o-Xylene (1,2-Dimethylbenzene)	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	**12.3**	0.2 U	0.2 U	0.76 JD	0.2 J	2.12
p-Cymene (p-Isopropyltoluene)	~	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.73	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U
Sec-Butylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.46 J	0.2 U	0.31 J	2.24 D	0.2 U	0.2 U
T-Butylbenzene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.32 J	NA	NA	0.2 U	0.2 U	0.2 U	0.58 JD	0.2 U	0.2 U
Tert-Butyl Alcohol	~	0.5 U	0.5 U	0.5 U	0.5 U	4.85	NA	NA	0.5 U	0.5 U	4.08	1 U	0.5 U	0.5 U
Tert-Butyl Methyl Ether	10	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.66	0.4 U	0.2 U	0.2 U
Tetrachloroethene (PCE)	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.4 U	0.48 J	0.22 J
Toluene	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	**13.6**	0.2 U	0.2 U	3.08 D	0.2 U	4.1
Total Xylenes	5	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	NA	NA	**49.8**	0.6 U	0.6 U	3.16 D	0.86 J	**6.91**
Semivolatile Organic Compounds (µg/L)														
1,4-Dioxane (P-Dioxane)	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	~	2.94 U	3.23 U	2.94 U	2.63 U	2.78 U	NA	NA	2.86 U	2.86 U	2.94 U	2.78 U	2.7 U	2.86 U
Acenaphthene	20	0.118	0.0645 U	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.731	0.0571 U	0.0588 U	0.167	0.0541 U	0.0571 U
Acenaphthylene	~	0.0588 U	0.0645 U	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.0571 U	0.0571 U	0.0588 U	0.0556 U	0.0541 U	0.0571 U
Anthracene	50	0.0706	0.0903	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.16	0.0571 U	0.0588 U	0.0556 U	0.0541 U	0.0571 U
Benzo(a)Anthracene	0.002	*0.0588* U	**0.0774**	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	*0.0571* U	**0.0588**	*0.0556* U	*0.0541* U	*0.0571* U
Benzo(a)Pyrene	0	*0.0588* U	**0.0645**	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	**0.0571**	*0.0588* U	*0.0556* U	*0.0541* U	*0.0571* U
Benzo(b)Fluoranthene	0.002	*0.0588* U	*0.0645* U	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	*0.0571* U	*0.0588* U	*0.0556* U	*0.0541* U	*0.0571* U
Benzo(g,h,i)Perylene	~	0.0588 U	0.0645 U	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.0571 U	0.0571	0.0588 U	0.0556 U	0.0541 U	0.0571 U
Benzo(k)Fluoranthene	0.002	*0.0588* U	*0.0645* U	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	*0.0571* U	*0.0588* U	*0.0556* U	*0.0541* U	*0.0571* U
Bis(2-Ethylhexyl) Phthalate	5	0.588 U	0.645 U	0.588 U	0.526 U	0.556 U	NA	NA	0.571 U	0.994	0.588 U	0.789	0.541 U	0.571 U
Chrysene	0.002	*0.0588* U	**0.103**	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	**0.0571**	**0.0706**	*0.0556* U	*0.0541* U	*0.0571* U
Dibenz(a,h)Anthracene	~	0.0588 U	0.0645 U	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.0571 U	0.0571 U	0.0588 U	0.0556 U	0.0541 U	0.0571 U
Fluoranthene	50	0.0588 U	0.142	0.0588 U	0.0526 U	0.144	NA	NA	0.32	0.08	0.0824	0.0556 U	0.0541 U	0.0571 U
Fluorene	50	0.0706	0.0645 U	0.0588 U	0.0526 U	0.0556 U	NA	NA	0.149	0.0571 U	0.0588 U	0.0778	0.0541 U	0.0571 U
Indeno(1,2,3-c,d)Pyrene	0.002	*0.0588* U	*0.0645* U	*0.0588* U	*0.0526* U	*0.0556* U	NA	NA	*0.0571* U	*0.0571* U	*0.0588* U	*0.0556* U	*0.0541* U	*0.0571* U
Naphthalene	10	0.129	0.0903	0.0588	0.0526 U	0.0556 U	NA	NA	0.446	0.0571 U	0.0941	0.256	0.0541 U	0.0571 U
Phenanthrene	50	0.0588	0.168	0.0588 U	0.0526 U	0.0556	NA	NA	0.114	0.103	0.0941	0.0556 U	0.0541 U	0.0571 U
Pyrene	50	0.106	0.181	0.0588	0.0526 U	0.3	NA	NA	0.4	0.0914	0.0824	0.0556	0.0541 U	0.0571 U
Petroleum Hydrocarbons (µg/L)														
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	NA	NA	NA	NA	NA	1,000	NA	NA	NA	NA	NA	NA	NA
Pesticides (µg/L)														
Alpha Chlordane	~	0.00432 U	0.0041 U	0.00444 U	0.00432 U	0.00432 U	NA	NA	0.00457 U	0.00432 U	0.00421 U	0.0041 U	0.004 U	0.00444 U
Chlordane (alpha and gamma)	0.05	0.0216 U	0.0205 U	0.0222 U	0.0216 U	0.0216 U	NA	NA	0.0229 U	0.0216 U	0.0211 U	0.0205 U	0.02 U	0.0222 U
Gamma-Chlordane	~	0.0108 U	0.0103 U	0.0111 U	0.0108 U	0.0108 U	NA	NA	0.0114 U	0.0108 U	0.0105 U	0.0103 U	0.01 U	0.0111 U
Herbicides (µg/L)	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (µg/L)	~	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-1	LMW-2	LMW-3	LMW-3	LMW-4	LMW-4	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10
Sample ID	SGVs	LMW-1	LMW-2	LMW-3	Dup-3	LMW-4	210 LMW-4	217_LMW-4-COD	LMW-5	LMW-6	LMW-7	LMW-8	LMW-9	LMW-10
Laboratory ID		18K0979-08	18K0979-09	18K0979-07	18K0979-12	18K0979-04	20H0041-05	20H0202-02	18K1020-02	18K0979-06	18K0979-05	18K0979-02	18K0979-03	18K1020-01
Sample Date		11/26/2018	11/26/2018	11/26/2018	11/26/2018	11/26/2018	8/3/2020	8/6/2020	11/27/2018	11/26/2018	11/26/2018	11/26/2018	11/26/2018	11/27/2018
Inorganics (µg/L)														
Aluminum	~	262	218	57.4	414	176	NA	NA	254	114	138	55.6 U	503	721
Aluminum (Dissolved)	~	147	67.6	55.6 U	70.6	55.6 U	NA	NA	55.6 U	95.2	62.8	55.6 U	55.6 U	55.6 U
Antimony	3	1.91	2.93	1.46	1.48	1.11 U	NA	NA	1.11 U	1.7	1.11 U	1.18	1.85	1.66
Antimony (Dissolved)	3	1.84	2.93	1.57	1.37	1.11 U	NA	NA	1.11 U	2.23	1.11 U	1.28	2.15	2.09
Arsenic	25	3.13	5.56	5.52	4.93	5.38	NA	NA	1.83	4.45	1.68	8.88	3.84	2.34
Arsenic (Dissolved)	25	2.95	3.72	4.69	6.56	3.64	NA	NA	1.11 U	4	1.11 U	3.6	2	1.4
Barium	1000	137	113	35.8	36.9	232	NA	NA	287	159	507	301	183	926
Barium (Dissolved)	1000	136	117	36.3	36.6	213	NA	NA	67.9	155	351	270	180	57.9
Beryllium	3	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	NA	NA	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U
Cadmium	5	0.745	2.14	0.556 U	0.608	0.556 U	NA	NA	0.556 U	0.556 U	0.556 U	0.556 U	0.707	0.556 U
Cadmium (Dissolved)	5	0.745	2.09	0.556 U	0.556 U	0.556 U	NA	NA	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U
Calcium	~	207,000	236,000	182,000	185,000	162,000	NA	NA	671,000	300,000	177,000	144,000	170,000	375,000
Calcium (Dissolved)	~	207,000	238,000	180,000	180,000	162,000	NA	NA	84,500	293,000	168,000	146,000	170,000	104,000
Chromium, Hexavalent	50	10 U	10 U	10 U	10 U	10 U	NA	NA	10 U	11	10 U	10 U	15	10 U
Chromium, Total	50	14.4	6.23	5.56 U	5.56 U	5.56 U	NA	NA	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Chromium, Total (Dissolved)	50	14.8	5.56 U	5.56 U	5.56 U	5.56 U	NA	NA	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Chromium, Trivalent	~	14	10 U	10 U	10 U	10 U	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	~	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	NA	NA	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U	4.44 U
Copper	200	25.8	23.7	22.2 U	22.2 U	22.2 U	NA	NA	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U
Copper (Dissolved)	200	24.5	22.2 U	22.2 U	22.2 U	22.2 U	NA	NA	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U
Cyanide	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	278 U	**625**	278 U	278 U	**1,560**	NA	NA	**6,880**	278 U	**13,700**	**4,160**	**1,240**	**76,900**
Iron (Dissolved)	300	278 U	**339**	278 U	278 U	278 U	NA	NA	278 U	278 U	278 U	278 U	278 U	278 U
Lead	25	6.42	5.56 U	5.56 U	5.56 U	16.7	NA	NA	**106**	5.56 U	19.8	5.56 U	15.6	17.6
Lead (Dissolved)	25	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	NA	NA	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Magnesium	35000	**280,000**	**629,000**	**501,000**	**510,000**	**158,000**	NA	NA	**158,000**	**210,000**	**50,700**	**53,300**	**279,000**	**111,000**
Magnesium (Dissolved)	35000	**285,000**	**645,000**	**503,000**	**503,000**	**160,000**	NA	NA	15,800	**203,000**	**49,600**	**53,300**	**282,000**	18,000
Manganese	300	84.5	40.8	7.49	7.71	**425**	NA	NA	**2,120**	295	**649**	291	**685**	**1,280**
Manganese (Dissolved)	300	79.3	40.6	7.68	7.69	**417**	NA	NA	**488**	289	**616**	283	**678**	168
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	NA	NA	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Potassium	~	94,700 B	218,000 B	166,000 B	171,000 B	63,200 B	NA	NA	52,800	82,800 B	33,500 B	39,500 B	97,000 B	76,800
Potassium (Dissolved)	~	97,600	228,000	172,000	176,000	65,100	NA	NA	8,950	80,700	33,800	40,000	98,900	10,200
Selenium	10	**12.8** D	*11.1* U	*11.1* U	*11.1* U	*11.1* U	NA	NA	*11.1* U	*11.1* U	*11.1* U	*11.1* U	*11.1* U	*11.1* U
Selenium (Dissolved)	10	**11.7** D	*11.1* U	*11.1* U	**17.7** D	*11.1* U	NA	NA	*11.1* U	**13.5** D	*11.1* U	*11.1* U	*11.1* U	*11.1* U
Silver	50	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	NA	NA	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Sodium	20000	**4,110,000** D	**8,530,000** D	**6,780,000** D	**5,720,000** D	**2,640,000** D	NA	NA	**1,030,000**	**2,900,000** D	**729,000**	**640,000**	**3,780,000** D	**1,100,000**
Sodium (Dissolved)	20000	**2,860,000** D	**7,390,000** D	**5,680,000** D	**5,500,000** D	**1,990,000** D	NA	NA	**71,100**	**2,170,000** D	**625,000**	**560,000**	**3,240,000** D	**76,600**
Vanadium	~	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	NA	NA	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Zinc	2000	136	55.1	40	64.7	40	NA	NA	74	27.8 U	27.8 U	27.8 U	292	27.8 U
Zinc (Dissolved)	2000	140	57.9	50	47.2	27.8 U	NA	NA	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U	88.1
General Chemistry														
Alkalinity (As Calcium Carbonate)	~	NA	NA	NA	NA	NA	440,000	NA	NA	NA	NA	NA	NA	NA
Chloride (As Cl)	250000	NA	NA	NA	NA	NA	**6,790,000** D	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand	~	NA	NA	NA	NA	NA	NA	1,400,000 D	NA	NA	NA	NA	NA	NA
Sulfate (As SO4)	250000	NA	NA	NA	NA	NA	**326,000** D	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	~	NA	NA	NA	NA	NA	8,940,000	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	~	NA	NA	NA	NA	NA	5,440	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-11	LMW-12	LMW-13	LMW-14	LMW-15	LMW-15	LMW-16	LMW-17	LMW-18	LMW-19	LMW-20	LMW-21	LMW-22
Sample ID	SGVs	LMW-11	LMW-12	LMW-13	LMW-14	190 LMW-15	191 DUP-1	192 LMW-16	195 LMW-17	197 LMW-18	196 LMW-19	198 LMW-20	199 LMW-21	200 LMW-22
Laboratory ID		18K0979-01	18K1020-03	18K1020-04	18K1020-05	20G1005-01	20G1005-02	20G1005-03	20G1065-01	20G1065-03	20G1065-02	20G1065-04	20G1065-05	20G1065-06
Sample Date		11/26/2018	11/27/2018	11/27/2018	11/27/2018	7/27/2020	7/27/2020	7/27/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020
Volatile Organic Compounds (µg/L)														
1,2,4,5-Tetramethylbenzene	5	**146** D	**17.4**	0.33 J	**239** D	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	**14** D	0.97	0.41 J	**13.2** D	0.72	0.81	0.6	0.2 U	0.2 U	0.61	0.2 U	0.43 J	0.2 U
1,3,5-Trimethylbenzene (Mesitylene)	5	4.6 JD	0.77	0.2 U	3.3 JD	0.53	0.6	0.22 J	0.2 U	0.2 U	0.21 J	0.2 U	0.2 U	0.2 U
Acetone	50	13.8 JD	6.98	1 U	10 U	3.5 U	5.5 U	9.8 U	2.4 U	1 U	3.6 U	1 U	4.8 U	4.6 U
Benzene	1	**119** D	0.62	0.2 J	**50.1** D	0.27 J	0.31 J	**3.3**	0.23 J	0.2 U	**1.8**	0.2 U	0.84	0.25 J
Carbon Disulfide	60	2 U	0.2 U	0.2 U	2 U	0.38 J	0.21 J	0.23 J	0.2 U	0.2 U	0.2 U	0.22 J	0.2 U	0.39 J
Chloroform	7	2 U	0.2 U	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1.1
Cyclohexane	~	57.3 D	0.2 U	0.2 U	100 D	0.7	2.5	43	0.82	0.2 U	11	0.2 U	0.2 U	0.2 U
Ethylbenzene	5	**14.5** D	0.34 J	0.2 U	**7.2** D	0.2 U	0.2 U	0.58	0.2 U	0.2 U	0.49 J	0.2 U	0.48 J	0.2 U
Isopropylbenzene (Cumene)	5	**125** D	3.38	0.2 U	**282** D	1.2	1.4	**12**	0.2 U	0.2 U	**8.2**	0.2 U	0.2 U	0.2 U
M,P-Xylene	5	**49.1** D	1.37	0.74 J	**34.8** D	0.5 U	0.5 U	2.2	0.5 U	0.5 U	1.6	0.5 U	1.4	0.5 U
Methyl Acetate	~	2 U	0.2 U	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.2	0.2 U	0.2 U	0.2 U	0.2 U
Methyl Ethyl Ketone (2-Butanone)	50	2 U	0.9	0.2 U	2 U	0.5 U	0.2 U	0.2 U	0.2 UJ	0.2 UJ	1.1 J	0.2 UJ	0.2 UJ	0.67 J
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	2 U	3.22	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Methylcyclohexane	~	163 D	6.67	0.2 U	219 D	18	21	36	1.1	0.2 U	47	0.2 U	0.2 U	0.2 U
n-Butylbenzene	5	**46.6** D	4.33	0.2 U	**77.1** D	1.1	1.2	3	0.2 U	0.2 U	3.4	0.2 U	0.2 U	0.2 U
n-Propylbenzene	5	**320** D	**5.89**	0.2 U	**469** D	0.87	0.95	**11**	0.2 U	0.2 U	**9.3**	0.2 U	0.2 U	0.2 U
o-Xylene (1,2-Dimethylbenzene)	5	**20.1** D	0.61	0.27 J	**8.8** D	0.2 U	0.2 U	0.65	0.2 U	0.2 U	1.5	0.2 U	0.45 J	0.2 U
p-Cymene (p-Isopropyltoluene)	~	4.7 JD	0.27 J	0.2 U	2 U	120	140	0.97	2.3	0.2 U	0.2 U	0.2 U	0.2 U	4.9
Sec-Butylbenzene	5	**29.8** D	1.86	0.2 U	**52.8** D	2.3	2.6	2.6	0.2 U	0.2 U	3.6	0.2 U	1.3	0.2 U
T-Butylbenzene	5	2.7 JD	0.23 J	0.2 U	4 JD	0.33 J	0.37 J	0.25 J	0.29 J	0.2 U	0.86	0.2 U	0.2 U	0.2 U
Tert-Butyl Alcohol	~	5 U	3.96	0.5 U	5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	4.4 J	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
Tert-Butyl Methyl Ether	10	2 U	0.2 U	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	1.4	0.32 J	0.2 U	0.2 U	0.2 U
Tetrachloroethene (PCE)	5	2 U	0.2 U	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.33 J	0.2 U	0.2 U
Toluene	5	**113** D	1.35	0.76	**8.6** D	0.2 U	0.2 U	1	0.2 U	0.2 U	1	0.2 U	1.2	0.2 U
Total Xylenes	5	**69.2** D	1.98	1.01 J	**43.6** D	0.6 U	0.6 U	2.8	0.6 U	0.6 U	3.1	0.6 U	1.8	0.6 U
Semivolatile Organic Compounds (µg/L)														
1,4-Dioxane (P-Dioxane)	~	NA	NA	NA	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.62	0.4 U	0.4 U	0.4 U
2-Methylnaphthalene	~	5.12 J	2.78 U	2.78 U	2.78 U	2.78 U	2.86 U	2.7 U	2.86 U	2.78 U	2.86 U	3.03 U	3.03 U	2.94 U
Acenaphthene	20	1.94	0.0556 U	0.0556 U	0.0556 U	0.533	0.434	1.01	0.629	0.0556 U	0.126	0.109	0.412	0.435
Acenaphthylene	~	0.0556 U	0.0556 U	0.0556 U	0.0556 U	0.0556 U	0.0571 U	0.13	0.0571 U	0.0556 U	0.0571 U	0.0606 U	0.0727	0.176
Anthracene	50	0.244	0.0556 U	0.0556 U	0.1	0.178	0.171	0.0649	0.503	0.0556	0.0571 U	0.097	0.145	0.388
Benzo(a)Anthracene	0.002	*0.0556* U	*0.0556* U	*0.0556* U	**0.1**	**0.111**	**0.103**	**0.0541**	**0.103**	**0.0667**	*0.0571* U	**0.182**	**0.0606**	**0.235**
Benzo(a)Pyrene	0	*0.0556* U	*0.0556* U	*0.0556* U	**0.1**	**0.111**	**0.0914**	**0.0541**	*0.0571* U	**0.0889**	*0.0571* U	**0.315**	*0.0606* U	**0.2**
Benzo(b)Fluoranthene	0.002	*0.0556* U	*0.0556* U	*0.0556* U	**0.1**	**0.0778**	**0.08**	**0.0541**	*0.0571* U	**0.0667**	*0.0571* U	**0.218**	*0.0606* U	**0.153**
Benzo(g,h,i)Perylene	~	0.0556 U	0.0556 U	0.0556 U	0.0778	0.111	0.08	0.0541 U	0.0571 U	0.111	0.0571 U	0.255	0.0606 U	0.118
Benzo(k)Fluoranthene	0.002	*0.0556* U	*0.0556* U	*0.0556* U	**0.0889**	**0.0667**	**0.0686**	*0.0541* U	*0.0571* U	**0.0556**	*0.0571* U	**0.206**	*0.0606* U	**0.129**
Bis(2-Ethylhexyl) Phthalate	5	0.556 U	1.12	0.556 U	1.41	0.722	0.571 U	0.541 U	1.23	0.556 U	0.571 U	0.606 U	0.606 U	0.588 U
Chrysene	0.002	*0.0556* U	*0.0556* U	*0.0556* U	**0.122**	**0.122**	**0.114**	**0.0541**	**0.08**	**0.0667**	*0.0571* U	**0.206**	*0.0606* U	**0.294**
Dibenz(a,h)Anthracene	~	0.0556 U	0.0556 U	0.0556 U	0.0556 U	0.0556 U	0.0571 U	0.0541 U	0.0571 U	0.0556 U	0.0571 U	0.0606 U	0.0606 U	0.0588 U
Fluoranthene	50	0.156	0.0778	0.0556 U	0.256	0.267	0.309	0.141	1.18	0.133	0.0571 U	0.291	0.291	0.576
Fluorene	50	1.03	0.0556 U	0.0556 U	0.0556 U	0.311	0.263	0.746	0.731	0.0556 U	0.183	0.0606 U	0.182	0.424
Indeno(1,2,3-c,d)Pyrene	0.002	*0.0556* U	*0.0556* U	*0.0556* U	**0.0778**	**0.0778**	**0.0571**	*0.0541* U	*0.0571* U	**0.0667**	*0.0571* U	**0.206**	*0.0606* U	**0.0824**
Naphthalene	10	3.74	0.0556 U	0.0556 U	2.6	0.378 J	0.251 J	0.508	0.126	0.0556 U	0.0914	0.121	0.0727	0.176
Phenanthrene	50	1.24	0.0556 U	0.0556 U	0.333	0.6	0.537	0.184	1.43	0.122	0.0914	0.182	0.097	0.165
Pyrene	50	0.111	0.2	0.0556 U	0.256	0.3	0.286	0.108	0.823	0.122	0.0571 U	0.364	0.291	0.941
Petroleum Hydrocarbons (µg/L)														
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (µg/L)														
Alpha Chlordane	~	0.0041 U	0.00432 U	0.0165	0.00444 U	0.00432 U	0.00432 U	0.00432 U	0.00437 U	0.00432 U	0.00437 U	0.00432 U	0.00421 U	0.00421 U
Chlordane (alpha and gamma)	0.05	0.0205 U	0.0216 U	**0.11**	0.0222 U	0.0216 U	0.0216 U	0.0216 U	0.0219 U	0.0216 U	0.0219 U	0.0216 U	0.0211 U	0.0211 U
Gamma-Chlordane	~	0.0103 U	0.0108 U	0.011	0.0111 U	0.0108 U	0.0108 U	0.0108 U	0.0109 U	0.0108 U	0.0109 U	0.0108 U	0.0105 U	0.0105 U
Herbicides (µg/L)	~	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
Polychlorinated Biphenyls (µg/L)	~	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-11	LMW-12	LMW-13	LMW-14	LMW-15	LMW-15	LMW-16	LMW-17	LMW-18	LMW-19	LMW-20	LMW-21	LMW-22
Sample ID	SGVs	LMW-11	LMW-12	LMW-13	LMW-14	190 LMW-15	191 DUP-1	192 LMW-16	195 LMW-17	197 LMW-18	196 LMW-19	198 LMW-20	199 LMW-21	200 LMW-22
Laboratory ID		18K0979-01	18K1020-03	18K1020-04	18K1020-05	20G1005-01	20G1005-02	20G1005-03	20G1065-01	20G1065-03	20G1065-02	20G1065-04	20G1065-05	20G1065-06
Sample Date		11/26/2018	11/27/2018	11/27/2018	11/27/2018	7/27/2020	7/27/2020	7/27/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020
Inorganics (µg/L)														
Aluminum	~	55.6 U	2,690 D	55.6 U	93.3	764 J	3,400 J	55.6 U	148	3,810	71.5	55.6 U	61.9	632
Aluminum (Dissolved)	~	75.5	55.6 U	55.6 U	55.6 U	65.2	95.8	55.6 U	55.6 U	63.5	97.9	55.6 U	55.6 U	127
Antimony	3	1.11 U	1.33	1.23	**6.7**	1.11 U	2.03	1.11 U	1.11 U	2.26	1.11 U	1.11 U	1.11 U	1.11 U
Antimony (Dissolved)	3	1.11 U	1.52	1.47	1.11 U	1.11 U	1.11 U	**4.3** J	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U	1.11 U
Arsenic	25	7.65	3.79	2.41	**40.7**	6.16 J	12.1 J	1.47	5.57 J	16.6	2.5	4.55	1.11 U	6.72
Arsenic (Dissolved)	25	5.07	1.76	1.9	2.27	1.5	1.46	1.11 U	1.14	1.11 U	1.11 U	1.11 U	1.11 U	3.23
Barium	1000	251	278 U	502	501	426	511	199	379 J	423	308	169	162	370
Barium (Dissolved)	1000	179	41.5	27.8 U	291	283	275	136	321 J	141	232	139	121	361
Beryllium	3	0.333 U	0.333 U	0.333 U	0.419	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U	0.333 U
Cadmium	5	0.556 U	0.556 U	0.556 U	1.16	0.556 U	0.556 U	0.556 U	0.556 U	2.33	0.556 U	0.556 U	0.556 U	0.556 U
Cadmium (Dissolved)	5	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U	0.556 U
Calcium	~	124,000	40,700 D	466,000	479,000	156,000	160,000	78,500	74,700	170,000	109,000	108,000	114,000	306,000
Calcium (Dissolved)	~	123,000	33,500	7,720	251,000	158,000	158,000	73,300	74,300	169,000	124,000	111,000	122,000	342,000
Chromium, Hexavalent	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chromium, Total	50	5.56 U	*55.6* U	5.56 U	5.56 U	5.56 U	17	5.56 U	5.56 U	17.5	5.56 U	5.56 U	5.56 U	5.56 U
Chromium, Total (Dissolved)	50	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Chromium, Trivalent	~	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	17.5	10 U	10 U	10 U	10 U
Cobalt	~	4.44 U	44.4 U	4.44 U	18.2	4.44 U	4.88	4.44 U	4.44 U	4.75	4.44 U	4.44 U	4.44 U	4.44 U
Copper	200	22.2 U	*222* U	22.2 U	22.2 U	91.3 U	*257* U	41.5 U	23.3 U	125 U	22.2 U	22.2 U	22.2 U	29.5 U
Copper (Dissolved)	200	22.2 U	22.2 U	22.2 U	22.2 U	40.9 U	37.4 U	24.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U	22.2 U
Cyanide	200	NA	NA	NA	NA	15.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	300	**15,900**	*2,780* U	**16,700**	**16,800**	**45,900**	**52,300**	**13,500**	**13,400**	**54,200**	**31,900**	**17,600**	**12,500**	**7,640**
Iron (Dissolved)	300	**2,120**	278 U	278 U	**882**	**8,210** J	**1,500** J	**563**	278 U	**8,050**	**2,780**	**3,150**	278 U	278 U
Lead	25	13.1	*55.6* U	10.8	20.7	**107** J	**307** J	5.56 U	16.6	**516**	5.56 U	5.56 U	5.56 U	20.8
Lead (Dissolved)	25	9.89	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U	5.56 U
Magnesium	35000	21,600	3,550 D	**107,000**	**106,000**	20,300	21,600	9,030	6,350	**73,500**	11,900	22,800	17,300	**166,000**
Magnesium (Dissolved)	35000	22,400	2,610	1,900	31,500	20,900	22,100	8,750	6,470 J	**74,200**	13,900	24,300	19,000	**180,000**
Manganese	300	**847**	216 D	**785**	**800**	**1,280**	**1,390**	**1,270**	**497** J	**934**	**801**	**472**	**393**	**3,210**
Manganese (Dissolved)	300	**825**	157	5.56 U	**1,130**	**1,300**	**1,260**	**1,120**	**487** J	**864**	**900**	**492**	**410**	**3,550**
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.42	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	11.1 U	*111* U	11.1 U	19.1	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Potassium	~	29,000 B	4,810 D	49,000	48,600	22,800	23,300	11,400	8,460	46,500	15,700	14,000	13,100	67,400
Potassium (Dissolved)	~	28,000	4,020	1,750	28,900	22,700	23,800	10,900	8,350 J	47,100	18,000	14,100	13,900	77,100
Selenium	10	*11.1* U	*11.1* U	*11.1* U	**18.2** D	7.69	9.12	1.11 U	2.08	**20.7**	4.28	6.73	3.33	**61.5**
Selenium (Dissolved)	10	*11.1* U	*11.1* U	*11.1* U	*11.1* U	6.53 J	8.88 J	1.11 U	2.39	**18.2**	1.11 U	4.59	2.13	**36.2**
Silver	50	5.56 U	*55.6* U	5.56 U	5.56 U	5.56 UJ	5.56 UJ	5.56 UJ	9.03 J	7.06 J	5.56 UJ	5.56 UJ	5.56 UJ	5.56 UJ
Sodium	20000	**206,000**	**26,600** D	**1,130,000**	**1,130,000**	**298,000**	**304,000**	**93,900**	**64,600**	**586,000**	**112,000**	**127,000**	**113,000**	**1,750,000** D
Sodium (Dissolved)	20000	**179,000**	**22,800**	16,600	**309,000**	**316,000**	**322,000**	**90,700**	**67,500**	**615,000**	**134,000**	**133,000**	**123,000**	**1,510,000** D
Vanadium	~	11.1 U	111 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	12.2	11.1 U	11.1 U	11.1 U	11.1 U
Zinc	2000	27.8 U	436 D	27.8 U	30.2	83 J	233 J	27.8 U	49.9	909	27.8 U	28.8	27.8 U	30.8
Zinc (Dissolved)	2000	182	31.7	28.3	776	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U	27.8 U
General Chemistry														
Alkalinity (As Calcium Carbonate)	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride (As Cl)	250000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COD-Chemical Oxygen Demand	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate (As SO4)	250000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	~	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-22	LMW-22	LMW-23	LMW-24	LMW-24	LMW-24	LMW-25	LMW-25	LMW-25	LMW-29	LMW-29	LMW-30	LMW-30
Sample ID	SGVs	211 LMW-22	216_LMW-22-COD	204 LMW-23	203 LMW-24	207 LMW-24	218_LMW-24-COD	202 LMW-25	209 LMW-25	219_LMW-25-COD	208 LMW-29	220_LMW-29-COD	206 LMW-30	221_LMW-30-COD
Laboratory ID		20H0041-06	20H0202-01	20G1176-03	20G1176-02	20H0041-02	20H0202-03	20G1176-01	20H0041-04	20H0202-04	20H0041-03	20H0202-05	20H0041-01	20H0202-06
Sample Date		8/3/2020	8/6/2020	7/30/2020	7/30/2020	8/3/2020	8/6/2020	7/30/2020	8/3/2020	8/6/2020	8/3/2020	8/6/2020	8/3/2020	8/6/2020
Volatile Organic Compounds (µg/L)														
1,2,4,5-Tetramethylbenzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	NA	NA	0.65	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene (Mesitylene)	5	NA	NA	0.47 J	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Acetone	50	NA	NA	2.8 U	2 U	NA	NA	1 UJ	NA	NA	NA	NA	NA	NA
Benzene	1	NA	NA	0.2 U	0.36 J	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Carbon Disulfide	60	NA	NA	0.2 U	1.4	NA	NA	0.2 J	NA	NA	NA	NA	NA	NA
Chloroform	7	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Cyclohexane	~	NA	NA	0.35 J	1	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Ethylbenzene	5	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Isopropylbenzene (Cumene)	5	NA	NA	0.2 U	1.5	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
M,P-Xylene	5	NA	NA	0.5 U	0.5 U	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA
Methyl Acetate	~	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	50	NA	NA	0.2 U	0.2 U	NA	NA	0.2 U	NA	NA	NA	NA	NA	NA
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	~	NA	NA	0.2 U	0.2 UJ	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Methylcyclohexane	~	NA	NA	1.4 J	3.3	NA	NA	0.2 U	NA	NA	NA	NA	NA	NA
n-Butylbenzene	5	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
n-Propylbenzene	5	NA	NA	0.2 U	0.88	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
o-Xylene (1,2-Dimethylbenzene)	5	NA	NA	0.35 J	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
p-Cymene (p-Isopropyltoluene)	~	NA	NA	1.3	0.2 U	NA	NA	0.2 J	NA	NA	NA	NA	NA	NA
Sec-Butylbenzene	5	NA	NA	0.2 U	0.5	NA	NA	0.2 U	NA	NA	NA	NA	NA	NA
T-Butylbenzene	5	NA	NA	0.2 UJ	0.43 J	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Tert-Butyl Alcohol	~	NA	NA	0.5 UJ	0.5 UJ	NA	NA	0.5 UJ	NA	NA	NA	NA	NA	NA
Tert-Butyl Methyl Ether	10	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5	NA	NA	2.2	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Toluene	5	NA	NA	0.2 U	0.2 U	NA	NA	0.2 UJ	NA	NA	NA	NA	NA	NA
Total Xylenes	5	NA	NA	0.65 J	0.6 U	NA	NA	0.6 UJ	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (µg/L)														
1,4-Dioxane (P-Dioxane)	~	NA	NA	0.4 U	0.4 U	NA	NA	0.4 U	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	~	NA	NA	2.78 U	2.86 U	NA	NA	2.7 U	NA	NA	NA	NA	NA	NA
Acenaphthene	20	NA	NA	1.93	0.491	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Acenaphthylene	~	NA	NA	0.178	0.183	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Anthracene	50	NA	NA	1	0.16	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Benzo(a)Anthracene	0.002	NA	NA	**0.711**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene	0	NA	NA	**0.744**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Benzo(b)Fluoranthene	0.002	NA	NA	**0.456**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	~	NA	NA	0.433	0.0571 U	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene	0.002	NA	NA	**0.3**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl) Phthalate	5	NA	NA	0.556 U	0.571 U	NA	NA	0.541 U	NA	NA	NA	NA	NA	NA
Chrysene	0.002	NA	NA	**0.878**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Dibenz(a,h)Anthracene	~	NA	NA	0.256	0.0571 U	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Fluoranthene	50	NA	NA	1.63	0.114	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Fluorene	50	NA	NA	1.39	0.64	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)Pyrene	0.002	NA	NA	**0.267**	*0.0571* U	NA	NA	*0.0541* U	NA	NA	NA	NA	NA	NA
Naphthalene	10	NA	NA	4.98	0.171	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Phenanthrene	50	NA	NA	3.29	0.366	NA	NA	0.0541 U	NA	NA	NA	NA	NA	NA
Pyrene	50	NA	NA	1.99	0.103	NA	NA	0.108	NA	NA	NA	NA	NA	NA
Petroleum Hydrocarbons (µg/L)														
EPA Total Extractable Petroleum Hydrocarbons Range 9 To 40	~	2,040	NA	NA	NA	2,200	NA	NA	109 U	NA	190	NA	2,250	NA
Pesticides (µg/L)														
Alpha Chlordane	~	NA	NA	0.00444 U	0.00444 U	NA	NA	0.00444 U	NA	NA	NA	NA	NA	NA
Chlordane (alpha and gamma)	0.05	NA	NA	0.0222 U	0.0222 U	NA	NA	0.0222 U	NA	NA	NA	NA	NA	NA
Gamma-Chlordane	~	NA	NA	0.0111 U	0.0111 U	NA	NA	0.0111 U	NA	NA	NA	NA	NA	NA
Herbicides (µg/L)	~	NA	NA	ND	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (µg/L)	~	NA	NA	ND	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDEC	LMW-22	LMW-22	LMW-23	LMW-24	LMW-24	LMW-24	LMW-25	LMW-25	LMW-25	LMW-29	LMW-29	LMW-30	LMW-30
Sample ID	SGVs	211 LMW-22	216_LMW-22-COD	204 LMW-23	203 LMW-24	207 LMW-24	218_LMW-24-COD	202 LMW-25	209 LMW-25	219_LMW-25-COD	208 LMW-29	220_LMW-29-COD	206 LMW-30	221_LMW-30-COD
Laboratory ID		20H0041-06	20H0202-01	20G1176-03	20G1176-02	20H0041-02	20H0202-03	20G1176-01	20H0041-04	20H0202-04	20H0041-03	20H0202-05	20H0041-01	20H0202-06
Sample Date		8/3/2020	8/6/2020	7/30/2020	7/30/2020	8/3/2020	8/6/2020	7/30/2020	8/3/2020	8/6/2020	8/3/2020	8/6/2020	8/3/2020	8/6/2020
Inorganics (µg/L)														
Aluminum	~	NA	NA	3,140	208	NA	NA	131	NA	NA	NA	NA	NA	NA
Aluminum (Dissolved)	~	NA	NA	132	88.2	NA	NA	156	NA	NA	NA	NA	NA	NA
Antimony	3	NA	NA	1.4	1.11 U	NA	NA	1.11 U	NA	NA	NA	NA	NA	NA
Antimony (Dissolved)	3	NA	NA	1.11 U	1.11 U	NA	NA	1.11 U	NA	NA	NA	NA	NA	NA
Arsenic	25	NA	NA	19.3	2.89	NA	NA	2.93	NA	NA	NA	NA	NA	NA
Arsenic (Dissolved)	25	NA	NA	3.31	2	NA	NA	2.42	NA	NA	NA	NA	NA	NA
Barium	1000	NA	NA	185	205	NA	NA	76.2	NA	NA	NA	NA	NA	NA
Barium (Dissolved)	1000	NA	NA	124	165	NA	NA	81.8	NA	NA	NA	NA	NA	NA
Beryllium	3	NA	NA	0.333 U	0.333 U	NA	NA	0.333 U	NA	NA	NA	NA	NA	NA
Cadmium	5	NA	NA	1.25	0.556 U	NA	NA	0.556 U	NA	NA	NA	NA	NA	NA
Cadmium (Dissolved)	5	NA	NA	0.556 U	0.556 U	NA	NA	0.556 U	NA	NA	NA	NA	NA	NA
Calcium	~	NA	NA	275,000	136,000	NA	NA	260,000	NA	NA	NA	NA	NA	NA
Calcium (Dissolved)	~	NA	NA	263,000	157,000	NA	NA	291,000	NA	NA	NA	NA	NA	NA
Chromium, Hexavalent	50	NA	NA	10 U	10 U	NA	NA	10 U	NA	NA	NA	NA	NA	NA
Chromium, Total	50	NA	NA	10.8	5.56 U	NA	NA	5.56 U	NA	NA	NA	NA	NA	NA
Chromium, Total (Dissolved)	50	NA	NA	5.56 U	5.56 U	NA	NA	5.56 U	NA	NA	NA	NA	NA	NA
Chromium, Trivalent	~	NA	NA	10.8	10 U	NA	NA	10 U	NA	NA	NA	NA	NA	NA
Cobalt	~	NA	NA	4.44 U	4.44 U	NA	NA	4.44 U	NA	NA	NA	NA	NA	NA
Copper	200	NA	NA	73.8	22.2 U	NA	NA	28.3	NA	NA	NA	NA	NA	NA
Copper (Dissolved)	200	NA	NA	22.2 U	22.2 U	NA	NA	22.2 U	NA	NA	NA	NA	NA	NA
Cyanide	200	NA	NA	10 U	43.6	NA	NA	10 U	NA	NA	NA	NA	NA	NA
Iron	300	NA	NA	**8,640**	**2,560**	NA	NA	283	NA	NA	NA	NA	NA	NA
Iron (Dissolved)	300	NA	NA	**1,960**	278 U	NA	NA	278 U	NA	NA	NA	NA	NA	NA
Lead	25	NA	NA	**94.7**	6.87	NA	NA	5.56 U	NA	NA	NA	NA	NA	NA
Lead (Dissolved)	25	NA	NA	5.56 U	5.56 U	NA	NA	5.56 U	NA	NA	NA	NA	NA	NA
Magnesium	35000	NA	NA	**703,000**	**126,000**	NA	NA	**747,000**	NA	NA	NA	NA	NA	NA
Magnesium (Dissolved)	35000	NA	NA	**708,000**	**141,000**	NA	NA	**849,000**	NA	NA	NA	NA	NA	NA
Manganese	300	NA	NA	263	246	NA	NA	65.3	NA	NA	NA	NA	NA	NA
Manganese (Dissolved)	300	NA	NA	158	273	NA	NA	68.6	NA	NA	NA	NA	NA	NA
Mercury	0.7	NA	NA	0.2 U	0.2 U	NA	NA	0.2 U	NA	NA	NA	NA	NA	NA
Nickel	100	NA	NA	11.1 U	11.1 U	NA	NA	11.1 U	NA	NA	NA	NA	NA	NA
Potassium	~	NA	NA	233,000	50,100	NA	NA	248,000	NA	NA	NA	NA	NA	NA
Potassium (Dissolved)	~	NA	NA	241,000	55,000	NA	NA	256,000 D	NA	NA	NA	NA	NA	NA
Selenium	10	NA	NA	**202**	**47.3**	NA	NA	**211**	NA	NA	NA	NA	NA	NA
Selenium (Dissolved)	10	NA	NA	**198**	**40.8**	NA	NA	**186**	NA	NA	NA	NA	NA	NA
Silver	50	NA	NA	5.56 UJ	5.56 UJ	NA	NA	5.56 UJ	NA	NA	NA	NA	NA	NA
Sodium	20000	NA	NA	**5,740,000** D	**1,100,000**	NA	NA	**6,490,000** D	NA	NA	NA	NA	NA	NA
Sodium (Dissolved)	20000	NA	NA	**5,820,000** D	**1,220,000**	NA	NA	**6,960,000** D	NA	NA	NA	NA	NA	NA
Vanadium	~	NA	NA	13	11.1 U	NA	NA	11.1 U	NA	NA	NA	NA	NA	NA
Zinc	2000	NA	NA	184	27.8 U	NA	NA	27.8 U	NA	NA	NA	NA	NA	NA
Zinc (Dissolved)	2000	NA	NA	27.8 U	27.8 U	NA	NA	27.8 U	NA	NA	NA	NA	NA	NA
General Chemistry														
Alkalinity (As Calcium Carbonate)	~	610,000	NA	NA	NA	460,000	NA	NA	150,000	NA	480,000	NA	500,000	NA
Chloride (As Cl)	250000	**4,200,000** D	NA	NA	NA	**2,070,000** D	NA	NA	**19,500,000** D	NA	**11,100,000** D	NA	133,000 D	NA
COD-Chemical Oxygen Demand	~	NA	580,000 D	NA	NA	NA	310,000 D	NA	NA	2,100,000 D	NA	1,500,000 D	NA	98,000
Sulfate (As SO4)	250000	**331,000** D	NA	NA	NA	56,700 D	NA	NA	**364,000** D	NA	**640,000** D	NA	1,000 U	NA
Total Dissolved Solids	~	8,010,000	NA	NA	NA	3,590,000	NA	NA	23,500,000	NA	14,000,000	NA	994,000	NA
Total Organic Carbon	~	13,800	NA	NA	NA	10,600	NA	NA	5,570	NA	5,910	NA	8,090	NA

Notes provided on Page 7.

Table 2A
Remedial Action Work Plan
Groundwater Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

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 (herein collectively referenced as "NYSDEC SGVs").
2. Criterion comparisons for total xylenes and m,p-xylene are provided for reference. Promulgated NYSDEC SGVs are for o-xylene, m-xylene, and p-xylene.
3. Only detected analytes are shown in the table.
4. Detected analytical results above NYSDEC SGVs are bolded and shaded.
5. Analytical results with reporting limits (RL) above NYSDEC SGVs are italicized.
6. Sample Dup-3 is a duplicate sample of LMW-3 and sample 191 DUP-1 is a duplicate sample of 190 LMW-15.
7. ~ = Regulatory limit for this analyte does not exist
8. µg/l = micrograms per liter
9. NA = Not analyzed
10. ND = Not detected

Qualifiers:

D = The concentration reported is a result of a diluted sample.
J = The analyte was detected above the Method Detection Limit (MDL), but below the 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.
B = The analyte was found in the associated analysis batch blank.

Notes provided on Page 7.

Table 2B
Remedial Action Work Plan
Groundwater Sample Analytical Results Summary - Emerging Contaminants

28-90 Review Avenue
Long Island City, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location Sample ID Laboratory ID Sample Date	NYSDEC June 2021 Guidance Values	NYSDEC 1,4-Dioxane MCLs	LMW-15 190 LMW-15 20G1005-01 7/27/2020		LMW-15 191 DUP-1 20G1005-02 7/27/2020		LMW-16 192 LMW-16 20G1005-03 7/27/2020		LMW-17 195 LMW-17 20G1065-01 7/28/2020		LMW-18 197 LMW-18 20G1065-03 7/28/2020		LMW-19 196 LMW-19 20G1065-02 7/28/2020		LMW-20 198 LMW-20 20G1065-04 7/28/2020		LMW-21 199 LMW-21 20G1065-05 7/28/2020		LMW-22 200 LMW-22 20G1065-06 7/28/2020		LMW-23 204 LMW-23 20G1176-03 7/30/2020		LMW-24 203 LMW-24 20G1176-02 7/30/2020		LMW-25 202 LMW-25 20G1176-01 7/30/2020	
Semivolatile Organic Compounds (ng/L)																												
1,4-Dioxane (P-Dioxane)	~	1,000	400	U	400	U	400	U	400	U	400	U	620		400	U	400	U	400	U	400	U	400	U	400	U	400	U
Per and Polyfluoroalkyl Substances (ng/L)																												
Perfluorobutanesulfonic Acid (PFBS)	~	~	2.36		2.9		8.59		3.56		4.82		0.294	U	4.79		8.52		10.3		5.09		6.74		2.43			
Perfluorodecanoic acid (PFDA)	~	~	0.524	U	0.524	U	1.69	J	1.77	J	0.654	J	0.524	U	0.524	U	0.587	J	1.82	J	0.524	U	0.605	J	0.524	U		
Perfluoroheptanesulfonic acid (PFHpS)	~	~	0.415	U	0.415	U	0.415	U	0.415	U	0.415	U	0.424	J	0.415	U	0.415	U	0.415	U	0.415	U	1.2	J	0.415	U		
Perfluoroheptanoic acid (PFHpA)	~	~	6.89		7.06		8.25		5.44		23		5.36		11.5		15.8		21.4		6.3		24.2		4.12			
Perfluorohexanesulfonic Acid (PFHxS)	~	~	0.483	J	0.527	J	1.02	J	1.46	J	0.399	J	1.82	J	3.42		2.64		10.6		3.84		888	D	8			
Perfluorohexanoic Acid (PFHxA)	~	~	5.37		6.22		6.59		7.84		16.3		6.49		8.82		10.2		24.8		4.46		19.3		6.12			
Perfluorononanoic Acid (PFNA)	~	~	1	J	0.972	J	3.04		2.86		1.85	J	2.53		2.45		3.1		3.61		0.71	J	2.68		1.05	J		
Perfluorooctanesulfonamide (FOSA)	~	~	0.296	UJ	0.296	U	0.296	U	0.296	U	0.296	UJ	0.296	U	0.296	U	0.296	U	0.296	U	0.529	J	0.296	UJ	0.296	U		
Perfluorooctanesulfonic acid (PFOS)	10	~	3.27	J	2.91	J	**32.3**	J	**31.3**	J	0.292	U	**14.8**	J	**20.6**	J	5.89	J	**26.6**	J	4.8		**29.1**		5.34			
Perfluorooctanoic Acid (PFOA)	10	~	**16.5**		**16.5**		9.07		**14.3**		**24**		**25.5**		**47.3**		**60.8**		**61.8**		**20.7**		**66.9**		10			
Perfluoropentanoic Acid (PFPeA)	~	~	11.5		11.4		16.4		9.05	U	46.8		9.2	U	7.49	U	24.6		26.6		7.38	U	25		8.41	U		
Perfluorotetradecanoic Acid (PFTA)	~	~	0.651	J	0.692	J	0.531	U	0.531	U	0.592	J	0.619	J	0.531	U	0.531	U	0.531	U	0.651	J	0.531	UJ	0.531	U		
Perfluoroundecanoic Acid (PFUnA)	~	~	0.657	U	0.657	U	0.685	J	0.657	U	0.657	UJ	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U	0.657	U		
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2) (6:2FTS)	~	~	0.492	UJ	0.492	U	0.492	U	2.04	J	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U	0.492	U		
Total PFOA and PFOS	~	~	19.8		19.4		41.4		45.6		24		40.3		67.9		66.7		88.4		25.5		96		15.3			
Total PFAS	~	~	48		49.2		87.6		70.6		118		57.5		98.9		132		188		47.1		1,060		37.1			

Notes:

1. Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) (June 2021) and to the NYSDEC 1,4-Dioxane Maximum Contaminant Level (MCL) (August 2020).
2. Only detected analytes are shown in the table.
3. Detected analytical results above NYSDEC June 2021 Guidance Values are bolded and shaded.
4. Sample 191 DUP-1 is a duplicate sample of 190 LMW-15.
5. ~ = Regulatory limit for this analyte does not exist
6. ng/l = nanograms per liter

Qualifiers:

D = The concentration reported is a result of a diluted 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 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 3
Remedial Action Work Plan
Soil Vapor Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDOH Decision	Ambient-1		LSV-2		LSV-3		LSV-4		LSV-5		LSV-6		LSV-7		LSV-8	
Sample ID	Matrices Minimum	178 AMBIENT-1		LSV-2_112718		LSV-3_112718		LSV-4_112718		LSV-5_112718		LSV-6_112718		LSV-7_112718		LSV-8_112718	
Laboratory ID	Concentrations	20G0629-05		18K1021-10		18K1021-06		18K1021-11		18K1021-09		18K1021-05		18K1021-04		18K1021-07	
Sample Date		7/16/2020		11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/27/2018	
Sample Type		AA		SV		SV		SV		SV		SV		SV		SV	
Analyte		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organic Compounds (µg/m³)																	
1,1,1-Trichloroethane	100	0.41	U	6.15	D	4.52	D	0.853	U	0.86	U	0.837	U	0.84	U	0.778	U
1,2,4-Trichlorobenzene	~	0.56	U	1.1	U	1.12	U	1.16	U	1.17	U	1.14	U	1.14	U	1.06	U
1,2,4-Trimethylbenzene	~	0.59	D	19.6	D	14.7	D	8.38	D	9.45	D	17.8	D	16.4	D	6.24	D
1,2-Dichloroethane	~	0.3	U	0.6	U	0.609	U	0.633	U	0.638	U	0.621	U	0.623	U	0.577	U
1,3,5-Trimethylbenzene (Mesitylene)	~	0.37	U	5.32	D	3.92	D	2.92	D	2.56	D	4.9	D	4.62	D	1.96	D
2-Hexanone	~	0.62	U	10.3	D	26.4	D	1.28	U	1.29	U	32.7	D	19.7	D	1.17	U
4-Ethyltoluene	~	0.48	D	18.4	D	14.9	D	8.38	D	8.45	D	19.3	D	17.7	D	5.82	D
Acetone	~	4.1	D	53	D	193	D	9.59	D	29.5	D	206	D	86.5	D	62.3	D
Benzene	~	0.29	D	13.2	D	14	D	3.6	D	7.75	D	23.9	D	24.7	D	8.84	D
Carbon Disulfide	~	0.23	U	7.62	D	7.93	D	3.6	D	1.91	D	8.03	D	4.75	D	2.4	D
Carbon Tetrachloride	6	0.47	D	0.373	D	0.237	U	0.246	U	0.248	U	0.241	U	0.242	U	0.224	U
Chloroform	~	0.37	U	0.724	U	0.735	U	0.764	U	0.77	U	0.749	U	0.752	U	0.696	U
Chloromethane	~	1.3	D	0.306	U	0.311	U	0.323	U	0.325	U	0.317	U	0.318	U	0.294	U
Cyclohexane	~	0.26	U	2.4	D	1.14	D	37.5	D	8.79	D	2.43	D	3.55	D	38.1	D
Dichlorodifluoromethane	~	1.5	D	3.45	D	2.38	D	2.4	D	2.42	D	2.88	D	2.82	D	1.62	D
Ethyl Acetate	~	0.54	U	1.07	U	1.09	U	1.13	U	1.14	U	1.11	U	1.11	U	1.03	U
Ethylbenzene	~	0.33	U	12.9	D	12.7	D	3.33	D	4.86	D	15.1	D	14.5	D	5.26	D
Isopropanol	~	0.94	D	0.729	U	0.74	U	0.769	U	0.775	U	0.754	U	0.757	U	1.75	D
M,P-Xylene	~	0.95	D	45.4	D	49.4	D	17	D	22.1	D	58.1	D	54	D	19.3	D
Methyl Ethyl Ketone (2-Butanone)	~	0.53	D	41.6	D	107	D	10.6	D	11	D	131	D	70.4	D	28.5	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentano	~	0.31	U	26.5	D	0.617	U	0.641	U	0.646	U	0.628	U	0.631	U	0.584	U
Methyl Methacrylate	~	0.31	U	0.607	U	0.617	U	0.64	U	0.645	U	0.628	U	0.63	U	0.584	U
Methylene Chloride	100	0.6	D	1.03	U	1.05	U	1.09	U	1.09	U	1.07	U	1.07	U	0.991	U
n-Heptane	~	0.34	D	13.4	D	7.22	D	19.9	D	5.56	D	12.7	D	10.5	D	0.584	U
n-Hexane	~	0.37	D	33.6	D	18.5	D	57.3	D	12.1	D	38.7	D	34	D	29.7	D
o-Xylene (1,2-Dimethylbenzene)	~	0.33	D	14.4	D	14.5	D	6.11	D	6.36	D	15.9	D	14.3	D	5.39	D
Propylene	~	0.48	D	4.44	D	4.35	D	1.67	D	2.2	D	7.6	D	3.63	D	2.53	D
Styrene	~	0.32	U	0.758	D	0.642	U	0.933	D	1.01	D	0.653	U	0.656	D	0.668	D
Tetrachloroethene (PCE)	100	0.51	U	99.5	D	78	D	18.7	D	92.6	D	33.4	D	48.5	D	4.64	D
Tetrahydrofuran	~	0.44	U	17.8	D	0.888	U	26.6	D	0.93	U	0.905	U	0.908	U	0.841	U
Toluene	~	1.1	D	58.6	D	119	D	9.78	D	31.7	D	104	D	87.7	D	34	D
Trichloroethene (TCE)	6	0.1	U	0.478	D	0.202	U	0.21	U	0.212	U	0.206	U	0.207	U	0.192	U
Trichlorofluoromethane	~	1.3	D	39.4	D	4.99	D	6.68	D	2.83	D	9.22	D	10.2	D	4.97	D
Vinyl Acetate	~	0.26	UJ	0.522	U	0.53	U	0.551	U	0.555	U	0.54	U	0.542	U	10.6	D
Vinyl Chloride	6	0.096	U	0.379	U	0.385	U	0.4	U	0.403	U	0.392	U	0.394	U	0.365	U

Notes provided on Page 3.

Table 3
Remedial Action Work Plan
Soil Vapor Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Location	NYSDOH Decision	LSV-8		LSV-9		LSV-10		LSV-11		LSV-13		LSV-14		LSV-15		LSV-15	
Sample ID	Matrices Minimum	DUP-4_112718		LSV-9_112718		LSV-10_112718		LSV-11_112718		174 LSV-13		175 LSV-14		176 LSV-15		177 DUP-1	
Laboratory ID	Concentrations	18K1021-08		18K1021-03		18K1021-01		18K1021-02		20G0629-01		20G0629-02		20G0629-03		20G0629-04	
Sample Date		11/27/2018		11/27/2018		11/27/2018		11/27/2018		7/16/2020		7/16/2020		7/16/2020		7/16/2020	
Sample Type		SV		SV		SV		SV		SV		SV		SV		SV	
Analyte		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organic Compounds (µg/m³)																	
1,1,1-Trichloroethane	100	0.834	U	0.864	U	8.24	U	7.86	U	0.86	U	0.84	U	1.7	U	1.9	U
1,2,4-Trichlorobenzene	~	2.16	D	1.17	U	11.2	U	10.7	U	1.2	U	1.1	U	2.3	U	2.6	U
1,2,4-Trimethylbenzene	~	10.9	D	12.4	D	1,350	D	7.08	U	4.7	D	2	D	1.8	D	2	D
1,2-Dichloroethane	~	0.619	U	0.641	U	715	D	5.83	U	0.64	U	0.62	U	1.3	U	1.4	U
1,3,5-Trimethylbenzene (Mesitylene)	~	3.61	D	4.44	D	7.43	U	7.08	U	3.7	D	0.76	U	1.5	U	1.7	U
2-Hexanone	~	1.25	U	26.8	D	12.4	U	11.8	U	32	D	7.4	D	6.8	D	7.4	D
4-Ethyltoluene	~	10.4	D	11.8	D	1,960	D	7.08	U	6	D	1.6	D	1.8	D	1.9	D
Acetone	~	99	D	160	D	1,210	D	602	D	170	D	110	D	93	D	94	D
Benzene	~	10.6	D	25.9	D	4.83	U	4.6	U	50	D	2.2	D	2.7	D	2.6	D
Carbon Disulfide	~	3.14	D	7	D	4.71	U	4.49	U	7.5	D	1.8	D	2.2	D	2.5	D
Carbon Tetrachloride	6	0.24	U	0.249	U	2.38	U	2.27	U	0.25	U	**6.9**	D	0.49	U	0.55	U
Chloroform	~	0.747	U	0.773	U	7.38	U	7.04	U	11	D	0.75	U	1.5	U	1.7	U
Chloromethane	~	0.316	U	0.327	U	3.12	U	2.98	U	0.36	D	1.3	D	0.77	D	0.72	U
Cyclohexane	~	0.526	U	23.6	D	NA		4.96	U	3.5	D	0.69	D	1.1	U	1.2	U
Dichlorodifluoromethane	~	1.89	D	2.11	D	7.47	U	7.13	U	1.4	D	1.7	D	1.8	D	2.1	D
Ethyl Acetate	~	1.1	U	1.14	U	10.9	U	10.4	U	1.1	U	6.6	D	2.2	U	2.5	U
Ethylbenzene	~	8.5	D	9.76	D	2,280	D	163	D	5.8	D	4.6	D	2.6	D	2.9	D
Isopropanol	~	0.752	U	0.778	U	7.43	U	7.08	U	20	D	170	D	1.5	U	1.7	U
M,P-Xylene	~	31.9	D	33	D	5,660	D	414	D	17	D	17	D	8.2	D	8.7	D
Methyl Ethyl Ketone (2-Butanone)	~	46.5	D	92.3	D	4.46	U	4.25	U	60	D	24	D	17	D	18	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentano	~	0.626	U	0.648	U	6.19	U	5.9	U	0.65	U	3.8	D	1.3	U	1.4	U
Methyl Methacrylate	~	0.626	U	0.648	U	6.19	U	5.9	U	0.65	U	1.1	D	1.3	U	1.4	U
Methylene Chloride	100	1.06	U	1.1	U	10.5	U	10	U	1.1	U	2.6	D	2.2	U	2.4	U
n-Heptane	~	0.627	U	0.649	U	6.19	U	5.91	U	15	D	5.7	D	1.8	D	2.3	D
n-Hexane	~	42.6	D	33.8	D	10,600	D	5,650	D	37	D	5.7	D	2.3	D	2.6	D
o-Xylene (1,2-Dimethylbenzene)	~	9.1	D	9.97	D	2,400	D	98.2	D	2.5	D	4.1	D	1.6	D	1.8	D
Propylene	~	4.45	D	4.06	D	1,130	D	91.3	D	4.7	D	0.26	U	1.9	D	1.7	D
Styrene	~	1.11	D	0.809	D	6.44	U	6.14	U	0.67	U	1.1	D	1.3	U	1.5	U
Tetrachloroethene (PCE)	100	4.04	D	13.7	D	2.56	U	2.44	U	16	D	54	D	**790**	D	**850**	D
Tetrahydrofuran	~	0.902	U	16.2	D	8.91	U	8.5	U	0.93	U	0.91	U	1.8	U	2	U
Toluene	~	51.5	D	58.7	D	1,630	D	353	D	7.8	D	25	D	6.6	D	7.2	D
Trichloroethene (TCE)	6	0.205	U	0.213	U	2.03	U	1.94	U	0.21	U	0.21	U	0.42	U	0.47	U
Trichlorofluoromethane	~	6.53	D	7.2	D	8.49	U	8.1	U	2	D	2.8	D	5.4	D	5.9	D
Vinyl Acetate	~	0.538	U	4.9	D	5.32	U	5.07	U	0.56	UJ	0.54	UJ	1.1	UJ	1.2	UJ
Vinyl Chloride	6	0.391	U	0.405	U	**41.3**	D	3.68	U	0.2	U	0.2	U	0.4	U	0.44	U

Notes provided on Page 3.

Table 3
Remedial Action Work Plan
Soil Vapor Sample Analytical Results

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

Notes:

1. Soil vapor sample analytical results are compared to the minimum soil vapor concentrations at which mitigation is recommended as set forth in the New York State Department of Health (NYSDOH) October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York Decision Matrices for Sub-Slab Vapor and Indoor Air and subsequent updates (2017).
2. Ambient air sample analytical results are shown for reference only.
3. Only detected analytes are shown in the table.
4. Detected analytical results above the minimum soil vapor concentrations recommending mitigation are bolded and shaded.
5. Analytical results with reporting limits (RL) above the minimum soil vapor concentrations recommending mitigation are italicized.
6. Sample DUP-4_112718 is a duplicate of parent sample LSV-8_112718 and sample 177 DUP-1 is a duplicate of parent sample 176 LSV-15.
7. ~ = Regulatory limit for this analyte does not exist
8. ug/m3= micrograms per cubic meter
9. IA = Indoor Air
10. AA = Ambient Air
11. SV = Soil Vapor
12. SSV = Sub-slab Soil Vapor

Qualifiers:

D = The concentration reported is a result of a diluted 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.
J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.

Notes provided on Page 3.

Table 4A
Remedial Action Work Plan
Vacuum Enhanced Extraction Pilot Test Data Summary - VEE-01

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

SVE Test

Time (minutes)	VEE-01			Vacuum and PID Monitoring Points								Notes
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	LMW-26 Distance - southeast 18 ft		LMW-27 Distance - southwest 19 ft		LMW-25 Distance - north 24 ft		VEE-02 Distance - south 33 ft		
				Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	12.0	13.53	164.0	-0.02	5.24	-0.05	5.78	-0.03	5.33	-0.10	5.53	Start of SVE;
20	34.3	37.14	193.9	-0.03	5.16	-0.06	5.73	-0.03	5.62	-0.15	5.44	Step 2, increase vacuum
45	47.5	37.61	213.6	-0.02	5.21	-0.05	5.72	0.02	5.89	-0.14	5.43	Step 3, increase vacuum; Ends at 70 minutes

MPE Test

Time (minutes)	VEE-01			Vacuum and PID Monitoring Points								Notes
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	LMW-26 Distance - southeast 18 ft		LMW-27 Distance - southwest 19 ft		LMW-25 Distance - north 24 ft		VEE-02 Distance - south 33 ft		
				Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	129.8	48.83	111.9	0.00	5.11	0.00	5.90	-0.03	4.15	0.00	5.58	Start of MPE;
65	119.9	45.34	138.6	-0.03	6.07	-0.06	6.06	-0.05	3.70	-0.16	5.91	Decrease Vacuum
120	90.9	34.90	141.5	-0.02	5.82	0.01	5.92	-0.04	3.87	-0.15	5.77	Decrease Vacuum
175	69.7	19.97	139.5	-0.02	5.70	-0.04	5.90	-0.03	4.20	-0.08	5.71	Decrease Vacuum; Ends at 200

Initial Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-02	6.15	ND	16.5
LMW-25	4.85	ND	0.9
LMW-26	6.1	ND	0.6
LMW-27	5.9	ND	0.5

Post Testing Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-02	5.05	ND	2.2
LMW-25	5.8	ND	0.4
LMW-26	5.5	ND	0.1
LMW-27	5.65	ND	0.2

Notes:
DTW - depth to water
°F - degrees Fahrenheit
ft - feet
IWC - inches of water column vacuum
LMW - Langan monitoring well
MPE - multi-phase extraction
ND - not detected
PID - photoionization detector
ppm - parts per million
SCFM - standard cubic feet per minute
SVE - soil vapor extraction
VEE - vacuum enhanced extraction

Table 4B
Remedial Action Work Plan
Vacuum Enhanced Extraction Pilot Test Data Summary - VEE-02

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

SVE Test

Time (minutes)	VEE-02			Vacuum and PID Monitoring Points								Notes
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	LMW-26 Distance - north 16 ft		LMW-27 Distance - northwest 28 ft		VEE-01 Distance - north 33 ft		LMW-24 Distance - east 34 ft		
				Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	21.0	32.58	134.2	0.01	6.04	-0.01	7.03	-0.06	6.75	0	8.18	Start of SVE;
20	36.5	33.40	185.1	0.01	5.96	-0.02	7	-0.07	6.69	0	8.09	Step 2, increase vacuum
45	50.6	33.25	207.7	0	5.82	-0.02	6.9	-0.09	6.57	0	7.94	Step 3, increase vacuum; Ends at 70 minutes

MPE Test

Time (minutes)	VEE-02			Vacuum and PID Monitoring Points								Notes
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	LMW-26 Distance - north 16 ft		LMW-27 Distance - northwest 28 ft		VEE-01 Distance - north 33 ft		LMW-24 Distance - east 34 ft		
				Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	77.0	32.14	114.6	0.00	5.60	0.00	6.78	-0.03	6.41	0.00	7.77	Start of MPE;
60	94.4	37.50	126.4	-0.03	5.73	-0.01	6.91	-0.06	6.51	0.00	7.45	increase vacuum
120	167.5	44.10	130.4	0	5.65	-0.02	6.87	-0.11	6.46	-0.02	7.25	increase vacuum; Ends at 150 minutes

Initial Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-01	6.9	ND	15.5
LMW-24	5.68	ND	2.7
LMW-26	4.8	ND	0.9
LMW-27	6.6	ND	0.5

Post Testing Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-01	5.85	ND	1.8
LMW-24	4.72	ND	0.6
LMW-26	5.7	ND	0.3
LMW-27	6.05	ND	0.1

Notes:
DTW - depth to water
°F - degrees Fahrenheit
ft - feet
IWC - inches of water column vacuum
LMW - Langan monitoring well
MPE - multi-phase extraction
ND - not detected
PID - photoionization detector
ppm - parts per million
SCFM - standard cubic feet per minute
SVE - soil vapor extraction
VEE - vacuum enhanced extraction

Table 4C
Remedial Action Work Plan
Vacuum Enhanced Extraction Pilot Test Data Summary - VEE-03

28-90 Review Avenue
Queens, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

SVE Test

Time (minutes)	VEE-03			Vacuum and PID Monitoring Points						Notes
				LMW-31 Distance - west 20 ft		LMW-29 Distance - northwest 23 ft		LMW-23 Distance - northwest 64 ft		
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	35.7	29.28	148.3	-0.01	7.64	-0.07	7.75	-0.02	7.76	Start of SVE; Temp started at 41 and rose to 181.9
30	16.2	14.35	180.9	-0.02	7.50	-0.08	7.63	-0.03	7.6	Step 2, increase vacuum
55	6.0	9.57	181.8	-0.02	7.50	-0.10	7.6	-0.04	7.42	Step 3, increase vacuum; Ends at 70 minutes

MPE Test

Time (minutes)	VEE-03			Vacuum and PID Monitoring Points						Notes
				LMW-31 Distance - west 20 ft		LMW-29 Distance - northwest 23 ft		LMW-23 Distance - northwest 61.7 ft		
	Vacuum (IWC)	Flow Rate (SCFM)	Temperature (°F)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	Vacuum (IWC)	DTW (ft)	
0	57.7	30.60	105.5	-0.01	7.46	-0.10	7.40	-0.05	7.06	Start of MPE; Temp started at 101.4 and rose to 123.6
45	127.2	12.50	118.9	-0.02	7.60	-0.13	7.27	-0.06	6.77	Increase vacuum
75	167.5	9.50	128.3	-0.02	7.60	-0.13	7.25	-0.07	6.74	Increase vacuum
90	165.6	37.81	136.0	-0.04	8.06	-0.14	7.27	-0.08	6.70	Increase vacuum
120	75.4	48.06	131.5	-0.04	8.46	-0.15	7.37	-0.09	6.77	Decrease vacuum
180	126.2	41.59	132.8	-0.05	9.15	-0.14	7.57	-0.11	6.95	Increase vacuum

Initial Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-03	7.4	ND	0.3
LMW-23	6.8	ND	1.2
LMW-29	7.5	ND	0.6
LMW-31	7.7	ND	1.2

Post Testing Well Gauging

Well ID	Depth to Water (ft)	Depth to Product (ft)	PID (ppm)
VEE-03	8.9	ND	0.3
LMW-23	6	ND	0.4
LMW-29	7.2	ND	0.2
LMW-31	8.6	ND	0.2

Notes:
DTW - depth to water
°F - degrees Fahrenheit
ft - feet
IWC - inches of water column vacuum
LMW - Langan monitoring well
MPE - multi-phase extraction
ND - not detected
PID - photoionization detector
ppm - parts per million
SCFM - standard cubic feet per minute
SVE - soil vapor extraction
VEE - vacuum enhanced extraction

Table 5A
Remedial Action Work Plan
Soil Cleanup Objectives

28-90 Review Avenue
Queens, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100625601

Analyte	CAS Number	Track 1 SCOs (Unrestricted Use SCOs)	Track 4 SCOs (Commercial Restricted Use SCOs)
Volatile Organic Compounds (mg/kg)			
1,1,1-Trichloroethane	71-55-6	0.68	500
1,1-Dichloroethane	75-34-3	0.27	240
1,1-Dichloroethene	75-35-4	0.33	500
1,2,4-Trimethylbenzene	95-63-6	3.6	190
1,2-Dichlorobenzene	95-50-1	1.1	500
1,2-Dichloroethane	107-06-2	0.02	30
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	8.4	190
1,3-Dichlorobenzene	541-73-1	2.4	280
1,4-Dichlorobenzene	106-46-7	1.8	130
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	130
Acetone	67-64-1	0.05	500
Benzene	71-43-2	0.06	44
Carbon Tetrachloride	56-23-5	0.76	22
Chlorobenzene	108-90-7	1.1	500
Chloroform	67-66-3	0.37	350
Cis-1,2-Dichloroethene	156-59-2	0.25	500
Ethylbenzene	100-41-4	1	390
Hexachlorobenzene	118-74-1	0.33	6
Methyl Ethyl Ketone (2-Butanone)	78-93-3	0.12	500
Methylene Chloride	75-09-2	0.05	500
Naphthalene	91-20-3	12	500
n-Butylbenzene	104-51-8	12	500
n-Propylbenzene	103-65-1	3.9	500
Sec-Butylbenzene	135-98-8	11	500
T-Butylbenzene	98-06-6	5.9	500
Tert-Butyl Methyl Ether	1634-04-4	0.93	500
Tetrachloroethene (PCE)	127-18-4	1.3	150
Toluene	108-88-3	0.7	500
Total Xylenes	1330-20-7	0.26	500
Trans-1,2-Dichloroethene	156-60-5	0.19	500
Trichloroethene (TCE)	79-01-6	0.47	200
Vinyl Chloride	75-01-4	0.02	13
Semivolatile Organic Compounds (mg/kg)			
1,2-Dichlorobenzene	95-50-1	1.1	500
1,3-Dichlorobenzene	541-73-1	2.4	280
1,4-Dichlorobenzene	106-46-7	1.8	130
1,4-Dioxane (P-Dioxane)	123-91-1	0.1	130
2-Methylphenol (o-Cresol)	95-48-7	0.33	500
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	500
Acenaphthene	83-32-9	20	500
Acenaphthylene	208-96-8	100	500
Anthracene	120-12-7	100	500
Benzo(a)anthracene	56-55-3	1	5.6
Benzo(a)pyrene	50-32-8	1	1
Benzo(b)fluoranthene	205-99-2	1	5.6
Benzo(g,h,i)Perylene	191-24-2	100	500
Benzo(k)fluoranthene	207-08-9	0.8	56
Chrysene	218-01-9	1	56
Dibenz(a,h)anthracene	53-70-3	0.33	0.56
Dibenzofuran	132-64-9	7	350
Fluoranthene	206-44-0	100	500
Fluorene	86-73-7	30	500
Hexachlorobenzene	118-74-1	0.33	6
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	5.6
Naphthalene	91-20-3	12	500
Pentachlorophenol	87-86-5	0.8	6.7
Phenanthrene	85-01-8	100	500
Phenol	108-95-2	0.33	500
Pyrene	129-00-0	100	500

Notes provided on Page 2.

Table 5A
Remedial Action Work Plan
Soil Cleanup Objectives

28-90 Review Avenue
Queens, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100625601

Analyte	CAS Number	Track 1 SCOs (Unrestricted Use SCOs)	Track 4 SCOs (Commercial Restricted Use SCOs)
Pesticides (mg/kg)			
4,4'-DDD	72-54-8	0.0033	92
4,4'-DDE	72-55-9	0.0033	62
4,4'-DDT	50-29-3	0.0033	47
Aldrin	309-00-2	0.005	0.68
Alpha BHC (Alpha Hexachlorocyclohexane	319-84-6	0.02	3.4
Alpha Chlordane	5103-71-9	0.094	24
Alpha Endosulfan	959-98-8	2.4	200
Beta Bhc (Beta Hexachlorocyclohexane)	319-85-7	0.036	3
Beta Endosulfan	33213-65-9	2.4	200
Delta Bhc (Delta Hexachlorocyclohexane)	319-86-8	0.04	500
Dibenzofuran	132-64-9	7	350
Dieldrin	60-57-1	0.005	1.4
Endosulfan Sulfate	1031-07-8	2.4	200
Endrin	72-20-8	0.014	89
Gamma Bhc (Lindane)	58-89-9	0.1	9.2
Heptachlor	76-44-8	0.042	15
Herbicides (mg/kg)			
Silvex (2,4,5-Tp)	93-72-1	3.8	500
Polychlorinated Biphenyls (mg/kg)			
Total PCBs	1336-36-3	0.1	1
Inorganics (mg/kg)			
Arsenic	7440-38-2	13	16
Barium	7440-39-3	350	400
Beryllium	7440-41-7	7.2	590
Cadmium	7440-43-9	2.5	9.3
Chromium, Hexavalent	18540-29-9	1	400
Chromium, Trivalent	16065-83-1	30	1,500
Copper	7440-50-8	50	270
Total Cyanide	~	27	27
Lead	7439-92-1	63	1,000
Manganese	7439-96-5	1,600	10,000
Mercury	7439-97-6	0.18	2.8
Nickel	7440-02-0	30	310
Selenium	7782-49-2	3.9	1,500
Silver	7440-22-4	2	1,500
Zinc	7440-66-6	109	10,000

Notes:
1. Soil cleanup objectives taken from New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use and Commercial Restricted Use Soil Cleanup Objectives (SCOs).
2. Criterion comparisons for 3- & 4-methylphenol (m&p cresol) are provided for reference. Promulgated SCOs are for 3-methylphenol (m-cresol) and
3. ~ = Regulatory limit for this analyte does not exist
4. mg/kg = milligrams per kilogram

Notes provided on Page 2.

Table 5B
Remedial Action Work Plan
Soil Cleanup Objectives For Soil Reuse

28-90 Review Avenue
Queens, New York
NYSDEC BCP Site No.: C241236
Langan Project No.: 100625601

Analyte	CAS Number	Track 4 SCOs (Commercial Restricted Use SCOs)	NYSDEC Part 375 Protection of Groundwater SCOs
Volatile Organic Compounds (mg/kg)			
Benzene	71-43-2	44	0.06
n-Propylbenzene	103-65-1	500	3.9
Semivolatile Organic Compounds (mg/kg)			
Benzo(a)anthracene	56-55-3	5.6	1
Benzo(a)pyrene	50-32-8	1	22
Benzo(b)fluoranthene	205-99-2	5.6	1.7
Benzo(k)fluoranthene	207-08-9	56	1.7
Chrysene	218-01-9	56	1
Indeno(1,2,3-cd)pyrene	193-39-5	5.6	8.2
Inorganics (mg/kg)			
Manganese	7439-96-5	10,000	2,000
Selenium	7782-49-2	1,500	4

Notes:
1. Soil cleanup objectives taken from 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
2. mg/kg = milligrams per kilogram

Table 6
Remedial Action Work Plan
Track 4 Alternative I Remedial Cost Estimate

28-90 Review Avenue
Long Island City, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SITE PREPARATION COST
CONTRACTOR FEES					
1	Demolition of former buildings		Allowance		$ 350,000.00
2	Remedial Investigation Subcontractors (Drilling Contractor, Laboratory Contractor, etc.)				$ 150,000.00
3	Waste Characterization Subcontractors (Drilling Contractor, Laboratory Contractor, etc.)		Allowance		$ 15,000.00
4	Remediation Facilities, Mobilization, Demobilization, and Site Maintenance - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.		Allowance		$ 400,000.00
3	Management and Handling of Contaminated Material (Remedial Excavation and Grading)	20,000	CY	$ 30.00	$ 600,000.00
6	Off-Site Transport and Disposal of Historic Fill Material Unsuitable for Reuse *(Contingent)*	800	Ton	$ 35.00	$ 28,000.00
7	Off-Site Transport and Disposal of Petroleum-, SVOC-, and Metals-Impacted Soil	2,500	Ton	$ 60.00	$ 150,000.00
8	Dust, Odor, and Vapor Control	7	Months	$ 5,000.00	$ 35,000.00
9	Underground Storage Tank Removal	2	Each	$ 25,000.00	$ 50,000.00
10	Import of approved material for remedial excavation backfill and to raise Site grades	21,000	CY	$ 25.00	$ 525,000.00
11	Subslab Depressurization System (SSDS)	14,025	SF	$ 5.00	$ 70,125.00
12	Vapor Barrier Membrane	14,025	SF	$ 12.00	$ 168,300.00
13	Passive NAPL Recovery System Construction		Allowance		$ 680,000.00
14	Site Cover System (Building slab, parking garage slab, and driveway paving)	192,792	SF	$ 16.00	$ 3,084,672.00
				CONTRACTOR FEE ESTIMATED SUBTOTAL:	*$ 6,306,097.00*
				(15% CONTINGENCY OF CONTRACTOR FEE ESTIMATED SUBTOTAL):	*$ 945,914.55*
ENGINEERING FEES					
1	Waste Characterization		Allowance		$ 10,000.00
2	Construction Administration	7	Months	$ 10,000.00	$ 70,000.00
3	Construction Environmental Monitoring (includes community air monitoring program [CAMP] equipment rental)	7	Months	$ 35,000.00	$ 245,000.00
4	Special Inspection - Includes engineering special inspections for foundation construction.	7	Months	$ 35,000.00	$ 245,000.00
5	SSDS Design		Allowance		$ 30,000.00
6	Passive NAPL Recovery System Design		Allowance		$ 50,000.00
7	Documentation Endpoint Sampling	42	Samples	$ 1,200.00	$ 50,400.00
8	Documentation Endpoint Sampling - Hotspots	12	Samples	$ 100.00	$ 1,200.00
9	Legal Fees		Allowance		$ 100,000.00
10	Supplemental Remedial Investigation, Supplemental Remedial Investigation Report, Pilot Test Workplan, Pilot Testing, Remedial Action Work Plan (including CHASP)		Allowance		$ 125,000.00
11	Regulatory Agency Required Reporting (monthly, progress reports, Final Engineering Report [FER], Data Validation & EQuIS Submittals, CPP and fact sheets)		Allowance		$ 75,000.00
12	Operation and Maintenance - as required for the SSDS	10	years	16,000	$ 160,000.00
13	Operation and Maintenance - as required for the Passive NAPL Recovery System	10	years	230,000	$ 2,300,000.00
14	Institutional and Engineering Control Certification - Accounts for fees associated with annual on-site inspections and preparation and submission of annual Periodic Review Reports for ten years.	10	years	6,000	$ 60,000.00
				ENGINEERING FEE ESTIMATED SUBTOTAL:	*$ 3,521,600.00*
				(15% CONTINGENCY OF ENGINEERING FEE ESTIMATED SUBTOTAL):	*$ 528,240.00*
				ESTIMATED REMEDIATION COST - ALTERNATIVE I:	**$ 11,310,000.00**

General Assumptions and Conditions:
1. The density used for conversion from cubic yards to tons was 1.6 tons per cubic yard.
2. Remedial excavation depths were estimated using Remedial Investigation soil sample results and field observations.
3. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual fee. Utilization of this fee estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
4. A 7 month period is assumed for remediation and soil handling.
5. SVOC = semivolatile organic compound; RI = Remedial Investigation

Contractor Cost Assumptions:
-RAWP Item Nos. 6 and 7 - The unit rate provided reflects average disposal facility fees and may vary depending on time of year and facility.

-RAWP Item No. 8 - Cost estimate includes application of vapor/odor suppressing foam to open excavations and soil loaded into trucks. Labor provided by excavation, handling, and disposal contractor provided above; this line item estimate reflects material, freight, and equipment fees.
-RAWP Item No. 9 - The unit rate provided reflects removal of up to 2 undocumented USTs.
-RAWP Item No. 10 - Includes import of fill to raise grade beneath the building footprint such that the first floor elevation is above the FEMA floodplain elevation
-RAWP Item Nos. 11 and 12 - Assumes a SSDS and vapor barrier will be installed throughout the entire building footprint.

Engineering Fee Assumptions:
-Engineering Item No. 4 - Special inspections as required by the New York City Department of Building.

-Engineering Item No. 7 - The cost assumes collection of 35 samples plus quality assurance/quality control samples. Sample analysis will be for Part 375 VOCs, SVOCs, PCBs, pesticides, cyanide, metals including hexavalent and trivalent chromium, and per- and PFAS and 1,4-dioxane. Fee includes subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory and ASP Category B deliverables.

-Engineering Item No. 8 - The cost assumes collection of 10 samples plus quality assurance/quality control samples. Sample analysis will be for Part 375 metals. Fee includes subcontracted laboratory analysis by a NYSDOH ELAP-certified laboratory and ASP Category B deliverables.

-Engineering Item No. 14 - This task will be completed annually until such a time that the Environmental Easement is extinguished.

Table 7
Remedial Action Work Plan
Track 4 Alternative II Remedial Cost Estimate

28-90 Review Avenue
Long Island City, New York
Regulatory Site No.: C241236
Langan Project No.: 100652601

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	SITE PREPARATION COST
CONTRACTOR FEES					
1	Demolition of former buildings		Allowance		$ 350,000.00
2	Remedial Investigation Subcontractors (Drilling Contractor, Laboratory Contractor, etc.)				$ 150,000.00
3	Waste Characterization Subcontractors (Drilling Contractor, Laboratory Contractor, etc.)		Allowance		$ 15,000.00
4	Remediation Facilities, Mobilization, Demobilization, and Site Maintenance - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.		Allowance		$ 400,000.00
3	Management and Handling of Contaminated Material (Remedial Excavation and Grading)	20,000	CY	$ 30.00	$ 600,000.00
6	Off-Site Transport and Disposal of Historic Fill Material Unsuitable for Reuse *(Contingent)*	800	Ton	$ 35.00	$ 28,000.00
7	Off-Site Transport and Disposal of Petroleum-, SVOC-, and Metals-Impacted Soil	4,000	Ton	$ 60.00	$ 240,000.00
8	Dust, Odor, and Vapor Control	7	Months	$ 5,000.00	$ 35,000.00
9	Underground Storage Tank Removal	2	Each	$ 25,000.00	$ 50,000.00
10	Import of approved material for remedial excavation backfill and to raise Site grades	21,000	CY	$ 25.00	$ 525,000.00
11	Subslab Depressurization System (SSDS)	14,025	SF	$ 5.00	$ 70,125.00
12	Vapor Barrier Membrane	14,025	SF	$ 12.00	$ 168,300.00
13	ISS System Construction		Allowance		$ 3,800,000.00
14	Site Cover System (Building slab, parking garage slab, and driveway paving)	192,792	SF	$ 16.00	$ 3,084,672.00
				CONTRACTOR FEE ESTIMATED SUBTOTAL:	*$ 9,516,097.00*
				(15% CONTINGENCY OF CONTRACTOR FEE ESTIMATED SUBTOTAL):	*$ 1,427,414.55*
ENGINEERING FEES					
1	Waste Characterization		Allowance		$ 10,000.00
2	Construction Administration	7	Months	$ 10,000.00	$ 70,000.00
3	Construction Environmental Monitoring (includes community air monitoring program [CAMP] equipment rental)	7	Months	$ 35,000.00	$ 245,000.00
4	Special Inspection - Includes engineering special inspections for foundation construction.	7	Months	$ 35,000.00	$ 245,000.00
5	SSDS Design		Allowance		$ 30,000.00
6	ISS System Technical Design		Allowance		$ 260,000.00
7	Documentation Endpoint Sampling	42	Samples	$ 1,200.00	$ 50,400.00
8	Documentation Endpoint Sampling - Hotspots	12	Samples	$ 100.00	$ 1,200.00
9	Legal Fees		Allowance		$ 100,000.00
10	Supplemental Remedial Investigation, Supplemental Remedial Investigation Report, Pilot Test Workplan, Pilot Testing, Remedial Action Work Plan (including CHASP)		Allowance		$ 125,000.00
11	Regulatory Agency Required Reporting (monthly, progress reports, Final Engineering Report [FER], Data Validation & EQuIS Submittals, CPP and fact sheets)		Allowance		$ 75,000.00
12	Operation and Maintenance - as required for the SSDS	10	years	16,000	$ 160,000.00
13	Operation and Maintenance - as required for the ISS	10	years	120,000	$ 1,200,000.00
14	Institutional and Engineering Control Certification - Accounts for fees associated with annual on-site inspections and preparation and submission of annual Periodic Review Reports for ten years.	10	years	6,000	$ 60,000.00
				ENGINEERING FEE ESTIMATED SUBTOTAL:	*$ 2,631,600.00*
				(15% CONTINGENCY OF ENGINEERING FEE ESTIMATED SUBTOTAL):	*$ 394,740.00*
				ESTIMATED REMEDIATION COST - ALTERNATIVE II:	**$ 13,970,000.00**

General Assumptions and Conditions:
1. The density used for conversion from cubic yards to tons was 1.6 tons per cubic yard.
2. Remedial excavation depths were estimated using Remedial Investigation soil sample results and field observations.
3. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual fee. Utilization of this fee estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
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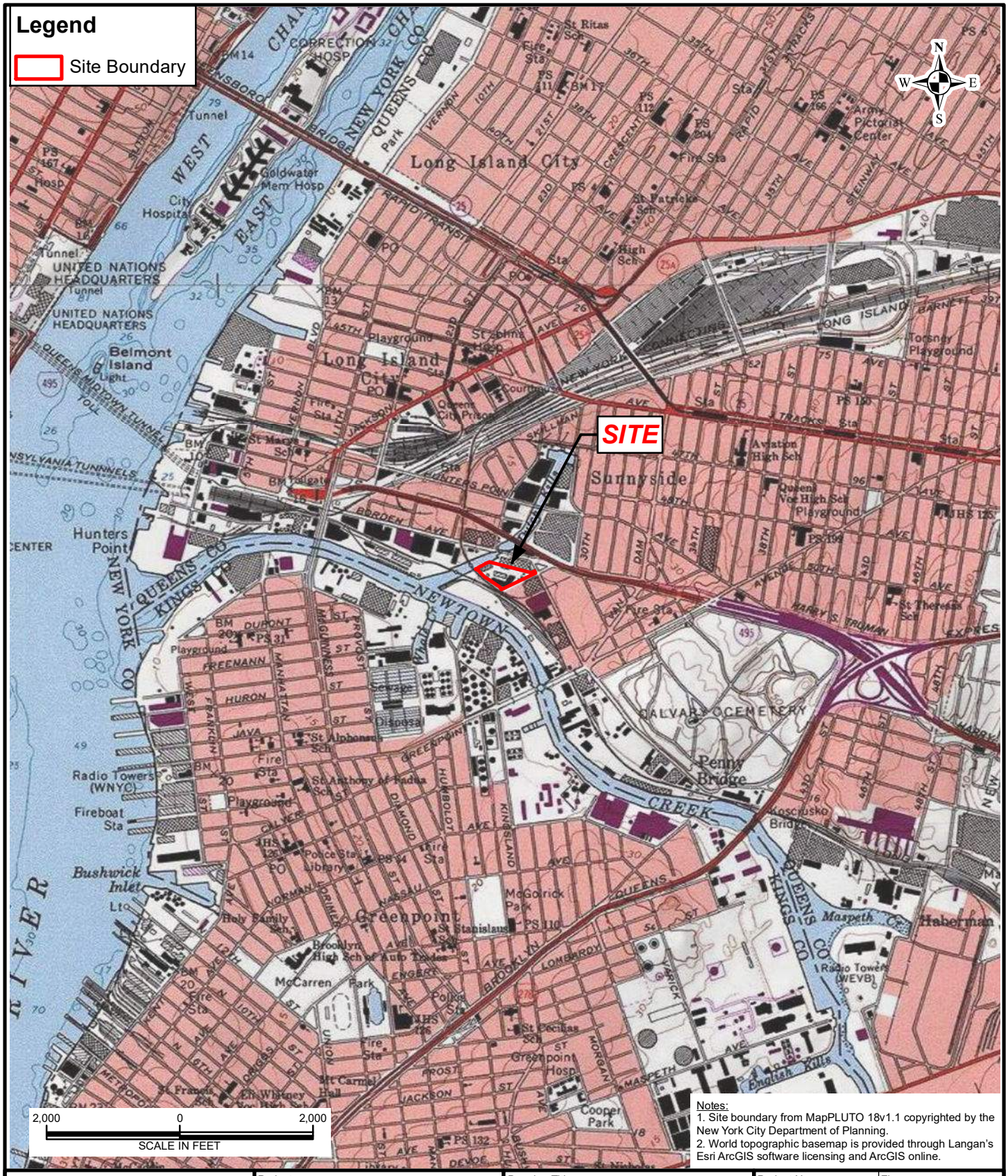
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FIGURES



Notes:
1. Site boundary from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
2. World topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.

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Langan International LLC
Collectively known as Langan

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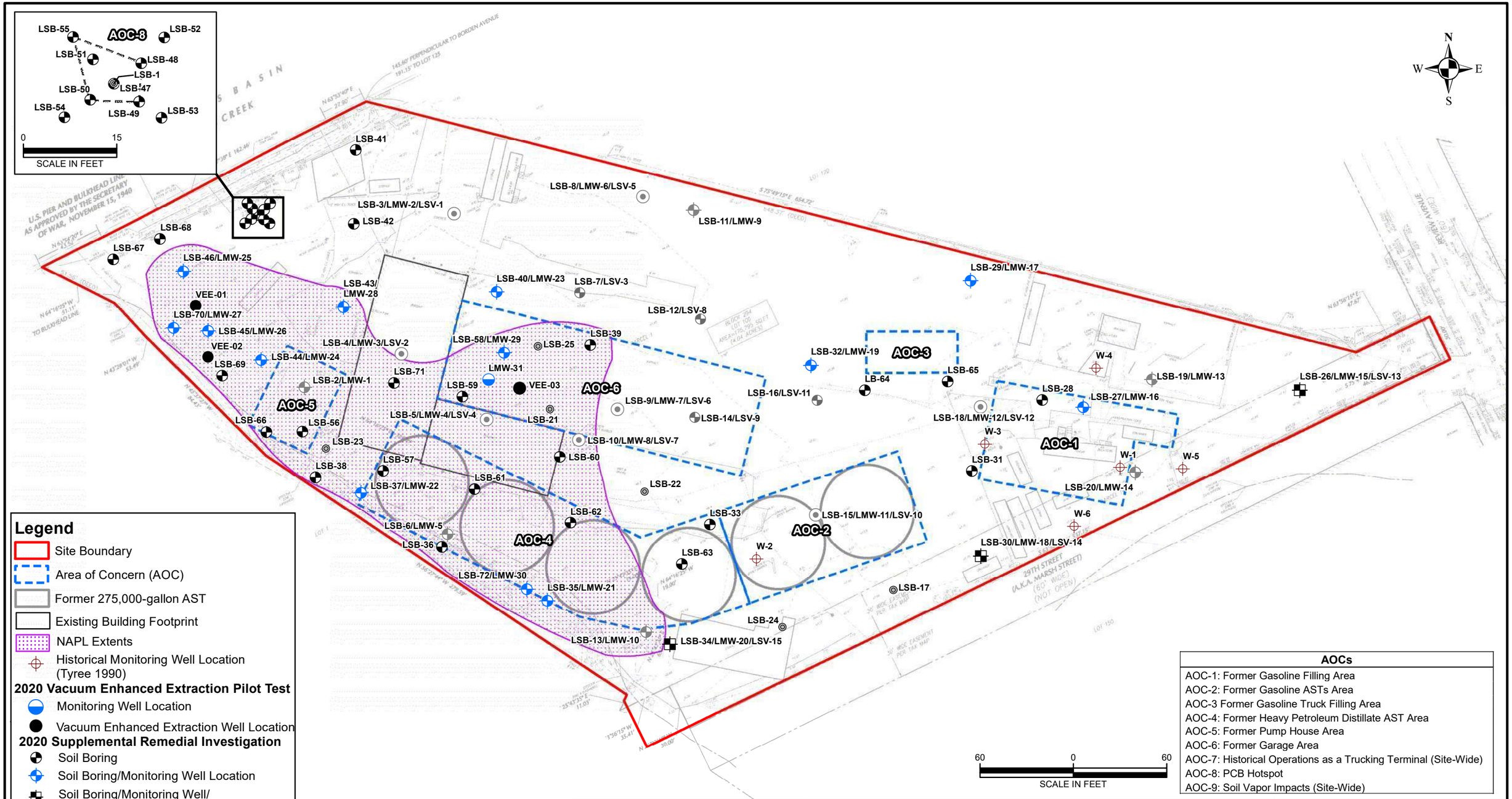
Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
USGS SITE LOCATION MAP

Project No. 100652601	Figure 1
Date 1/8/2021	
Scale 1"=2,000'	
Drawn By AR	
Last Revised 1/22/2021	

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 1 - Site Location Map1.mxd Date: 1/22/2021 User: ibaker Time: 1:36:27 PM



Legend

- Site Boundary
- Area of Concern (AOC)
- Former 275,000-gallon AST
- Existing Building Footprint
- NAPL Extents
- Historical Monitoring Well Location (Tyree 1990)

2020 Vacuum Enhanced Extraction Pilot Test

- Monitoring Well Location
- Vacuum Enhanced Extraction Well Location

2020 Supplemental Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well Location
- Soil Boring/Monitoring Well/ Soil Vapor Sampling Location

2018 Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well/ Soil Vapor Sampling Location
- Soil Boring/Soil Vapor Sampling Location
- Soil Boring/Monitoring Well Location

AOCs
AOC-1: Former Gasoline Filling Area
AOC-2: Former Gasoline ASTs Area
AOC-3 Former Gasoline Truck Filling Area
AOC-4: Former Heavy Petroleum Distillate AST Area
AOC-5: Former Pump House Area
AOC-6: Former Garage Area
AOC-7: Historical Operations as a Trucking Terminal (Site-Wide)
AOC-8: PCB Hotspot
AOC-9: Soil Vapor Impacts (Site-Wide)

Notes:
1. Basemap from "Topographic, Boundary and Utility Survey" by Langan, signed 3/8/2019.
2. Langan environmental boring locations are approximate and based on geolocation with a Trimble Geo 7x Handheld GNSS System.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
4. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map.
5. Historic Monitoring Well Locations obtained from Tyree Brothers Environmental Services Inc., "AA Truck Rental" dated 06/1990.

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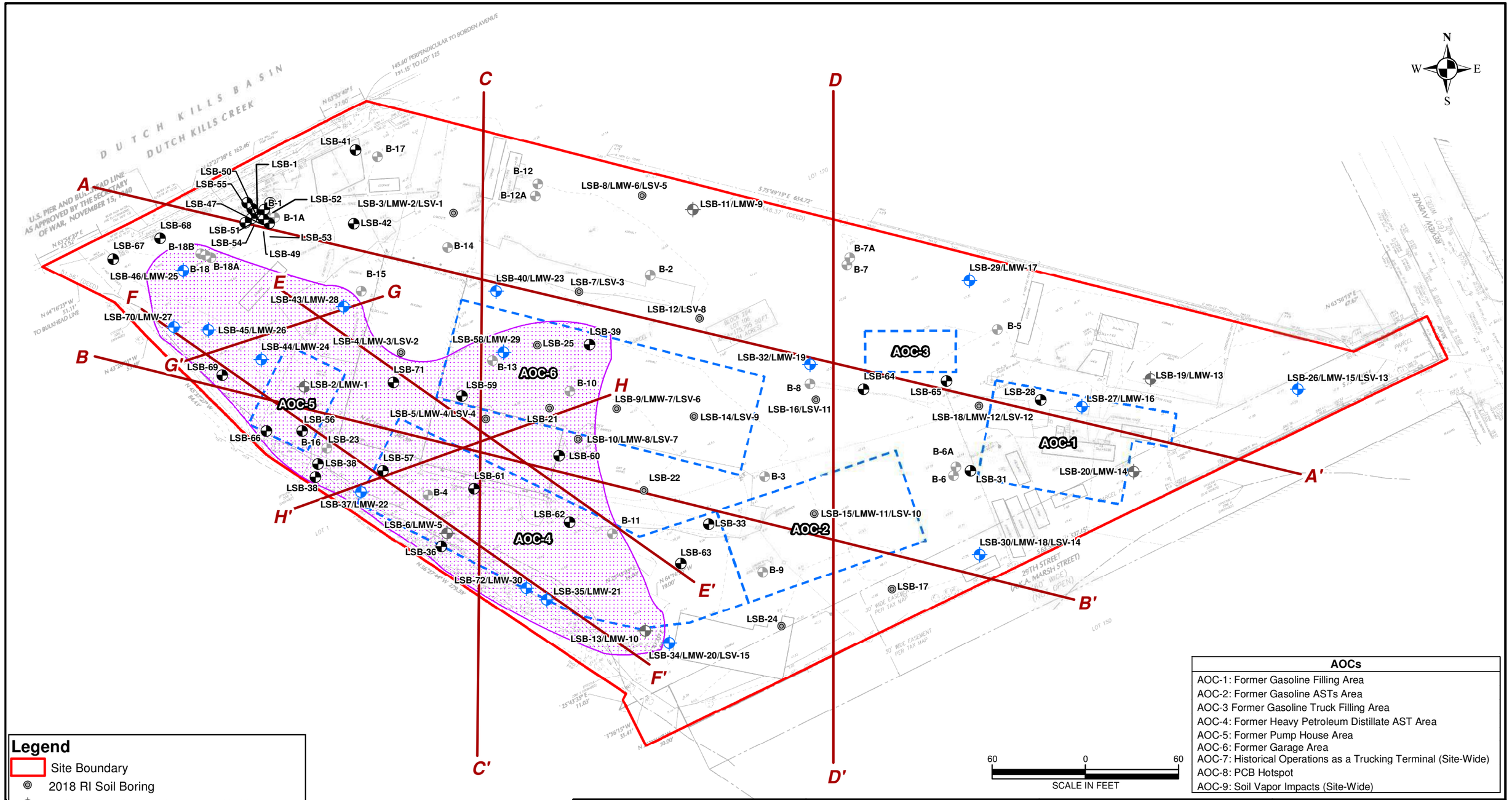
Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
SITE PLAN

Project No.	Figure
100652601	2
Date: 1/8/2021	
Scale: 1"=60'	
Drawn By: IHB	
Last Revised: 1/22/2021	

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 2 - Site Plan.mxd Date: 1/22/2021 User: ibaker Time: 3:25:13 PM



Legend

- Site Boundary
- 2018 RI Soil Boring
- 2018 RI Soil Boring/Monitoring Well Location
- Langan Geotechnical Boring Location
- 2020 SRI Soil Boring
- 2020 SRI Soil Boring/Monitoring Well Location
- Area of Concern (AOC)
- NAPL Impacts
- Cross Sectional Profile

Notes:
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2. Langan environmental boring locations are approximate and based on geolocation with a Trimble Geo 7x Handheld GNSS System.
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AOCs
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AOC-2: Former Gasoline ASTs Area
AOC-3 Former Gasoline Truck Filling Area
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AOC-5: Former Pump House Area
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AOC-8: PCB Hotspot
AOC-9: Soil Vapor Impacts (Site-Wide)

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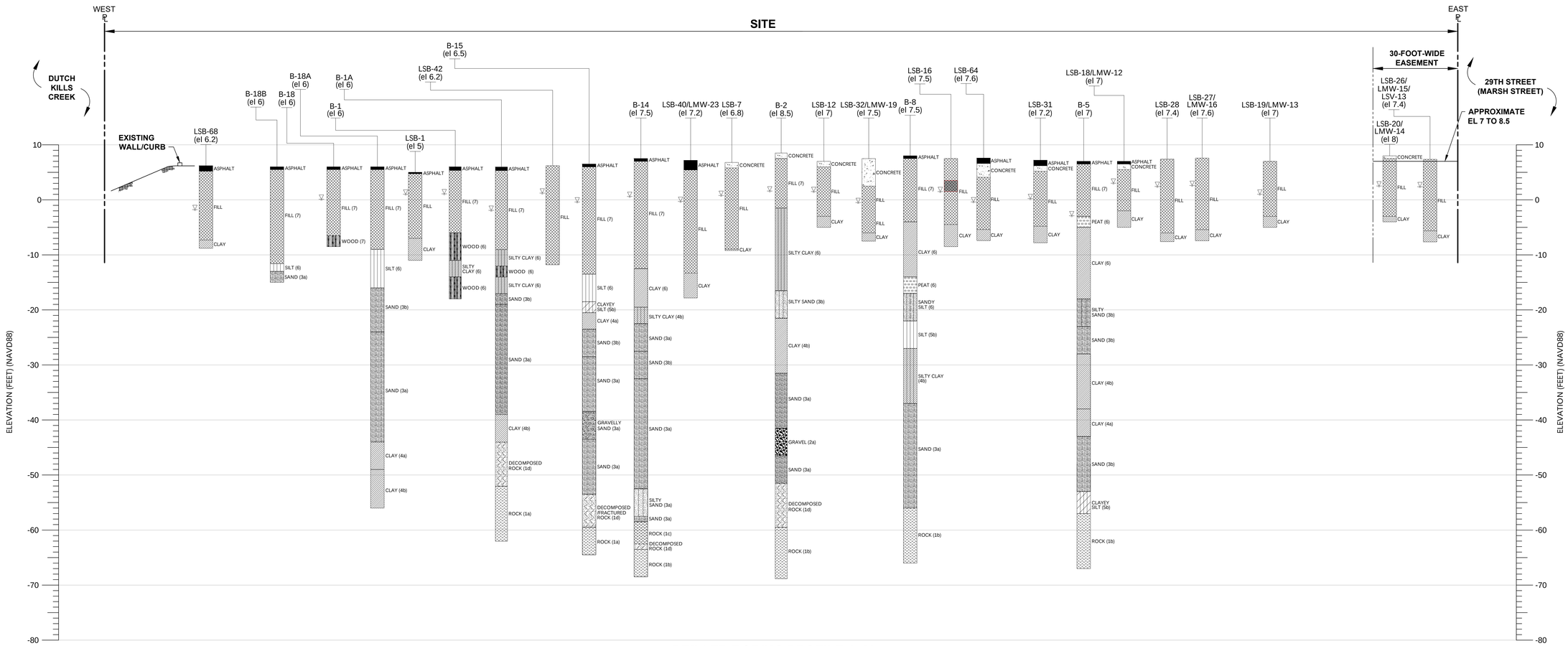
Project
28-90 REVIEW AVENUE
NYSDEC BCP SITE No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
SUBSURFACE PROFILE MAP KEY

Project No.	100652601
Date	1/22/2021
Scale	1"=60'
Drawn By	ATR
Last Revised	1/25/2021
Figure	3A

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 3A - Subsurface Profile Map Key.mxd Date: 1/25/2021 User: aruane Time: 12:58:04 PM



DRILLED BORING PROFILE A-A'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING

NOTES:

1. THIS PROFILE SHOWS GENERALIZED SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS. FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED, SEE BORING LOGS INCLUDED IN ATTACHMENT B.
2. ALL BORING LOCATIONS ARE APPROXIMATE. GROUND SURFACE ELEVATIONS ARE INFERRED FROM FROM "TOPOGRAPHIC BOUNDARY AND UTILITY," PREPARED BY LANGAN, SIGNED 3/8/2019.
3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.
4. BORINGS B-1 THROUGH B-4 WERE PERFORMED BETWEEN 14 AND 20 JUNE 2017 AND BORINGS B-5 THROUGH B-18 WERE PERFORMED BETWEEN 20 JUNE AND 13 JULY 2018 BY CRAIG GEOTECHNICAL DRILLING COMPANY, INC.UNDER THE FULL TIME INSPECTION OF LANGAN.
5. ENVIRONMENTAL SOIL BORINGS LSB-1 THROUGH LSB-25 WERE COMPLETED BETWEEN 19 AND 21 NOVEMBER 2018 AS PART OF THE 2018 REMEDIAL INVESTIGATION AND ENVIRONMENTAL SOIL BORINGS LSB-26 THROUGH LSB-72 WERE COMPLETED BETWEEN 7 AND 16 JULY 2020 AS PART OF THE 2020 REMEDIAL INVESTIGATION.

8 0 4 8
VERTICAL SCALE IN FEET

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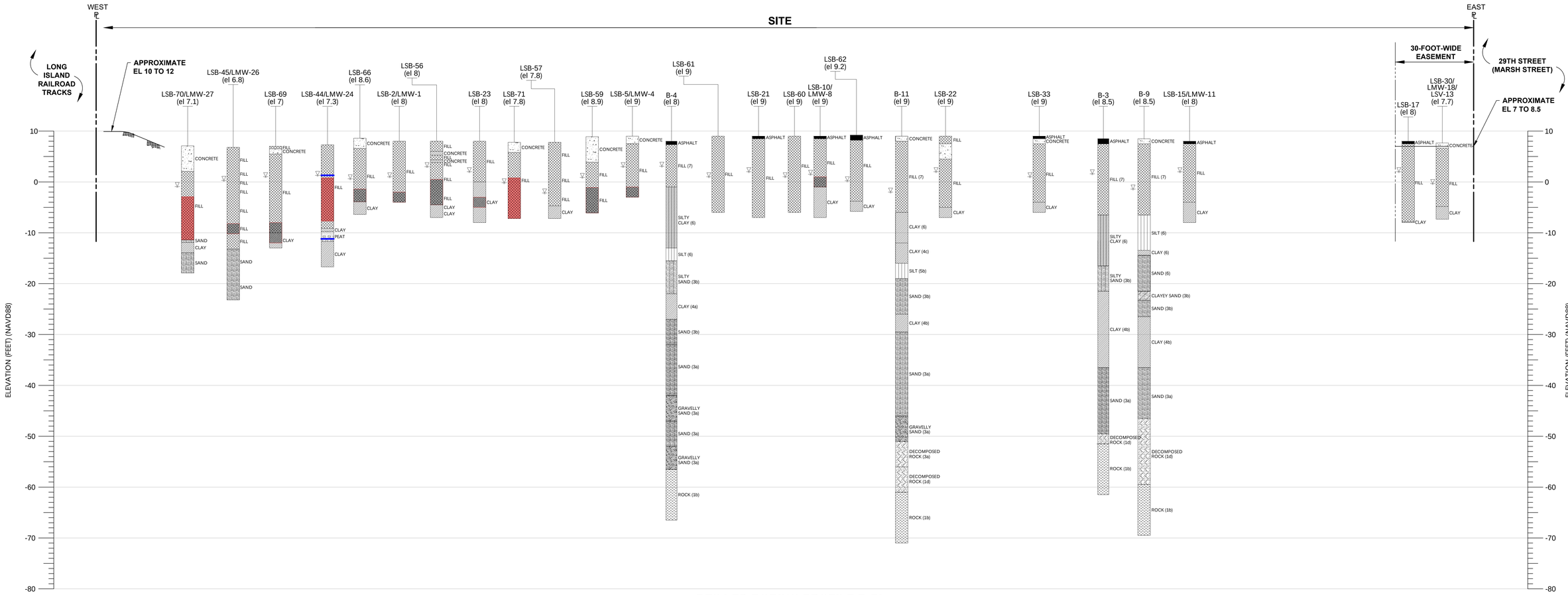
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Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	DRILLED BORING PROFILE A-A'
Project No.	100652601
Date	01/22/2021
Drawn By	AC
Checked By	AB
Drawing No.	3B

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LANGAN
PROJECT NO. ########



DRILLED BORING PROFILE B-B'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING
	PRODUCT OBSERVED DURING MONITORING WELL GAUGING

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8 0 4 8
VERTICAL SCALE IN FEET

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Project
28-90 REVIEW AVENUE
NYSDEC BCP SITE No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY **NEW YORK**

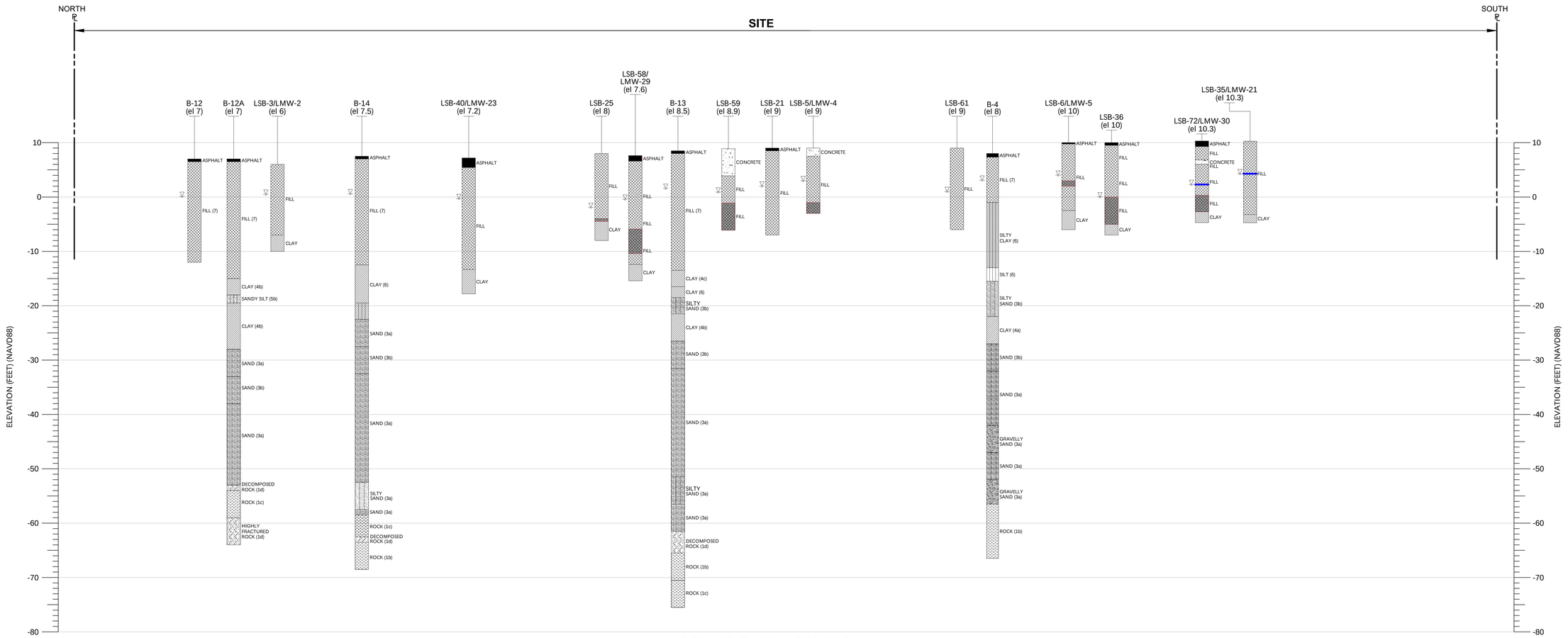
Drawing Title
DRILLED BORING PROFILE B-B'

Project No. **100652601**
Date **01/22/2021**
Drawn By **AC**
Checked By **AB**
Drawing No. **3C**

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LANGAN
PROJECT NO. ########



DRILLED BORING PROFILE C-C'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
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8 0 4 8
VERTICAL SCALE IN FEET

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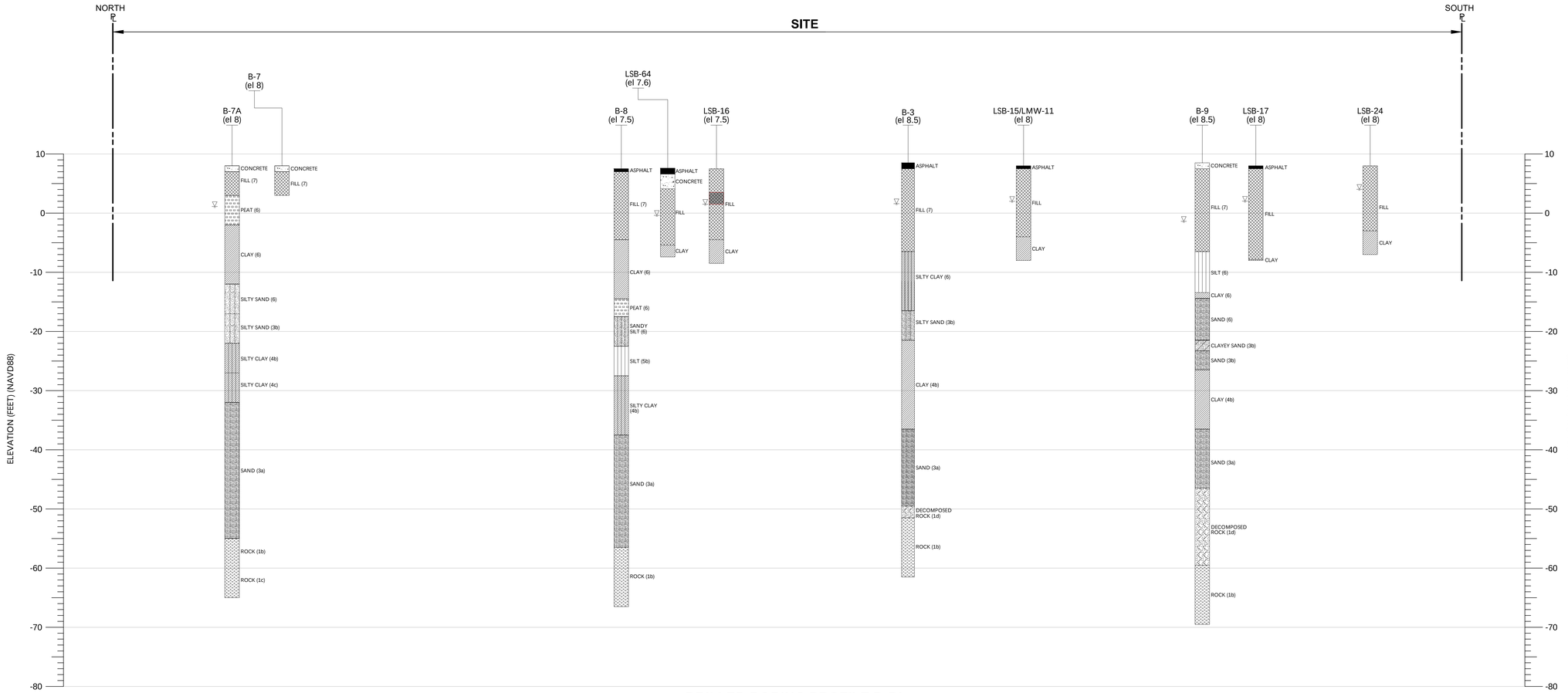
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Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	DRILLED BORING PROFILE C-C'
Project No.	100652601
Date	01/22/2021
Drawn By	AC
Checked By	AB
Drawing No.	3D

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PROJECT NO. ########



DRILLED BORING PROFILE D-D'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING

NOTES:

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8 0 4 8
VERTICAL SCALE IN FEET

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	DRILLED BORING PROFILE D-D'
Project No.	100652601
Date	01/22/2021
Drawn By	AC
Checked By	AB
Drawing No.	3E

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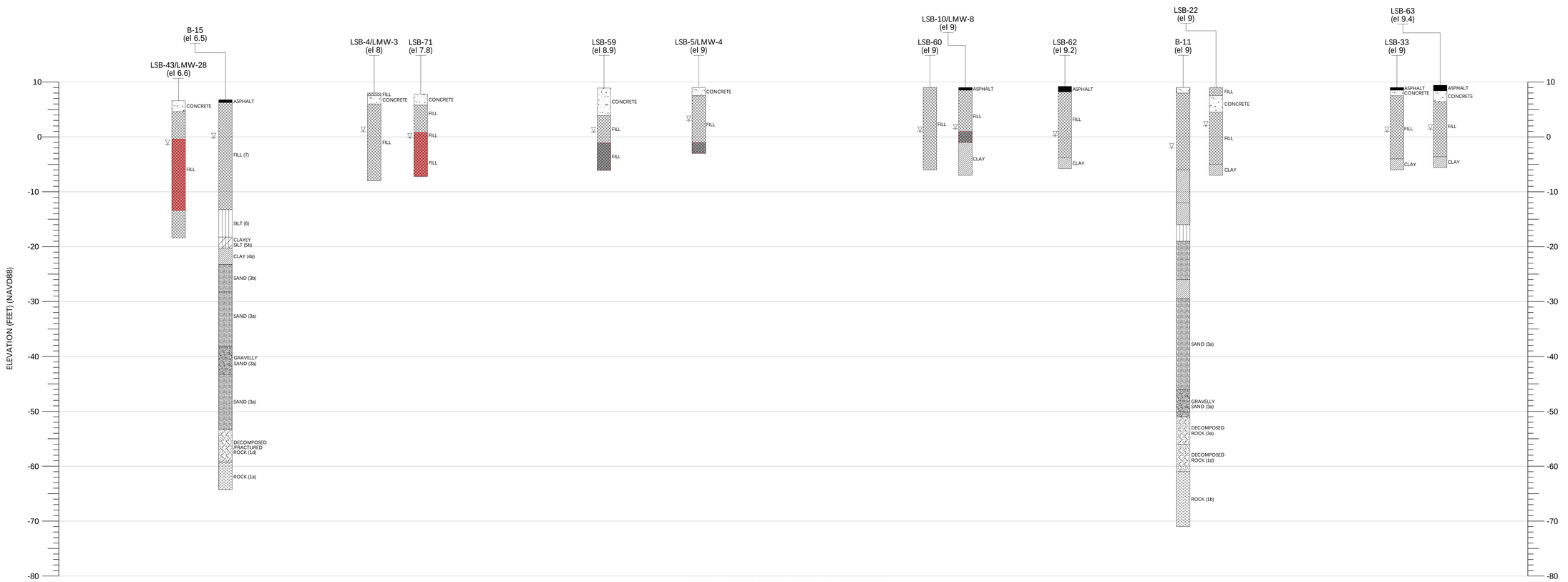
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PROJECT NO. ########

WEST

SITE

EAST



DRILLED BORING PROFILE E-E'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING

NOTES:

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8 0 4 8
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Project
28-90 REVIEW AVENUE
NYSDEC BCP SITE No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
DRILLED BORING PROFILE E-E'

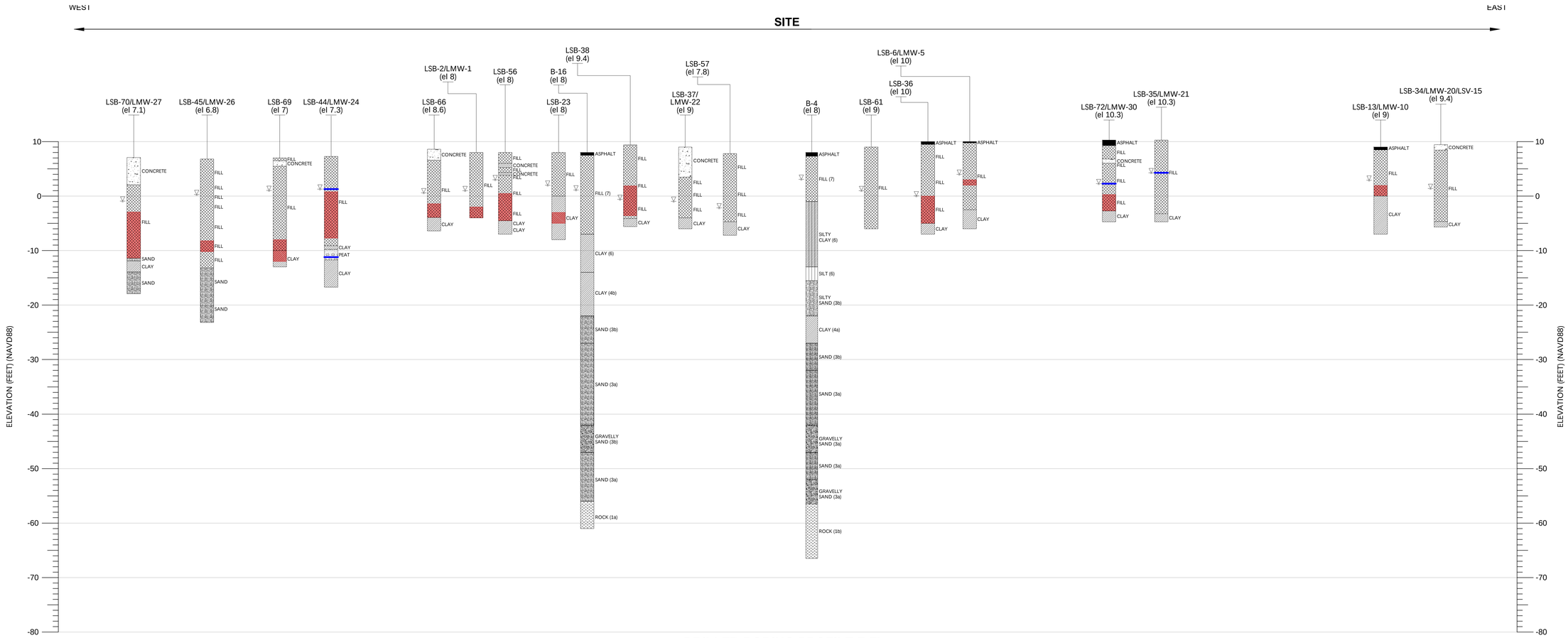
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Date	01/22/2021
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Drawing No. 3F

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LANGAN
PROJECT NO. ########



DRILLED BORING PROFILE F-F'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING
	PRODUCT OBSERVED DURING MONITORING WELL GAUGING

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8 0 4 8
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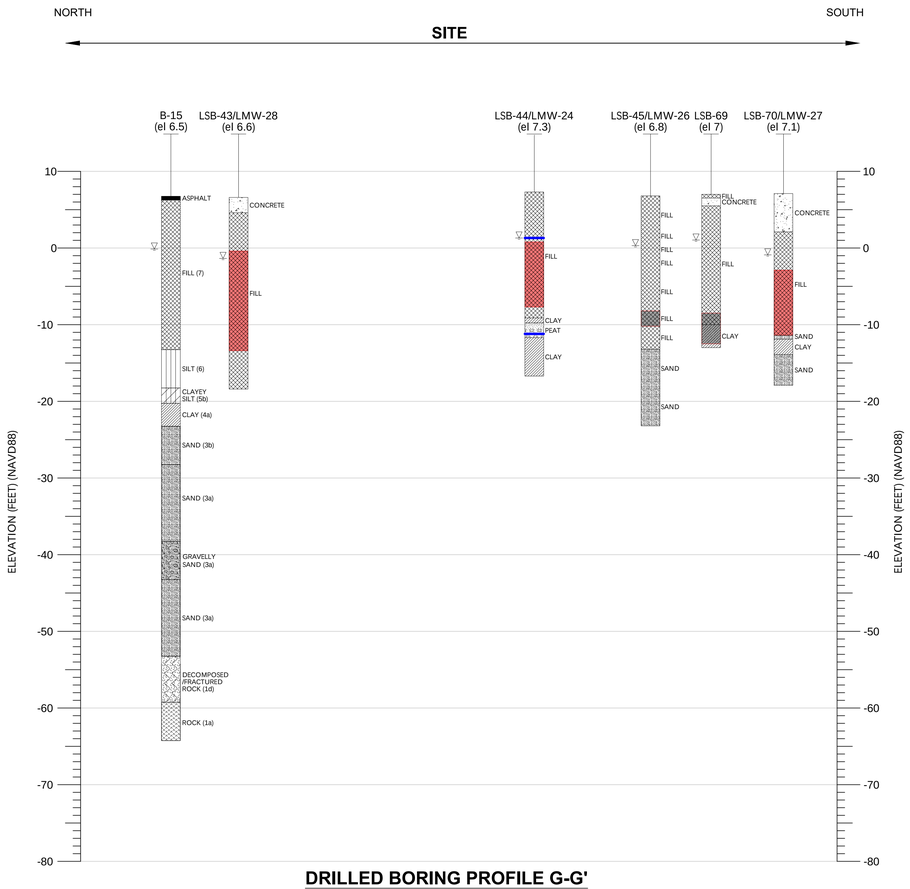
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Drawing Title	DRILLED BORING PROFILE F-F'
Project No.	100652601
Date	01/22/2021
Drawn By	AC
Checked By	AB
Drawing No.	3G

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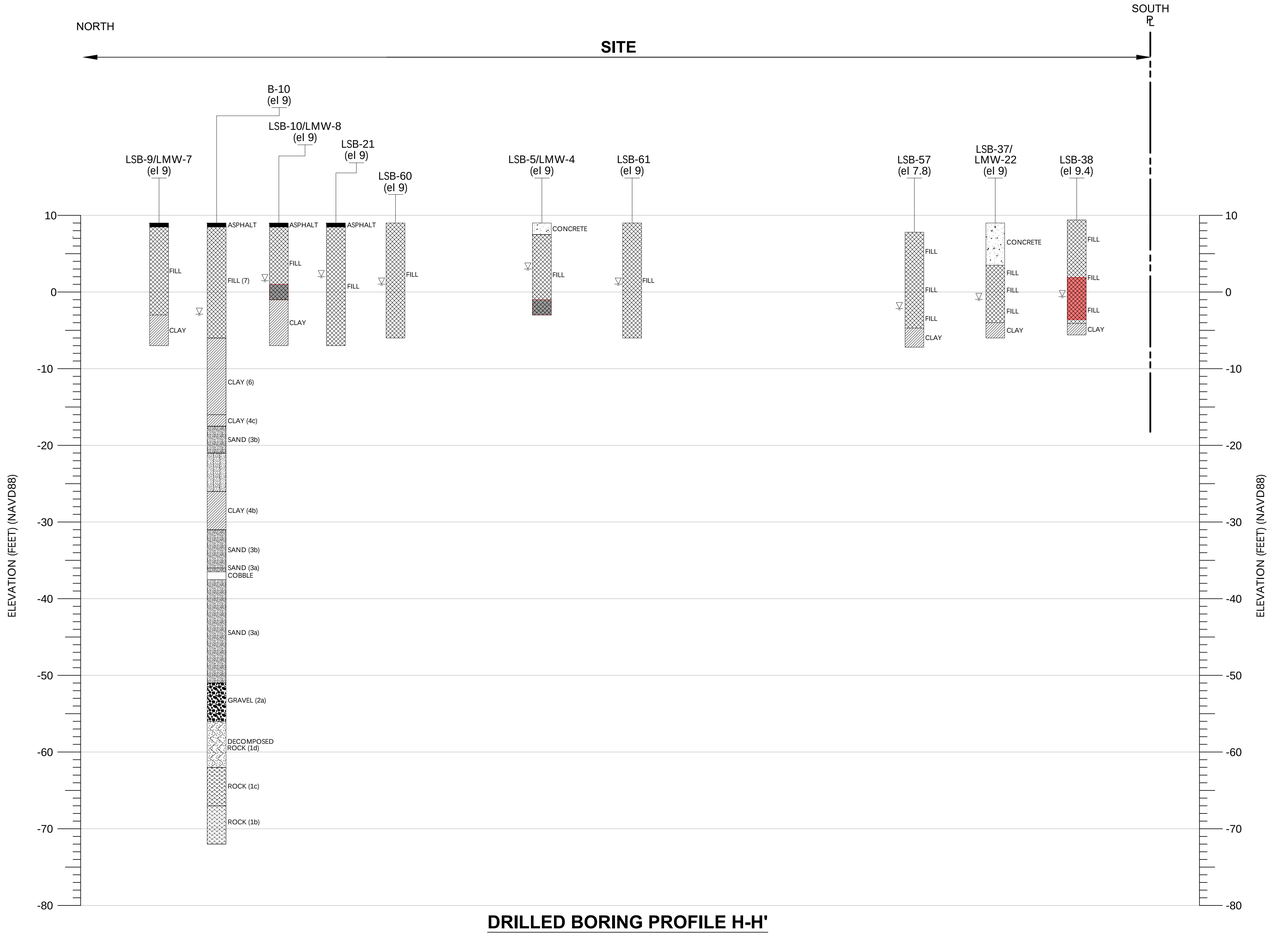
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LANGAN
PROJECT NO. ########



DRILLED BORING PROFILE G-G'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE



DRILLED BORING PROFILE H-H'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:



LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
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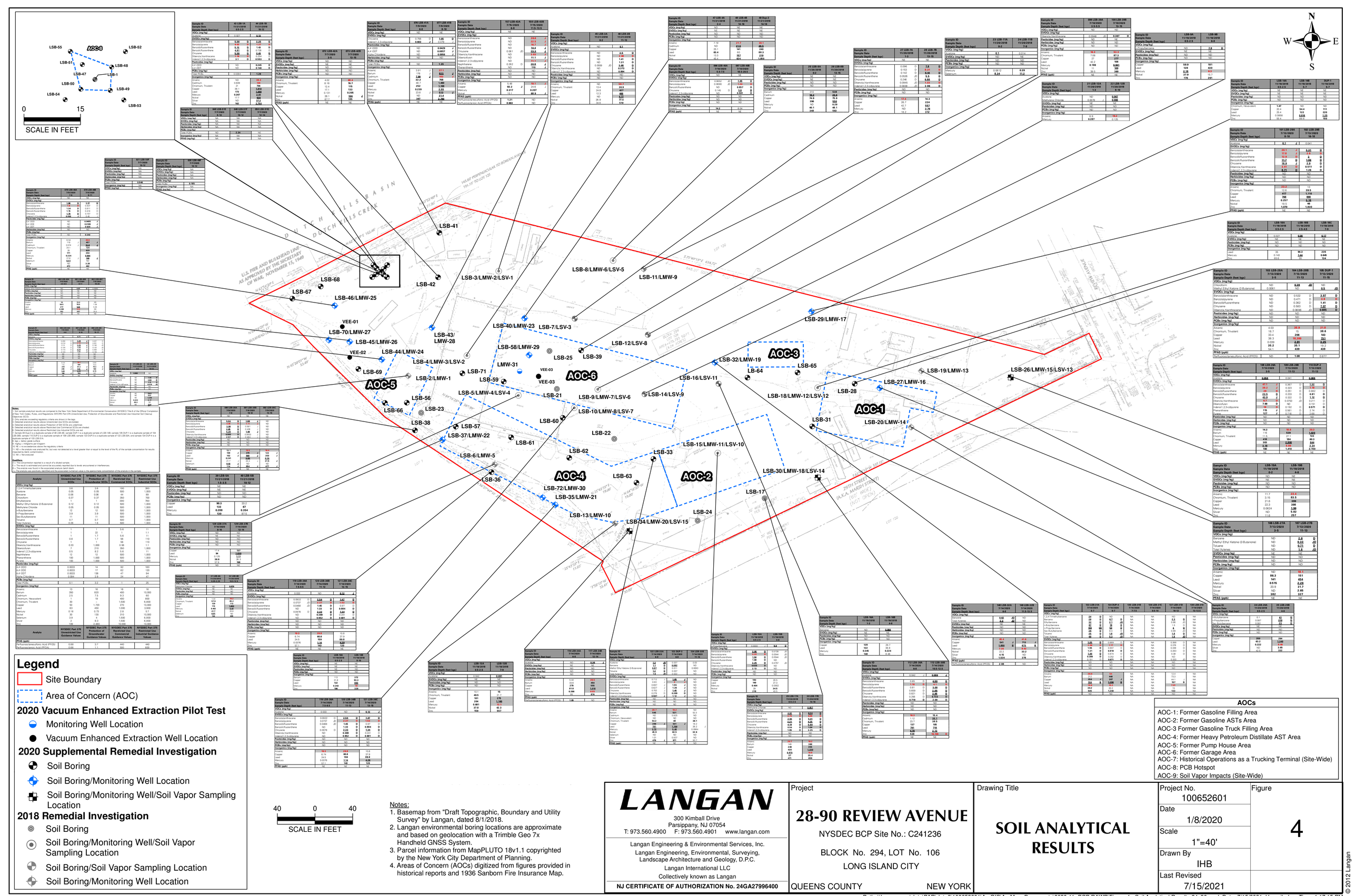
Drawing Title
DRILLED BORING PROFILE G-G' AND H-H'

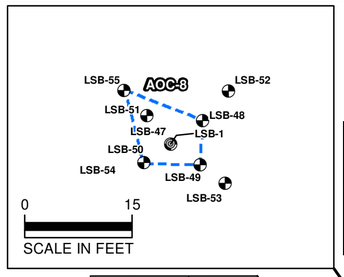
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Date 01/22/2021
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Drawing No. 3H

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N
W
E
S
LSB-41
LSB-68
LSB-42
LSB-3/LMW-2/LSV-1
LSB-8/LMW-6/LSV-5
LSB-11/LMW-9
LSB-67
LSB-46/LMW-25
LSB-29/LMW-17
VEE-01
LSB-70/LMW-27
LSB-40/LMW-23
LSB-7/LSV-3
LSB-45/LMW-26
LSB-43/
LMW-28
LSB-12/LSV-8
VEE-02
LSB-44/LMW-24
LSB-58/LMW-29
LSB-25
LSB-39
LSB-32/LMW-19
LSB-65
LSB-64
LSB-19/LMW-13
LSB-26/LMW-15/LSV-13
LSB-69
LSB-4/LMW-3/LSV-2
LSB-71
LMW-31
VEE-03
AOC-3
AOC-5
LSB-2/LMW-1
LSB-59
VEE-03
AOC-6
LSB-16/LSV-11
LSB-27/LMW-16
LSB-28
LSB-56
LSB-5/LMW-4/LSV-4
LSB-21
LSB-9/LMW-7/LSV-6
LSB-14/LSV-9
LSB-18/LMW-12/LSV-12
LSB-66
LSB-23
LSB-10/LMW-8/LSV-7
AOC-1
LSB-38
LSB-60
LSB-31
LSB-20/LMW-14
LSB-57
LSB-37/LMW-22
LSB-22
LSB-61
LSB-15/LMW-11/LSV-10
LSB-62
LSB-33
LSB-6/LMW-5
LSB-36
AOC-4
LSB-63
AOC-2
LSB-30/LMW-18/LSV-14
LSB-72/LMW-30
LSB-35/LMW-21
LSB-17
LSB-13/LMW-10
LSB-34/LMW-20/LSV-15
LSB-24
U.S. PIER AND BULKHEAD LINE AS APPROVED BY THE SECRETARY OF WAR, NOVEMBER 15, 1940
DUTCH KILLS BASIN
DUTCH KILLS CREEK
145.60' PERPENDICULAR TO JORDAN AVENUE
191.75' TO LOT 125
LOT 106
LOT 125
LOT 150
LOT 151
LOT 152
LOT 153
LOT 154
LOT 155
LOT 156
LOT 157
LOT 158
LOT 159
LOT 160
LOT 161
LOT 162
LOT 163
LOT 164
LOT 165
LOT 166
LOT 167
LOT 168
LOT 169
LOT



Sample ID	LMW-1
Sample Date	11/26/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Magnesium	280,000
Magnesium (Dissolved)	285,000
Selenium	12.8 D
Selenium (Dissolved)	11.7 D
Sodium	4,110,000 D
Sodium (Dissolved)	2,860,000 D

Sample ID	LMW-3	Dup-3
Sample Date	11/26/2018	11/26/2018
VOCs (µg/L)	ND	ND
SVOCs (µg/L)	NE	ND
Pesticides (µg/L)	ND	ND
PCBs (µg/L)	ND	ND
Inorganics (µg/L)		
Magnesium	501,000	510,000
Magnesium (Dissolved)	503,000	503,000
Selenium (Dissolved)	ND	17.7 D
Sodium	6,780,000 D	5,720,000 D
Sodium (Dissolved)	5,680,000 D	5,500,000 D

Sample ID	LMW-4
Sample Date	11/26/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	1,560
Magnesium	158,000
Magnesium (Dissolved)	160,000
Manganese	425
Manganese (Dissolved)	417
Sodium	2,640,000 D
Sodium (Dissolved)	1,990,000 D

Sample ID	LMW-2
Sample Date	11/26/2018
VOCs (µg/L)	ND
SVOCs (µg/L)	
Benzo(a)Anthracene	0.0774
Benzo(a)Pyrene	0.0645
Chrysene	0.103
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Metals (µg/L)	
Iron	625
Iron (Dissolved)	339
Magnesium	629,000
Magnesium (Dissolved)	645,000
Sodium	8,530,000 D
Sodium (Dissolved)	7,390,000 D

Sample ID	204 LMW-23
Sample Date	7/30/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.711
Benzo(a)Pyrene	0.744
Benzo(b)Fluoranthene	0.456
Benzo(k)Fluoranthene	0.3
Chrysene	0.878
Indeno(1,2,3-c,d)Pyrene	0.267
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	8,640
Iron (Dissolved)	1,960
Lead	94.7
Magnesium	703,000
Magnesium (Dissolved)	708,000
Selenium	202
Selenium (Dissolved)	198
Sodium	5,740,000 D
Sodium (Dissolved)	5,820,000 D
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	5.09
Perfluoroheptanoic acid	6.3
Perfluorohexanesulfonic Acid	3.84
Perfluorohexanoic Acid	4.46
Perfluorononanoic Acid	0.71 J
Perfluorooctanesulfonamide	0.529 J
Perfluorooctanesulfonic acid	4.8
Perfluorooctanoic Acid	20.7
Perfluorotetradecanoic Acid	0.651 J
Total PFOA and PFOS	25.5
Total PFAS	47.1

Sample ID	LMW-6
Sample Date	11/26/2018
VOCs (µg/L)	ND
SVOCs (µg/L)	
Benzo(a)Pyrene	0.0571
Chrysene	0.0571
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Magnesium	210,000
Magnesium (Dissolved)	203,000
Selenium (Dissolved)	13.5 D
Sodium	2,900,000 D
Sodium (Dissolved)	2,170,000 D

Sample ID	LMW-9
Sample Date	11/26/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	1,240
Magnesium	279,000
Magnesium (Dissolved)	282,000
Manganese	685
Manganese (Dissolved)	678
Sodium	3,780,000 D
Sodium (Dissolved)	3,240,000 D

Sample ID	LMW-7
Sample Date	11/26/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.0588
Chrysene	0.0706
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	13,700
Magnesium	50,700
Magnesium (Dissolved)	49,600
Manganese	649
Manganese (Dissolved)	616
Sodium	729,000
Sodium (Dissolved)	625,000

Sample ID	196 LMW-19
Sample Date	7/28/2020
VOCs (µg/L)	
Benzene	1.8
Isopropylbenzene (Cumene)	8.2
n-Propylbenzene	9.3
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	31,900
Iron (Dissolved)	2,780
Manganese	801
Manganese (Dissolved)	900
Sodium	112,000
Sodium (Dissolved)	134,000
PFAS (ng/L)	
Perfluoroheptanesulfonic acid	0.424 J
Perfluoroheptanoic acid	5.36
Perfluorohexanesulfonic Acid	1.82 J
Perfluorohexanoic Acid	6.49
Perfluorononanoic Acid	2.53
Perfluorooctanesulfonic acid	14.8 J
Perfluorooctanoic Acid	25.5
Perfluorotetradecanoic Acid	0.619 J
Total PFOA and PFOS	40.3
Total PFAS	57.5

Sample ID	195 LMW-17
Sample Date	7/28/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.103
Chrysene	0.08
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	13,400
Manganese	497 J
Manganese (Dissolved)	487 J
Sodium	64,600
Sodium (Dissolved)	67,500
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	3.56
Perfluorodecanoic acid	1.77 J
Perfluoroheptanoic acid	5.44
Perfluorohexanesulfonic Acid	1.46 J
Perfluorohexanoic Acid	7.84
Perfluorononanoic Acid	2.86
Perfluorooctanesulfonic acid	31.3 J
Perfluorooctanoic Acid	14.3 J
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	2.04 J
Total PFOA and PFOS	45.6
Total PFAS	70.6

Sample ID	192 LMW-16
Sample Date	7/27/2020
VOCs (µg/L)	
Benzene	3.3
Isopropylbenzene (Cumene)	12
n-Propylbenzene	11
SVOCs (µg/L)	
Benzo(a)Anthracene	0.0541
Benzo(a)Pyrene	0.0541
Benzo(b)Fluoranthene	0.0541
Chrysene	0.0541
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Antimony (Dissolved)	4.3 J
Iron	13,500
Iron (Dissolved)	563
Manganese	1,270
Manganese (Dissolved)	1,120
Sodium	93,900
Sodium (Dissolved)	90,700
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	8.59
Perfluorodecanoic acid	1.69 J
Perfluoroheptanoic acid	8.25
Perfluorohexanesulfonic Acid	1.02 J
Perfluorohexanoic Acid	6.59
Perfluorononanoic Acid	3.04
Perfluorooctanesulfonic acid	32.3 J
Perfluorooctanoic Acid	9.07
Perfluoropentanoic Acid	16.4
Perfluoroundecanoic Acid	0.685 J
Total PFOA and PFOS	41.4
Total PFAS	87.6

Sample ID	202 LMW-25
Sample Date	7/30/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Magnesium	747,000
Magnesium (Dissolved)	849,000
Selenium	211
Selenium (Dissolved)	186
Sodium	6,490,000 D
Sodium (Dissolved)	6,960,000 D
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	2.43
Perfluoroheptanoic acid	4.12
Perfluorohexanesulfonic Acid	8
Perfluorohexanoic Acid	6.12
Perfluorononanoic Acid	1.05 J
Perfluorooctanesulfonic acid	5.34
Perfluorooctanoic Acid	10
Total PFOA and PFOS	15.3
Total PFAS	37

Sample ID	203 LMW-24
Sample Date	7/30/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	2,560
Magnesium	126,000
Magnesium (Dissolved)	141,000
Selenium	47.3
Selenium (Dissolved)	40.8
Sodium	1,100,000
Sodium (Dissolved)	1,220,000
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	6.74
Perfluorodecanoic acid	0.605 J
Perfluoroheptanesulfonic acid	1.2 J
Perfluoroheptanoic acid	24.2
Perfluorohexanesulfonic Acid	888 D
Perfluorohexanoic Acid	19.3
Perfluorononanoic Acid	2.68
Perfluorooctanesulfonic acid	29.1
Perfluorooctanoic Acid	66.9
Perfluoropentanoic Acid	25
Total PFOA and PFOS	96
Total PFAS	1,060

Sample ID	200 LMW-22
Sample Date	7/28/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.235
Benzo(a)Pyrene	0.2
Benzo(b)Fluoranthene	0.153
Benzo(k)Fluoranthene	0.129
Chrysene	0.294
Indeno(1,2,3-c,d)Pyrene	0.0824
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	7,640
Magnesium	166,000
Magnesium (Dissolved)	180,000
Manganese	3,210
Manganese (Dissolved)	3,550
Selenium	61.5
Selenium (Dissolved)	38.2
Sodium	1,750,000 D
Sodium (Dissolved)	1,510,000 D
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	10.3
Perfluorodecanoic acid	1.82 J
Perfluoroheptanoic acid	21.4
Perfluorohexanesulfonic Acid	10.6
Perfluorohexanoic Acid	24.8
Perfluorononanoic Acid	3.61
Perfluorooctanesulfonic acid	26.6 J
Perfluorooctanoic Acid	61.8
Perfluoropentanoic Acid	26.6
Total PFOA and PFOS	88.4
Total PFAS	188

Sample ID	LMW-5
Sample Date	11/27/2018
VOCs (µg/L)	
1,2,4-Trimethylbenzene	11.4
Benzene	1.95
Ethylbenzene	5.18
M,P-Xylene	37.4
o-Xylene (1,2-Dimethylbenzene)	12.3
Toluene	13.6
Total Xylenes	49.8
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	6,880
Lead	106
Magnesium	158,000
Manganese	2,120
Manganese (Dissolved)	488
Sodium	1,030,000
Sodium (Dissolved)	71,100

Sample ID	199 LMW-21
Sample Date	7/28/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.0606
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	12,500
Manganese	393
Manganese (Dissolved)	410
Sodium	113,000
Sodium (Dissolved)	123,000
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	8.52
Perfluorodecanoic acid	0.587 J
Perfluoroheptanoic acid	15.8
Perfluorohexanesulfonic Acid	2.64
Perfluorohexanoic Acid	10.2
Perfluorononanoic Acid	3.1
Perfluorooctanesulfonic acid	5.89 J
Perfluorooctanoic Acid	60.8
Perfluoropentanoic Acid	24.6
Total PFOA and PFOS	66.7
Total PFAS	132

Sample ID	LMW-8
Sample Date	11/26/2018
VOCs (µg/L)	
1,2,4,5-Tetramethylbenzene	6.04 D
Benzene	1.64 D
Isopropylbenzene (Cumene)	6.24 D
n-Propylbenzene	6.66 D
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	4,160
Magnesium	53,300
Magnesium (Dissolved)	53,300
Sodium	640,000
Sodium (Dissolved)	560,000

Sample ID	198 LMW-20
Sample Date	7/28/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.182
Benzo(a)Pyrene	0.315
Benzo(b)Fluoranthene	0.218
Benzo(k)Fluoranthene	0.206
Chrysene	0.206
Indeno(1,2,3-c,d)Pyrene	0.206
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	17,600
Iron (Dissolved)	3,150
Manganese	472
Manganese (Dissolved)	492
Sodium	127,000
Sodium (Dissolved)	133,000
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	4.79
Perfluoroheptanoic acid	11.5
Perfluorohexanesulfonic Acid	3.42
Perfluorohexanoic Acid	8.82
Perfluorononanoic Acid	2.45
Perfluorooctanesulfonic acid	20.6 J
Perfluorooctanoic Acid	47.3
Total PFOA and PFOS	67.9
Total PFAS	98.9

Sample ID	LMW-10
Sample Date	11/27/2018
Total Xylenes	6.91
SVOCs (µg/L)	ND
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	76,900
Magnesium	111,000
Manganese	1,280
Sodium	1,100,000
Sodium (Dissolved)	76,600

Sample ID	LMW-11
Sample Date	11/26/2018
VOCs (µg/L)	
1,2,4,5-Tetramethylbenzene	146 D
1,2,4-Trimethylbenzene	14 D
Benzene	119 D
Ethylbenzene	14.5 D
Isopropylbenzene (Cumene)	125 D
M,P-Xylene	49.1 D
n-Butylbenzene	46.6 D
n-Propylbenzene	320 D
o-Xylene (1,2-Dimethylbenzene)	20.1 D
Sec-Butylbenzene	29.8 D
Toluene	113 D
Total Xylenes	69.2 D
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	15,900
Iron (Dissolved)	2,120
Manganese	847
Manganese (Dissolved)	825
Sodium	206,000
Sodium (Dissolved)	179,000

Sample ID	197 LMW-18
Sample Date	7/28/2020
VOCs (µg/L)	NE
SVOCs (µg/L)	
Benzo(a)Anthracene	0.0667
Benzo(a)Pyrene	0.0859
Benzo(b)Fluoranthene	0.0667
Benzo(k)Fluoranthene	0.0556
Chrysene	0.0667
Indeno(1,2,3-c,d)Pyrene	0.0667
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	54,200
Iron (Dissolved)	8,050
Lead	516
Magnesium	73,500
Magnesium (Dissolved)	74,200
Manganese	834
Manganese (Dissolved)	864
Selenium	20.7
Selenium (Dissolved)	18.2
Sodium	586,000
Sodium (Dissolved)	615,000
PFAS (ng/L)	
Perfluorobutanesulfonic Acid	4.82
Perfluorodecanoic acid	0.654 J
Perfluoroheptanoic acid	23
Perfluorohexanesulfonic Acid	0.399 J
Perfluorohexanoic Acid	16.3
Perfluorononanoic Acid	1.85 J
Perfluorooctanoic Acid	24
Perfluoropentanoic Acid	46.8
Perfluorotetradecanoic Acid	0.592 J
Total PFOA and PFOS	24
Total PFAS	118

Sample ID	LMW-12
Sample Date	11/27/2018
VOCs (µg/L)	
1,2,4,5-Tetramethylbenzene	17.4
n-Propylbenzene	5.89
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Sodium	26,600 D
Sodium (Dissolved)	22,800

Sample ID	LMW-13
Sample Date	11/27/2018
VOCs (µg/L)	NE
SVOCs (µg/L)	ND
Pesticides (µg/L)	
Chlordane (alpha and gamma)	0.11
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	16,700
Magnesium	107,000
Manganese	785
Sodium	1,130,000

Sample ID	190 LMW-15	191 DUP-1
Sample Date	7/27/2020	7/27/2020
VOCs (µg/L)	NE	NE
SVOCs (µg/L)		
Benzo(a)Anthracene	0.111	0.103
Benzo(a)Pyrene	0.111	0.0914
Benzo(b)Fluoranthene	0.0778	0.08
Benzo(k)Fluoranthene	0.0667	0.0686
Chrysene	0.122	0.114
Indeno(1,2,3-c,d)Pyrene	0.0778	0.0571
Pesticides (µg/L)	ND	ND
Herbicides (µg/L)	ND	ND
PCBs (µg/L)	ND	ND
Inorganics (µg/L)		
Iron	45,900	52,300
Iron (Dissolved)	8,210 J	1,500 J
Lead	107 J	307 J
Manganese	1,280	1,390
Manganese (Dissolved)	1,300	1,260
Sodium	298,000	304,000
Sodium (Dissolved)	316,000	322,000
PFAS (ng/L)		
Perfluorobutanesulfonic Acid	2.36	2.9
Perfluoroheptanoic acid	6.89	7.06
Perfluorohexanesulfonic Acid	0.483 J	0.527 J
Perfluorohexanoic Acid	5.37	6.22
Perfluorononanoic Acid	1 J	0.972 J
Perfluorooctanesulfonic acid	3.27 J	2.91 J
Perfluorooctanoic Acid	16.5	16.5
Perfluoropentanoic Acid	11.5	11.4
Perfluorotetradecanoic Acid	0.651 J	0.692 J
Total PFOA and PFOS	19.8	19.4
Total PFAS	48	49.2

Sample ID	LMW-14
Sample Date	11/27/2018
VOCs (µg/L)	
1,2,4,5-Tetramethylbenzene	239 D
1,2,4-Trimethylbenzene	13.2 D
Benzene	50.1 D
Ethylbenzene	7.2 D
Isopropylbenzene (Cumene)	282 D
M,P-Xylene	34.8 D
n-Butylbenzene	77.1 D
n-Propylbenzene	489 D
o-Xylene (1,2-Dimethylbenzene)	8.8 D
Sec-Butylbenzene	52.8 D
Toluene	8.6 D
Total Xylenes	43.6 D
SVOCs (µg/L)	
Benzo(a)Anthracene	0.1
Benzo(a)Pyrene	0.1
Benzo(b)Fluoranthene	0.1
Benzo(k)Fluoranthene	0.0889
Chrysene	0.122
Indeno(1,2,3-c,d)Pyrene	0.0778
Pesticides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Antimony	6.7
Arsenic	40.7
Iron	16,800
Iron (Dissolved)	882
Magnesium	106,000
Manganese	800
Manganese (Dissolved)	1,130
Selenium	18.2 D
Sodium	1,130,000
Sodium (Dissolved)	309,000

Analyte	CAS Number	NYSDEC SGVs	NYSDEC June 2021 Guidance Values
VOCs (µg/L)			
1,2,4,5-Tetramethylbenzene	95-93-2	5	~
1,2,4-Trimethylbenzene	95-63-6	5	~
Benzene	71-43-2	1	~
Ethylbenzene	100-41-4	5	~
Isopropylbenzene (Cumene)	98-82-8	5	~
M,P-Xylene	179601-23-1	5	~
n-Butylbenzene	104-51-8	5	~
n-Propylbenzene	103-65-1	5	~
o-Xylene (1,2-Dimethylbenzene)	95-47-6	5	~
Sec-Butylbenzene	135-98-8	5	~
Toluene	108-88-3	5	~
Total Xylenes	1330-20-7	5	~
SVOCs (µg/L)			
Benzo(a)Anthracene	56-55-3	0.002	~
Benzo(a)Pyrene	50-32-8	ND	~
Benzo(b)Fluoranthene	205-99-2	0.002	~
Benzo(k)Fluoranthene	207-08-9	0.002	~
Chrysene	218-01-9	0.002	~
Indeno(1,2,3-c,d)Pyrene	193-39-5	0.002	~
Pesticides (µg/L)			
Chlordane (alpha and gamma)	57-74-9	0.05	~
Inorganics (µg/L)			
Antimony	7440-36-0	3	~
Arsenic	7440-38-2	25	~
Iron	7439-89-6	300	~
Lead	7439-92-1	25	~
Magnesium	7439-95-4	35,000	~
Manganese	7439-96-5	300	~
Selenium	7782-49-2	10	~
Sodium	7440-23-5	20,000	~
PFAS (ng/L)			
Perfluorooctanesulfonic acid	1763-23-1	~	10
Perfluorooctanoic Acid	335-67-1	~	10

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 (herein collectively referenced as "NYSDEC SGVs").
2. Criterion comparisons for total xylenes and m,p-xylene are provided for reference. Promulgated NYSDEC SGVs are for o-xylene, m+p-xylene, and p-xylene.
3. Groundwater sample analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Part 375 Remedial Programs Guidelines for Sampling and Analysis of Per- and Polyfluoroalkyl Substances (PFAS) (June 2021).
4. Only analytes exceeding regulatory criteria are shown in the tags.
5. ug/l = micrograms per liter
6. ng/l = nanograms per liter
7. NE = no exceedances above the regulatory criteria
8. ND = the analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL of the sample concentration for results impacted by blank contamination.

Qualifiers:
D = The concentration reported is a result of a diluted sample.
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

Legend

- Site Boundary
- Area of Concern (AOC)
- Historical Monitoring Well Location (Tyree 1990)

2020 Supplemental Remedial Investigation

- Monitoring Well
- Vacuum Enhanced Extraction Well Location

2020 Supplemental Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well Location
- Soil Boring/Monitoring Well/Soil Vapor Sampling Location

2018 Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well/ Soil Vapor Sampling Location
- Soil Boring/Soil Vapor Sampling Location
- Soil Boring/Monitoring Well Location

Notes:
1. Basemap from "Topographic, Boundary and Utility Survey" by Langan, signed 3/8/2019.
2. Langan environmental boring locations are approximate and based on geolocation with a Trimble Geo 7x Handheld GNSS System.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
4. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map..
5. Historic Monitoring Well Locations obtained from Tyree Brothers Environmental Services Inc., "AA Truck Rental" dated 06/1990.

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SCALE IN FEET

AOCs

- AOC-1: Former Gasoline Filling Area
- AOC-2: Former Gasoline ASTs Area
- AOC-3 Former Gasoline Truck Filling Area
- AOC-4: Former Heavy Petroleum Distillate AST Area
- AOC-5: Former Pump House Area
- AOC-6: Former Garage Area
- AOC-7: Historical Operations as a Trucking Terminal (Site-Wide)
- AOC-8: PCB Hotspot
- AOC-9: Soil Vapor Impacts (Site-Wide)

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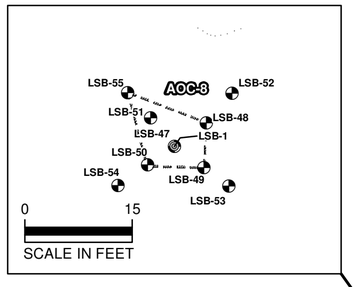
Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
GROUNDWATER ANALYTICAL RESULTS

Project No.	100652601
Date	1/8/2020
Scale	1"=50'
Drawn By	IHB
Last Revised	6/28/2022
Figure	5

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 5 - Groundwater Analytical Resultsv2.mxd Date: 6/28/2022 User: ibaker Time: 4:25:09 PM



Sample ID	LSV-7	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	16.4	D
1,3,5-Trimethylbenzene (Mesitylene)	4.62	D
2-Hexanone	19.7	D
4-Ethyltoluene	17.7	D
Acetone	86.5	D
Benzene	24.7	D
Carbon Disulfide	4.75	D
Cyclohexane	3.55	D
Dichlorodifluoromethane	2.82	D
Ethylbenzene	14.5	D
M,P-Xylene	54	D
Methyl Ethyl Ketone (2-Butanone)	70.4	D
n-Heptane	10.5	D
n-Hexane	34	D
o-Xylene (1,2-Dimethylbenzene)	14.3	D
Propylene	3.63	D
Styrene	0.656	D
Tetrachloroethene (PCE)	48.5	D
Toluene	87.7	D
Trichlorofluoromethane	10.2	D

Sample ID	LSV-3	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,1,1-Trichloroethane	4.52	D
1,2,4-Trimethylbenzene	14.7	D
1,3,5-Trimethylbenzene (Mesitylene)	3.92	D
2-Hexanone	26.4	D
4-Ethyltoluene	14.9	D
Acetone	193	D
Benzene	14	D
Carbon Disulfide	7.93	D
Cyclohexane	1.14	D
Dichlorodifluoromethane	2.38	D
Ethylbenzene	12.7	D
M,P-Xylene	49.4	D
Methyl Ethyl Ketone (2-Butanone)	107	D
n-Heptane	7.22	D
n-Hexane	18.5	D
o-Xylene (1,2-Dimethylbenzene)	14.5	D
Propylene	4.35	D
Tetrachloroethene (PCE)	78	D
Toluene	119	D
Trichlorofluoromethane	4.99	D

Sample ID	LSV-5	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	9.45	D
1,3,5-Trimethylbenzene (Mesitylene)	2.56	D
4-Ethyltoluene	8.45	D
Acetone	29.5	D
Benzene	7.75	D
Carbon Disulfide	1.91	D
Cyclohexane	8.79	D
Dichlorodifluoromethane	2.42	D
Ethylbenzene	4.86	D
M,P-Xylene	22.1	D
Methyl Ethyl Ketone (2-Butanone)	11	D
n-Heptane	5.56	D
n-Hexane	12.1	D
o-Xylene (1,2-Dimethylbenzene)	6.36	D
Propylene	2.2	D
Styrene	1.01	D
Tetrachloroethene (PCE)	92.6	D
Toluene	31.7	D
Trichlorofluoromethane	2.83	D

Sample ID	LSV-8		DUP-4	
Sample Date	11/27/2018		11/27/2018	
Sample Type	SV		SV	
VOCs (µg/m³)				
1,2,4-Trichlorobenzene	ND		2.16	D
1,2,4-Trimethylbenzene	6.24	D	10.9	D
1,3,5-Trimethylbenzene (Mesitylene)	1.96	D	3.61	D
4-Ethyltoluene	5.82	D	10.4	D
Acetone	62.3	D	99	D
Benzene	8.84	D	10.6	D
Carbon Disulfide	2.4	D	3.14	D
Cyclohexane	38.1	D	ND	
Dichlorodifluoromethane	1.62	D	1.89	D
Ethylbenzene	5.26	D	8.5	D
Isopropanol	1.75	D	ND	
M,P-Xylene	19.3	D	31.9	D
Methyl Ethyl Ketone (2-Butanone)	28.5	D	46.5	D
n-Hexane	29.7	D	42.6	D
o-Xylene (1,2-Dimethylbenzene)	5.39	D	9.1	D
Propylene	2.53	D	4.45	D
Styrene	0.668	D	1.11	D
Tetrachloroethene (PCE)	4.64	D	4.04	D
Toluene	34	D	51.5	D
Trichlorofluoromethane	4.97	D	6.53	D
Vinyl Acetate	10.6	D	ND	

Sample ID	LSV-6	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	17.8	D
1,3,5-Trimethylbenzene (Mesitylene)	4.9	D
2-Hexanone	32.7	D
4-Ethyltoluene	19.3	D
Acetone	206	D
Benzene	23.9	D
Carbon Disulfide	8.03	D
Cyclohexane	2.43	D
Dichlorodifluoromethane	2.88	D
Ethylbenzene	15.1	D
M,P-Xylene	58.1	D
Methyl Ethyl Ketone (2-Butanone)	131	D
n-Heptane	12.7	D
n-Hexane	38.7	D
o-Xylene (1,2-Dimethylbenzene)	15.9	D
Propylene	7.6	D
Tetrachloroethene (PCE)	33.4	D
Toluene	104	D
Trichlorofluoromethane	9.22	D

Sample ID	LSV-9	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	12.4	D
1,3,5-Trimethylbenzene (Mesitylene)	4.44	D
2-Hexanone	26.8	D
4-Ethyltoluene	11.8	D
Acetone	160	D
Benzene	25.9	D
Carbon Disulfide	7	D
Cyclohexane	23.6	D
Dichlorodifluoromethane	2.11	D
Ethylbenzene	9.76	D
M,P-Xylene	33	D
Methyl Ethyl Ketone (2-Butanone)	92.3	D
n-Hexane	33.8	D
o-Xylene (1,2-Dimethylbenzene)	9.97	D
Propylene	4.06	D
Styrene	0.809	D
Tetrachloroethene (PCE)	13.7	D
Tetrahydrofuran	16.2	D
Toluene	58.7	D
Trichlorofluoromethane	7.2	D
Vinyl Acetate	4.9	D

Sample ID	174 LSV-13	
Sample Date	7/16/2020	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	4.7	D
1,3,5-Trimethylbenzene (Mesitylene)	3.7	D
2-Hexanone	32	D
4-Ethyltoluene	6	D
Acetone	170	D
Benzene	50	D
Carbon Disulfide	7.5	D
Chloroform	11	D
Chloromethane	0.36	D
Cyclohexane	3.5	D
Dichlorodifluoromethane	1.4	D
Ethylbenzene	5.8	D
Isopropanol	20	D
M,P-Xylene	17	D
Methyl Ethyl Ketone (2-Butanone)	60	D
n-Heptane	15	D
n-Hexane	37	D
o-Xylene (1,2-Dimethylbenzene)	2.5	D
Propylene	4.7	D
Tetrachloroethene (PCE)	16	D
Toluene	7.8	D
Trichlorofluoromethane	2	D

Sample ID	LSV-11	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
Acetone	602	D
Ethylbenzene	163	D
M,P-Xylene	414	D
n-Hexane	5,650	D
o-Xylene (1,2-Dimethylbenzene)	98.2	D
Propylene	91.3	D
Toluene	353	D

Sample ID	175 LSV-14	
Sample Date	7/16/2020	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	2	D
2-Hexanone	7.4	D
4-Ethyltoluene	1.6	D
Acetone	110	D
Benzene	2.2	D
Carbon Disulfide	1.8	D
Carbon Tetrachloride	**6.9**	**D**
Chloromethane	1.3	D
Cyclohexane	0.69	D
Dichlorodifluoromethane	1.7	D
Ethyl Acetate	6.6	D
Ethylbenzene	4.6	D
Isopropanol	170	D
M,P-Xylene	17	D
Methyl Ethyl Ketone (2-Butanone)	24	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	3.8	D
Methyl Methacrylate	1.1	D
Methylene Chloride	2.6	D
n-Heptane	5.7	D
n-Hexane	5.7	D
o-Xylene (1,2-Dimethylbenzene)	4.1	D
Styrene	1.1	D
Tetrachloroethene (PCE)	54	D
Toluene	25	D
Trichlorofluoromethane	2.8	D

Sample ID	LSV-2	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,1,1-Trichloroethane	6.15	D
1,2,4-Trimethylbenzene	19.6	D
1,3,5-Trimethylbenzene (Mesitylene)	10.3	D
2-Hexanone	18.4	D
4-Ethyltoluene	53	D
Acetone	13.2	D
Benzene	7.62	D
Carbon Tetrachloride	0.373	D
Cyclohexane	2.4	D
Dichlorodifluoromethane	3.45	D
Ethylbenzene	12.9	D
M,P-Xylene	45.4	D
Methyl Ethyl Ketone (2-Butanone)	41.6	D
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	26.5	D
n-Heptane	13.4	D
n-Hexane	33.6	D
o-Xylene (1,2-Dimethylbenzene)	14.4	D
Propylene	4.44	D
Styrene	0.758	D
Tetrachloroethene (PCE)	99.5	D
Tetrahydrofuran	17.8	D
Toluene	58.6	D
Trichloroethene (TCE)	0.478	D
Trichlorofluoromethane	39.4	D

Sample ID	LSV-4	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	8.38	D
1,3,5-Trimethylbenzene (Mesitylene)	2.92	D
4-Ethyltoluene	8.38	D
Acetone	9.59	D
Benzene	3.6	D
Carbon Disulfide	3.6	D
Cyclohexane	37.5	D
Dichlorodifluoromethane	2.4	D
Ethylbenzene	3.33	D
M,P-Xylene	17	D
Methyl Ethyl Ketone (2-Butanone)	10.6	D
n-Heptane	19.9	D
n-Hexane	57.3	D
o-Xylene (1,2-Dimethylbenzene)	6.11	D
Propylene	1.67	D
Styrene	0.933	D
Tetrachloroethene (PCE)	18.7	D
Tetrahydrofuran	26.6	D
Toluene	9.78	D
Trichlorofluoromethane	6.68	D

Sample ID	176 LSV-15		177 DUP-1	
Sample Date	7/16/2020		7/16/2020	
Sample Type	SV		SV	
VOCs (µg/m³)				
1,2,4-Trimethylbenzene	1.8	D	2	D
2-Hexanone	6.8	D	7.4	D
4-Ethyltoluene	1.8	D	1.9	D
Acetone	93	D	94	D
Benzene	2.7	D	2.6	D
Carbon Disulfide	2.2	D	2.5	D
Chloromethane	0.77	D	ND	U
Dichlorodifluoromethane	1.8	D	2.1	D
Ethylbenzene	2.6	D	2.9	D
M,P-Xylene	8.2	D	8.7	D
Methyl Ethyl Ketone (2-Butanone)	17	D	18	D
n-Heptane	1.8	D	2.3	D
n-Hexane	2.3	D	2.6	D
o-Xylene (1,2-Dimethylbenzene)	1.6	D	1.8	D
Propylene	1.9	D	1.7	D
Tetrachloroethene (PCE)	**790**	**D**	**850**	**D**
Toluene	6.6	D	7.2	D
Trichlorofluoromethane	5.4	D	5.9	D

Sample ID	LSV-10	
Sample Date	11/27/2018	
Sample Type	SV	
VOCs (µg/m³)		
1,2,4-Trimethylbenzene	1,350	D
1,2-Dichloroethane	715	D
4-Ethyltoluene	1,960	D
Acetone	1,210	D
Ethylbenzene	2,280	D
M,P-Xylene	5,660	D
n-Hexane	10,600	D
o-Xylene (1,2-Dimethylbenzene)	2,400	D
Propylene	1,130	D
Toluene	1,630	D
Vinyl Chloride	**41.3**	**D**

Analyte	CAS Number	NYSDOH Decision Matrices Minimum Concentrations
VOCs (µg/m³)		
1,1,1-Trichloroethane	71-55-6	**100**
1,2,4-Trichlorobenzene	120-82-1	~
1,2,4-Trimethylbenzene	95-63-6	~
1,2-Dichloroethane	107-06-2	~
1,3,5-Trimethylbenzene (Mesitylene)	108-67-8	~
2-Hexanone	591-78-6	~
4-Ethyltoluene	622-96-8	~
Acetone	67-64-1	~
Benzene	71-43-2	~
Carbon Disulfide	75-15-0	~
Carbon Tetrachloride	56-23-5	**6**
Chloroform	67-66-3	~
Chloromethane	74-87-3	~
Cyclohexane	110-82-7	~
Dichlorodifluoromethane	75-71-8	~
Ethyl Acetate	141-78-6	~
Ethylbenzene	100-41-4	~
Isopropanol	67-63-0	~
M,P-Xylene	179601-23-1	~
Methyl Ethyl Ketone (2-Butanone)	78-93-3	~
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	108-10-1	~
Methyl Methacrylate	80-62-6	~
Methylene Chloride	75-09-2	**100**
n-Heptane	142-82-5	~
n-Hexane	110-54-3	~
o-Xylene (1,2-Dimethylbenzene)	95-47-6	~
Propylene	115-07-1	~
Styrene	100-42-5	~
Tetrachloroethene (PCE)	127-18-4	**100**
Tetrahydrofuran	109-99-9	~
Toluene	108-88-3	~
Trichloroethene (TCE)	79-01-6	**6**
Trichlorofluoromethane	75-69-4	~
Vinyl Acetate	108-05-4	~
Vinyl Chloride	75-01-4	**6**

Notes:

1. Soil vapor sample analytical results are compared to the minimum soil vapor concentrations at which mitigation is recommended as set forth in the New York State Department of Health (NYSDOH) October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York Decision Matrices for Sub-Slab Vapor and Indoor Air and subsequent updates (2017).
2. Ambient air sample analytical results are shown for reference only.
3. Only analytes exceeding regulatory criteria are shown in the tags.
4. ~ = Regulatory limit for this analyte does not exist
5. ug/m3= micrograms per cubic meter
6. AA = Ambient Air
7. SV = Soil Vapor
8. ND = the analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL of the sample concentration for results impacted by blank contamination.

Qualifiers:

D = The concentration reported is a result of a diluted sample.

Legend

- Site Boundary
- Area of Concern (AOC)

2020 Vacuum Enhanced Extraction Pilot Test

- Monitoring Well Location
- Vacuum Enhanced Extraction Well Location

2020 Supplemental Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well Location
- Soil Boring/Monitoring Well/Soil Vapor Sampling Location

2018 Remedial Investigation

- Soil Boring
- Soil Boring/Monitoring Well/Soil Vapor Sampling Location
- Soil Boring/Soil Vapor Sampling Location
- Soil Boring/Monitoring Well Location

AOCs
AOC-1: Former Gasoline Filling Area
AOC-2: Former Gasoline ASTs Area
AOC-3 Former Gasoline Truck Filling Area
AOC-4: Former Heavy Petroleum Distillate AST Area
AOC-5: Former Pump House Area
AOC-6: Former Garage Area
AOC-7: Historical Operations as a Trucking Terminal (Site-Wide)
AOC-8: PCB Hotspot
AOC-9: Soil Vapor Impacts (Site-Wide)

100 0 100
SCALE IN FEET

Notes:

1. Basemap from "Topographic, Boundary and Utility Survey" by Langan, dated 3/8/2019.
2. Langan environmental boring locations are approximate and based on geolocation with a Trimble Geo 7x Handheld GNSS System.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
4. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map.

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Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

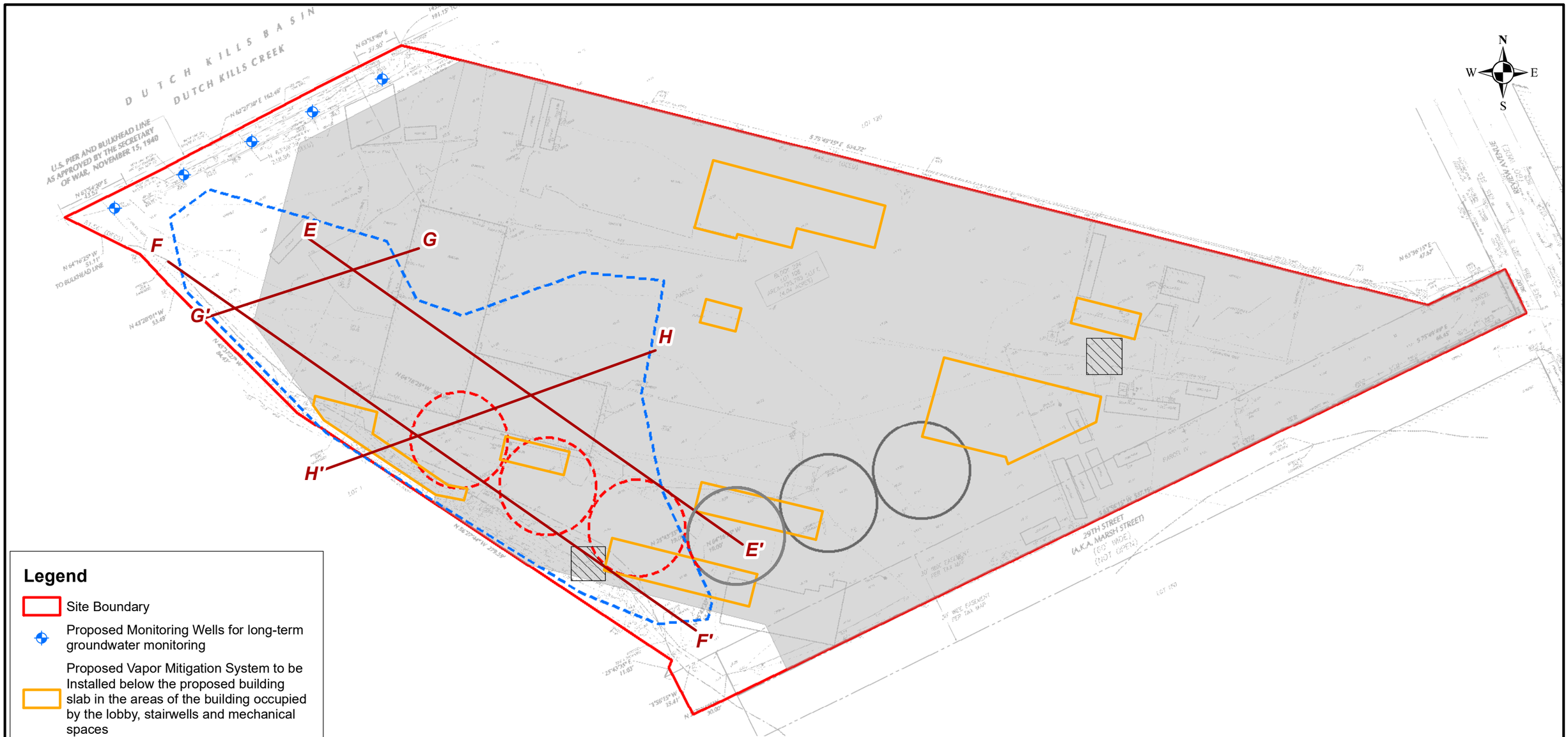
Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
SOIL VAPOR ANALYTICAL RESULTS

Project No.	Figure
100652601	6
Date: 1/8/2021	
Scale: 1"=50'	
Drawn By: IHB	
Last Revised: 1/22/2021	

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 6 - Soil Vapor Analytical Results.mxd Date: 1/22/2021 User: ibaker Time: 1:38:45 PM



Legend

- Site Boundary
- Proposed Monitoring Wells for long-term groundwater monitoring
- Proposed Vapor Mitigation System to be Installed below the proposed building slab in the areas of the building occupied by the lobby, stairwells and mechanical spaces
- Building Footprint
- Lead Hotspot to be excavated to 14 feet bgs
- Lateral Extents of ISS Remedy including excavation of up to approximately 4-feet of cover soil
- Former 275,000-gallon AST Foundation to be Removed
- Former 275,000-gallon AST Foundation to Remain
- Cross Section Delineation

60 0 60
SCALE IN FEET

Notes:
1. Basemap from "Draft Topographic, Boundary and Utility Survey" by Langan, dated 8/1/2018.
2. Building Extents from KSS Architects "Level 1 Floorplan" dated 10/27/2021.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.

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Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
ALTERNATIVE II – TRACK 4 CLEANUP PLAN VIEW

Project No.	100652601
Date	6/30/2021
Scale	1"=60'
Drawn By	IHB
Last Revised	6/28/2022

Figure 7A

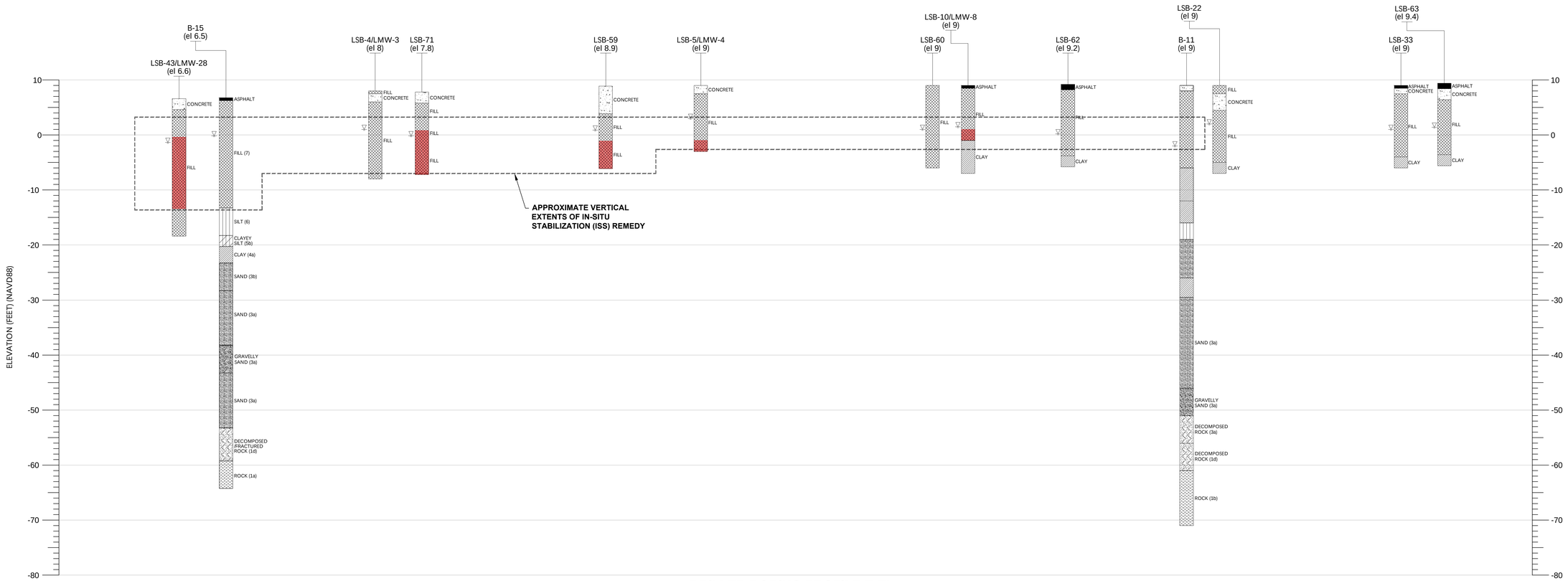
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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2021-06\Figure 7A - Alternative II - Track 4 Cleanup.mxd Date: 6/28/2022 User: ibaker Time: 4:19:34 PM

WEST

EAST

SITE



DRILLED BORING PROFILE E-E'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING

NOTES:

1. THIS PROFILE SHOWS GENERALIZED SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS. FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED, SEE BORING LOGS INCLUDED IN ATTACHMENT B.
2. ALL BORING LOCATIONS ARE APPROXIMATE. GROUND SURFACE ELEVATIONS ARE INFERRED FROM FROM "TOPOGRAPHIC BOUNDARY AND UTILITY," PREPARED BY LANGAN, SIGNED 3/8/2019.
3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.
4. BORINGS B-1 THROUGH B-4 WERE PERFORMED BETWEEN 14 AND 20 JUNE 2017 AND BORINGS B-5 THROUGH B-18 WERE PERFORMED BETWEEN 20 JUNE AND 13 JULY 2018 BY CRAIG GEOTECHNICAL DRILLING COMPANY, INC.UNDER THE FULL TIME INSPECTION OF LANGAN.
5. ENVIRONMENTAL SOIL BORINGS LSB-1 THROUGH LSB-25 WERE COMPLETED BETWEEN 19 AND 21 NOVEMBER 2018 AS PART OF THE 2018 REMEDIAL INVESTIGATION AND ENVIRONMENTAL SOIL BORINGS LSB-26 THROUGH LSB-72 WERE COMPLETED BETWEEN 7 AND 16 JULY 2020 AS PART OF THE 2020 REMEDIAL INVESTIGATION.

8 0 4 8
VERTICAL SCALE IN FEET

WARNING:
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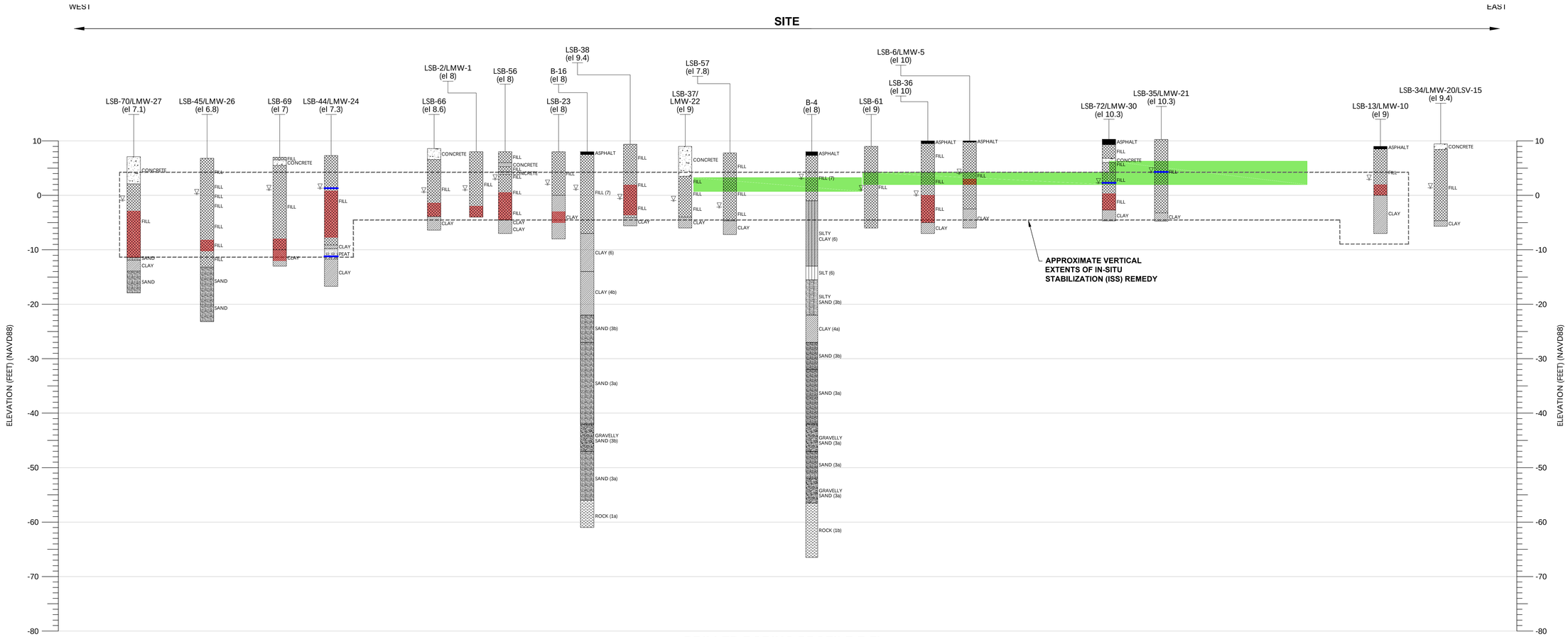
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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27998400

Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	ALTERNATIVE II - TRACK 4 CLEANUP PLAN PROFILE VIEW (E-E')
Project No.	100652601
Date	06/28/2021
Drawn By	AC
Checked By	AB
Drawing No.	7B

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LANGAN PROJECT NO. ########



DRILLED BORING PROFILE F-F'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:

B-X
(el XX±)
(XX)

LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING
	PRODUCT OBSERVED DURING MONITORING WELL GAUGING
	FORMER 275,000-GALLON AST FOUNDATION

NOTES:

1. THIS PROFILE SHOWS GENERALIZED SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS. FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED, SEE BORING LOGS INCLUDED IN ATTACHMENT B.
2. ALL BORING LOCATIONS ARE APPROXIMATE. GROUND SURFACE ELEVATIONS ARE INFERRED FROM FROM "TOPOGRAPHIC BOUNDARY AND UTILITY," PREPARED BY LANGAN, SIGNED 3/8/2019.
3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.
4. BORINGS B-1 THROUGH B-4 WERE PERFORMED BETWEEN 14 AND 20 JUNE 2017 AND BORINGS B-5 THROUGH B-18 WERE PERFORMED BETWEEN 20 JUNE AND 13 JULY 2018 BY CRAIG GEOTECHNICAL DRILLING COMPANY, INC.UNDER THE FULL TIME INSPECTION OF LANGAN.
5. ENVIRONMENTAL SOIL BORINGS LSB-1 THROUGH LSB-25 WERE COMPLETED BETWEEN 19 AND 21 NOVEMBER 2018 AS PART OF THE 2018 REMEDIAL INVESTIGATION AND ENVIRONMENTAL SOIL BORINGS LSB-26 THROUGH LSB-72 WERE COMPLETED BETWEEN 7 AND 16 JULY 2020 AS PART OF THE 2020 REMEDIAL INVESTIGATION.

8 0 4 8
VERTICAL SCALE IN FEET

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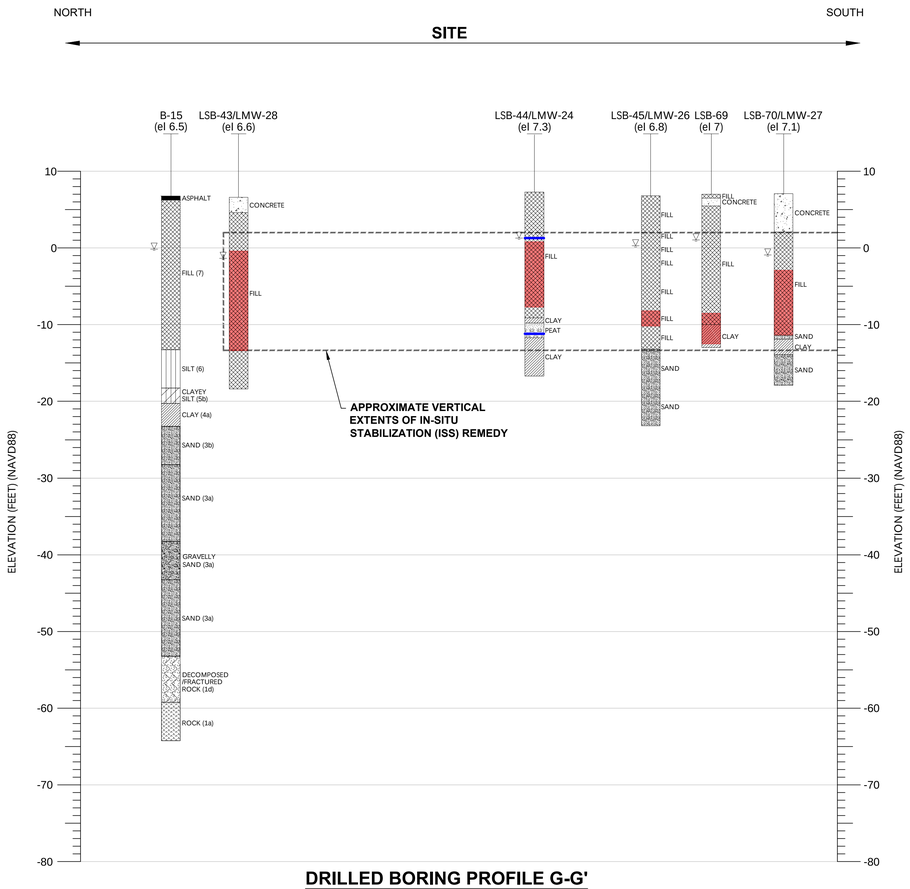
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Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	ALTERNATIVE II - TRACK 4 CLEANUP PLAN PROFILE VIEW (F-F')
Project No.	100652601
Date	06/28/2021
Drawn By	AC
Checked By	AB
Drawing No.	7C

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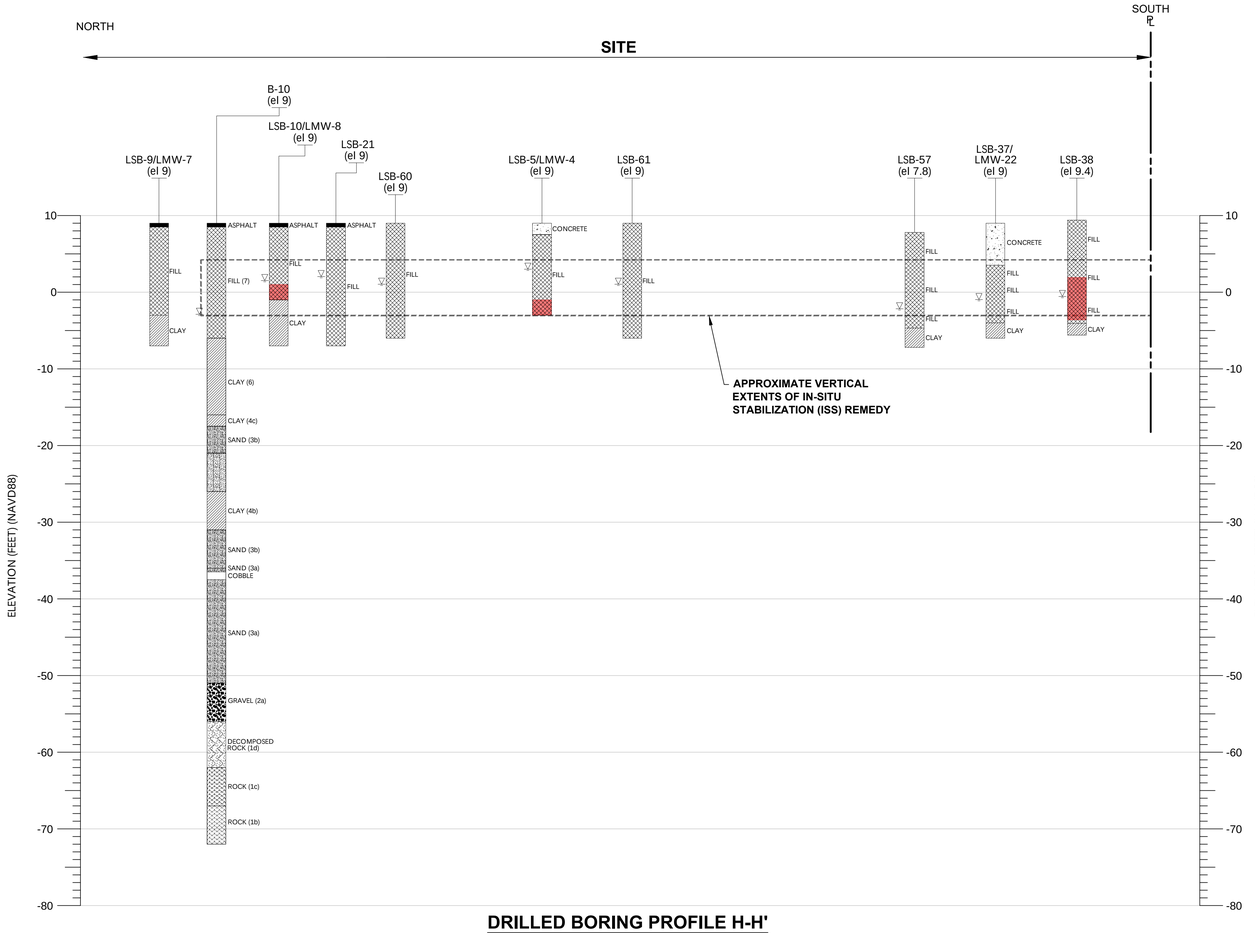
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LANGAN PROJECT NO. ########



DRILLED BORING PROFILE G-G'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE



DRILLED BORING PROFILE H-H'

VERTICAL SCALE: 1" = 8'
HORIZONTAL SCALE: NOT TO SCALE

BORING KEY:



LEGEND:

B-X	DRILLED BORING IDENTIFICATION
el XX±	APPROXIMATE SURFACE ELEVATION AT THE TIME OF BORING (NAVD88)
▽	GROUNDWATER LEVEL FIRST OBSERVED IN THE BORING
	PRODUCT OBSERVED WITHIN SOIL BORING
	PRODUCT OBSERVED DURING MONITORING WELL GAUGING

NOTES:

1. THIS PROFILE SHOWS GENERALIZED SUBSURFACE CONDITIONS AT THE RESPECTIVE BORING LOCATIONS. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS. FOR A DETAILED DESCRIPTION OF CONDITIONS ENCOUNTERED, SEE BORING LOGS INCLUDED IN ATTACHMENT B.
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3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD88.
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5. ENVIRONMENTAL SOIL BORINGS LSB-1 THROUGH LSB-25 WERE COMPLETED BETWEEN 19 AND 21 NOVEMBER 2018 AS PART OF THE 2018 REMEDIAL INVESTIGATION AND ENVIRONMENTAL SOIL BORINGS LSB-26 THROUGH LSB-72 WERE COMPLETED BETWEEN 7 AND 16 JULY 2020 AS PART OF THE 2020 REMEDIAL INVESTIGATION.

8 0 4 8
VERTICAL SCALE IN FEET

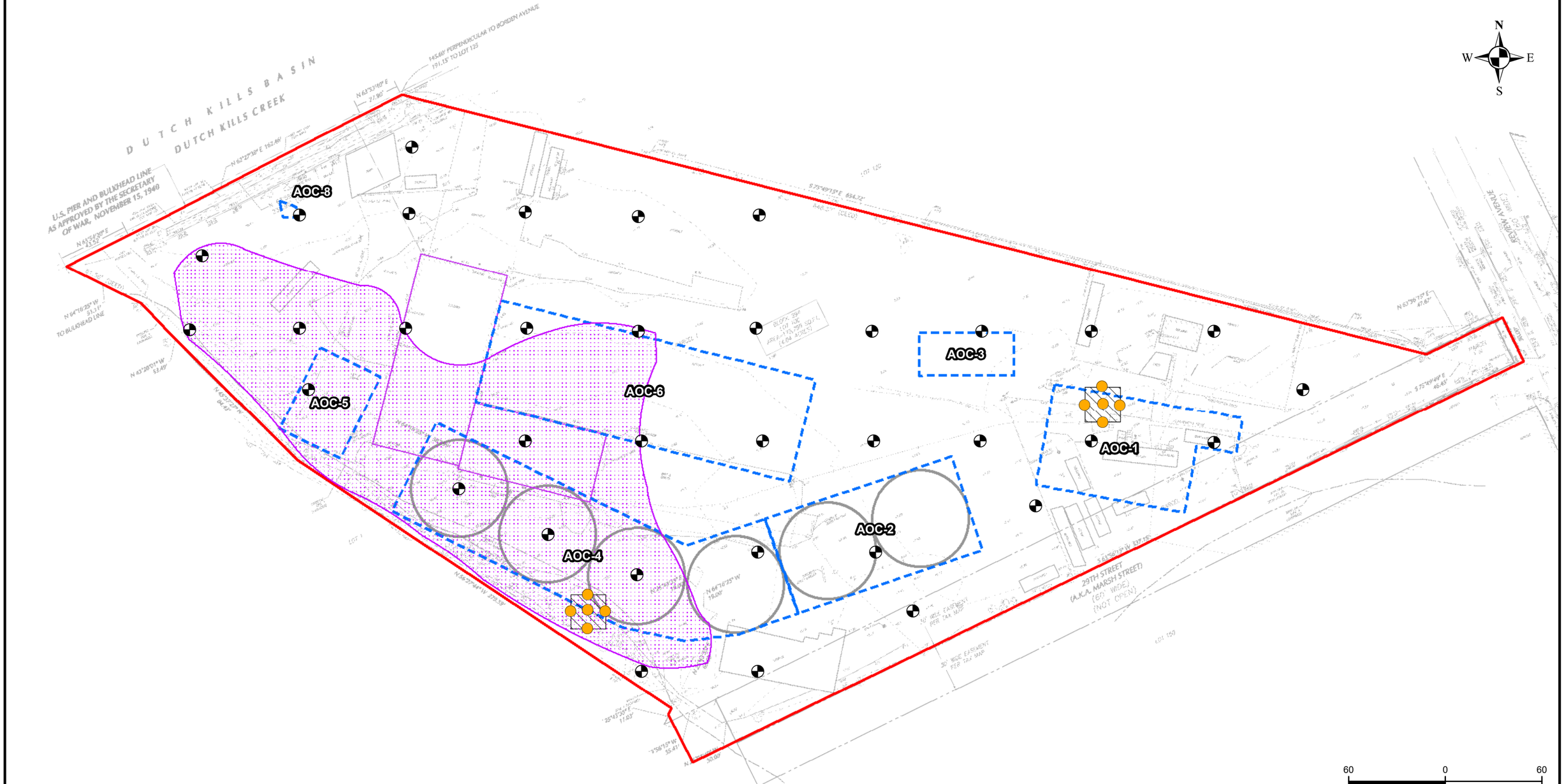
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Project	28-90 REVIEW AVENUE NYSDEC BCP SITE No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	ALTERNATIVE II - TRACK 4 CLEANUP PLAN PROFILE VIEW (G-G' & H-H')
Project No.	100652601
Date	06/28/2021
Drawn By	AC
Checked By	AB
Drawing No.	7D

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Legend

- Site Boundary
- Area of Concern (AOC)
- NAPL Impacts
- Lead Hotspot to be excavated to 14 feet bgs
- Proposed Bottom Documentation Sample Locations
- Proposed Hotspot Delineation Sample Locations

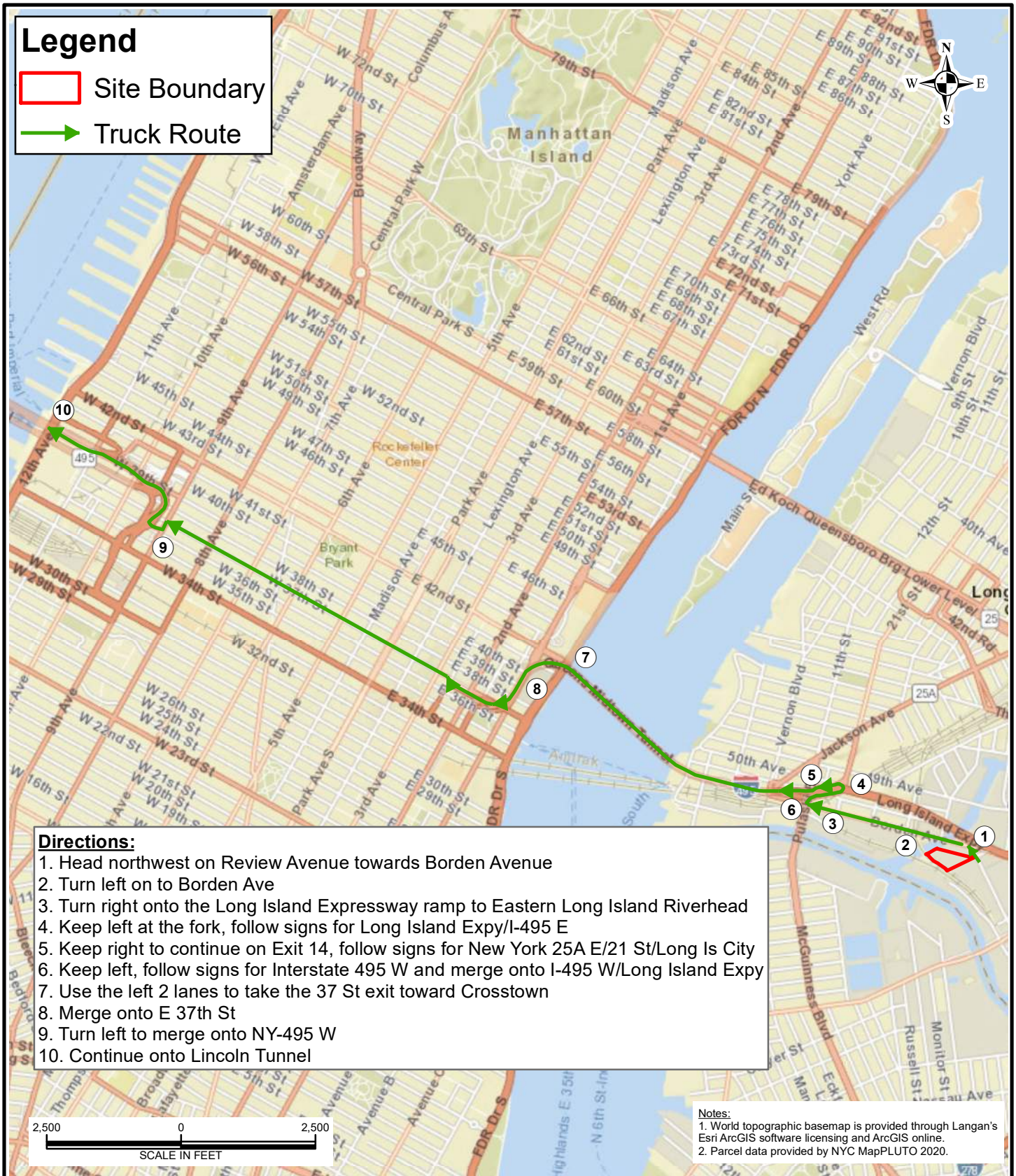
Notes:
1. Basemap from "Topographic, Boundary and Utility Survey" by Langan, signed 3/8/2019..
2. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
3. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map.
4. Metals hotspot locations are estimated and subject to change based on analytical results.

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project	28-90 REVIEW AVENUE NYSDEC BCP Site No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	PROPOSED ENDPOINT CONFIRMATION SAMPLING
Project No.	100652601
Date	1/8/2021
Scale	1"=60'
Drawn By	IHB
Last Revised	6/29/2022
Figure	8

© 2012 Langan

Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2021-06\Figure 8 - Proposed Endpoint Documentation Sampling.mxd Date: 6/29/2022 User: ibaker Time: 12:17:02 PM



LANGAN
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Parsippany, NJ 07054
T: 973.560.4900 F: 973.560.4901 www.langan.com
Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
TRUCK ROUTE MAP

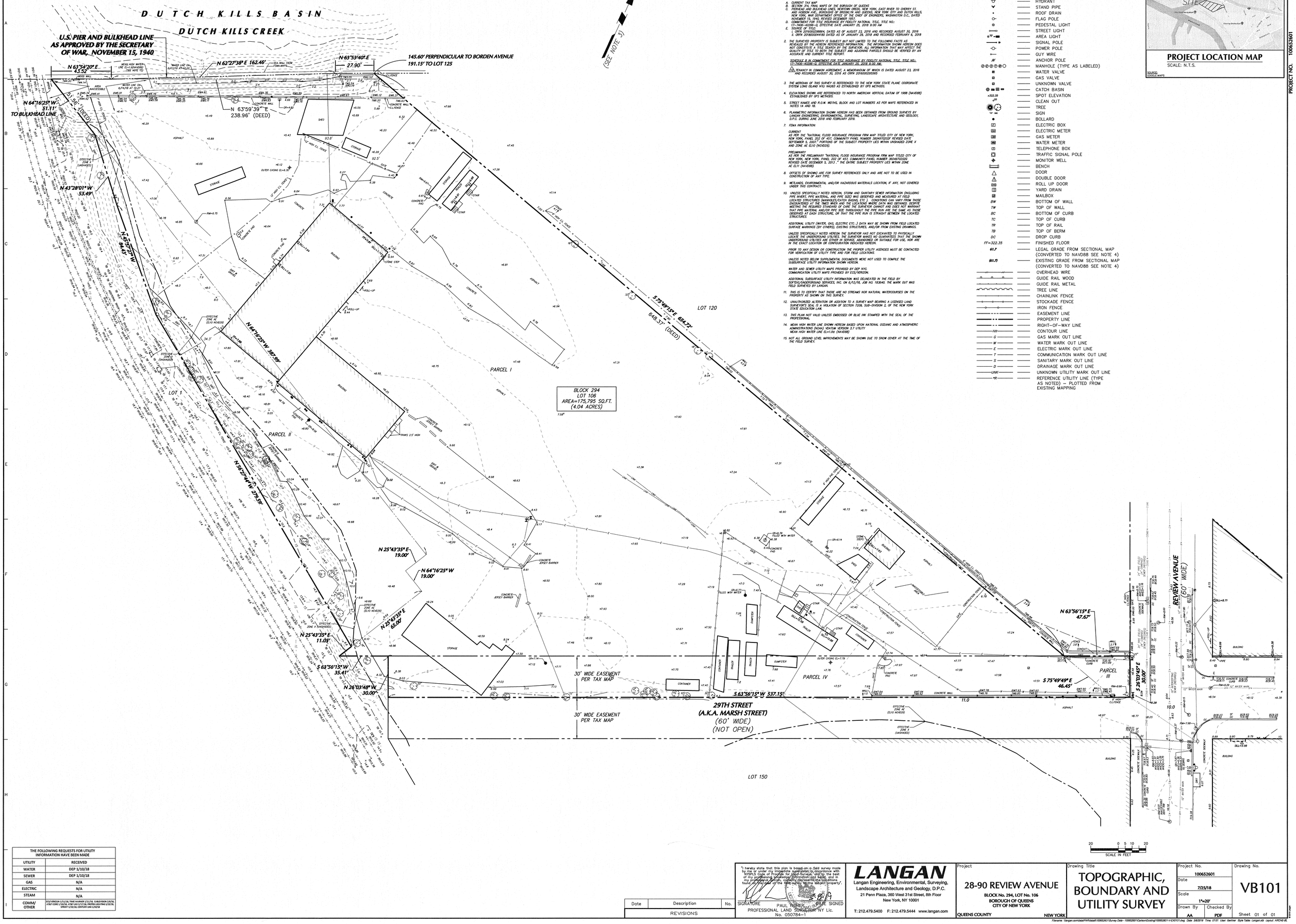
Project No.	100652601
Date	1/8/2021
Scale	1"=2,500'
Drawn By	IHB
Last Revised	1/22/2021
Figure	9

© 2013 Langan

Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 10 - Truck Route Map.mxd Date: 1/22/2021 User: ibaker Time: 1:54:28 PM

APPENDIX A

Site Survey



NOTES

1. THIS SURVEY IS BASED UPON EXISTING PHYSICAL CONDITIONS FOUND AT THE SUBJECT SITE, AND THE FOLLOWING REFERENCES:
   - A. CURRENT TAX MAP
   - B. SECTION 31-4, FINAL MAPS OF THE BOROUGH OF QUEENS
   - C. PIERHEAD AND BULKHEAD LINES, NEWTOWN CREEK, NEW YORK, EAST RIVER TO CHERRY ST. AND HOBSON AVE., BOROUGHS OF BROOKLYN AND QUEENS, NEW YORK CITY AND DUTCH KILLS, NEW YORK, WAR DEPARTMENT OFFICE OF THE CHIEF OF ENGINEERS, WASHINGTON D.C., DATED NOVEMBER 15, 1940, REVISED DECEMBER 1957.
   - D. COMMITMENT FOR TITLE INSURANCE BY FIDELITY NATIONAL TITLE, TITLE NO.: 17-7406-4022IM-G, EFFECTIVE DATE JANUARY 25, 2018 9:00 AM
   - E. SOURCE OF TITLE:
     - I. ORPA 2016000229884, DATED AS OF AUGUST 23, 2016 AND RECORDED AUGUST 30, 2016
     - II. ORPA 2018000044180 DATED AS OF JANUARY 29, 2018 AND RECORDED FEBRUARY 6, 2018
2. THE SURVEYED PROPERTY IS SUBJECT BUT NOT LIMITED TO THE FOLLOWING FACTS AS REVEALED BY THE HEREON REFERENCED INFORMATION. THE INFORMATION SHOWN HEREON DOES NOT CONSTITUTE A TITLE SEARCH BY THE SURVEYOR. ALL INFORMATION THAT MAY AFFECT THE QUALITY OF TITLE TO BOTH THE SUBJECT AND ADJOINING PARCELS SHOULD BE VERIFIED BY AN ACCURATE AND CURRENT TITLE REPORT.

   SCHEDULE B III, COMMITMENT FOR TITLE INSURANCE BY FIDELITY NATIONAL TITLE, TITLE NO.: 17-7406-4022IM-G, EFFECTIVE DATE JANUARY 25, 2018 9:00 AM:

   ⚠ TENANCY IN COMMON AGREEMENT, A MEMORANDUM OF WHICH IS DATED AUGUST 23, 2016 AND RECORDED AUGUST 30, 2016 AS CRFN 2016000229565
3. THE MERIDIAN OF THIS SURVEY IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM LONG ISLAND NYSJ NAD83 AS ESTABLISHED BY GPS METHODS.
4. ELEVATIONS SHOWN ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) ESTABLISHED BY GPS METHODS.
5. STREET NAMES AND R.O.W. WIDTHS, BLOCK AND LOT NUMBERS AS PER MAPS REFERENCED IN NOTES 1A AND 1B.
6. PLANIMETRIC INFORMATION SHOWN HEREON HAS BEEN OBTAINED FROM GROUND SURVEYS BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C. DURING JUNE 2018 AND FEBRUARY 2019.
7. FEMA INFORMATION:

   CURRENT
   AS PER THE "NATIONAL FLOOD INSURANCE PROGRAM FIRM MAP TITLED CITY OF NEW YORK, NEW YORK, PANEL 202 OF 457, COMMUNITY PANEL NUMBER 3604970202F REVISED DATE SEPTEMBER 5, 2007." PORTIONS OF THE SUBJECT PROPERTY LIES WITHIN UNSHADED ZONE X AND ZONE AE ELV.0 (NGVD29).

   PRELIMINARY
   AS PER THE PRELIMINARY "NATIONAL FLOOD INSURANCE PROGRAM FIRM MAP TITLED CITY OF NEW YORK, NEW YORK, PANEL 202 OF 457, COMMUNITY PANEL NUMBER 3604970202G REVISED DATE DECEMBER 5, 2013." THE ENTIRE SUBJECT PROPERTY LIES WITHIN ZONE AE ELV1 (NAVD88).
8. OFFSETS (IF SHOWN) ARE FOR SURVEY REFERENCES ONLY AND ARE NOT TO BE USED IN CONSTRUCTION OF ANY TYPE.
9. WETLANDS, ENVIRONMENTAL AND/OR HAZARDOUS MATERIALS LOCATION, IF ANY, NOT COVERED UNDER THIS CONTRACT.
10. UNLESS SPECIFICALLY NOTED HEREON, STORM AND SANITARY SEWER INFORMATION (INCLUDING PIPE INVERTS, PIPE MATERIAL, AND PIPE SIZE) WAS OBSERVED AND MEASURED AT FIELD LOCATED STRUCTURES (MANHOLES/CATCH BASINS, ETC.). CONDITIONS CAN VARY FROM THOSE ENCOUNTERED AT THE TIMES WHEN AND THE LOCATIONS WHERE DATA WAS OBTAINED. DESPITE MEETING THE REQUIRED STANDARD OF CARE THE SURVEYOR CANNOT AND DOES NOT WARRANT THAT PIPE MATERIAL AND/OR PIPE SIZE THROUGHOUT THE PIPE RUN ARE THE SAME AS THOSE OBSERVED AT EACH STRUCTURE, OR THAT THE PIPE RUN IS STRAIGHT BETWEEN THE LOCATED STRUCTURES.

    ADDITIONAL UTILITY (WATER, GAS, ELECTRIC ETC..) DATA MAY BE SHOWN FROM FIELD LOCATED SURFACE MARKINGS (BY OTHERS), EXISTING STRUCTURES, AND/OR FROM EXISTING DRAWINGS.

    UNLESS SPECIFICALLY NOTED HEREON THE SURVEYOR HAS NOT EXCAVATED TO PHYSICALLY LOCATE THE UNDERGROUND UTILITIES. THE SURVEYOR MAKES NO GUARANTEES THAT THE SHOWN UNDERGROUND UTILITIES ARE EITHER IN SERVICE, ABANDONED OR SUITABLE FOR USE, NOR ARE IN THE EXACT LOCATION OR CONFIGURATION INDICATED HEREON.

    PRIOR TO ANY DESIGN OR CONSTRUCTION THE PROPER UTILITY AGENCIES MUST BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS.

    UNLESS NOTED BELOW SUPPLEMENTAL DOCUMENTS WERE NOT USED TO COMPILE THE SUBSURFACE UTILITY INFORMATION SHOWN HEREON.

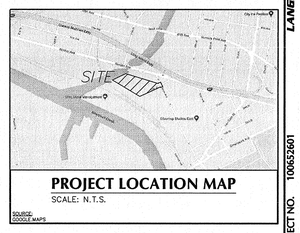
    WATER AND SEWER UTILITY MAPS PROVIDED BY DEP NYC.
    COMMUNICATION UTILITY MAPS PROVIDED BY ECS/HERITZON.

    ADDITIONAL SUBSURFACE UTILITY INFORMATION WAS DELINEATED IN THE FIELD BY SOFTSIG/UNDERGROUND SERVICES, INC. ON 6/12/18, JOB NO. 1163640. THE MARK OUT WAS FIELD SURVEYED BY LANGAN.
11. THIS IS TO CERTIFY THAT THERE ARE NO STREAMS NOR NATURAL WATERCOURSES ON THE PROPERTY AS SHOWN ON THIS SURVEY.
12. UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.
13. THIS PLAN NOT VALID UNLESS EMBOSSED OR BLUE INK STAMPED WITH THE SEAL OF THE PROFESSIONAL.
14. MEAN HIGH WATER LINE SHOWN HEREON BASED UPON NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATIONS (NOAA) VDATUM VERSION 3.7 UTILITY
    MEAN HIGH WATER LINE EL=1.26 (NAVD88)
15. NOT ALL GROUND LEVEL IMPROVEMENTS MAY BE SHOWN DUE TO SNOW COVER AT THE TIME OF THE FIELD SURVEY.

LEGEND (NOT SHOWN TO SCALE)

HYDRANT, STAND PIPE, ROOF DRAIN, FLAG POLE, PEDESTAL LIGHT, STREET LIGHT, AREA LIGHT, SIGNAL POLE, POWER POLE, GUY WIRE, ANCHOR POLE, MANHOLE (TYPE AS LABELED), WATER VALVE, GAS VALVE, UNKNOWN VALVE, CATCH BASIN, SPOT ELEVATION, CLEAN OUT, TREE, SIGN, BOLLARD, ELECTRIC BOX, ELECTRIC METER, GAS METER, WATER METER, TELEPHONE BOX, TRAFFIC SIGNAL POLE, MONITOR WELL, BENCH, DOOR, DOUBLE DOOR, ROLL UP DOOR, YARD DRAIN, MAILBOX, BOTTOM OF WALL (BW), TOP OF WALL (TW), BOTTOM OF CURB (BC), TOP OF CURB (TC), TOP OF RAIL (TR), TOP OF BERM (TB), DROP CURB (DC), FINISHED FLOOR (FF=322.35), LEGAL GRADE FROM SECTIONAL MAP (CONVERTED TO NAVD88 SEE NOTE 4) (61.7), EXISTING GRADE FROM SECTIONAL MAP (CONVERTED TO NAVD88 SEE NOTE 4) (61.7)

OVERHEAD WIRE, GUIDE RAIL WOOD, GUIDE RAIL METAL, TREE LINE, CHAINLINK FENCE, STOCKADE FENCE, IRON FENCE, EASEMENT LINE, PROPERTY LINE, RIGHT-OF-WAY LINE, CONTOUR LINE (322), GAS MARK OUT LINE (G), WATER MARK OUT LINE (W), ELECTRIC MARK OUT LINE (E), COMMUNICATION MARK OUT LINE (T), SANITARY MARK OUT LINE (S), DRAINAGE MARK OUT LINE (D), UNKNOWN UTILITY MARK OUT LINE (UNK), REFERENCE UTILITY LINE (TYPE AS NOTED) – PLOTTED FROM EXISTING MAPPING (XR)



PROJECT LOCATION MAP
SCALE: N.T.S.
SOURCE: GOOGLE MAPS

LANGAN
PROJECT NO. 100652601

THE FOLLOWING REQUESTS FOR UTILITY INFORMATION HAVE BEEN MADE

UTILITY	RECEIVED
WATER	DEP 1/10/18
SEWER	DEP 1/10/18
GAS	N/A
ELECTRIC	N/A
STEAM	N/A
COMM/ OTHER	FCS/VERIZON 1/31/18, TIME WARNER 1/31/18, CABLEVISION 1/8/18, AT&T CORP. 1/30/18, AT&T-MH 1/17/18, PROTEK LOCATING 1/25/18, SPRINT 1/29/18, CENTURY LINK 1/19/18

No.	Description	Date
	REVISIONS	

"I hereby state that this plan is based on a field survey made by me or under my immediate supervision, in accordance with 19 NYCRR Code of Practice for Land Surveys, and to the best of my professional knowledge, information and belief, and in my professional opinion, correctly represents the conditions found on the land, date of the field survey is the 'subject property'."

SIGNATURE PAUL PALMER, PROFESSIONAL LAND SURVEYOR NY Lic. No. 050784 DATE SIGNED

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project: 28-90 REVIEW AVENUE
BLOCK No. 294, LOT No. 106
BOROUGH OF QUEENS
CITY OF NEW YORK
QUEENS COUNTY NEW YORK

Drawing Title: TOPOGRAPHIC, BOUNDARY AND UTILITY SURVEY

Project No. 100652601
Date 7/25/18
Scale 1"=20'
Drawn By AA
Checked By PDF

Drawing No. VB101
Sheet 01 of 01

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Filename: \\langan.com\data\PAR\data6\100652601\Survey Data - 100652601\Cartion\Existing\100652601-V-EAX101.dwg Date: 3/8/2019 Time: 07:01 User: bentner Style Table: Langan.stb Layout: ARCH-E-BL

APPENDIX B

Proposed Development Plans

LANGAN

KSS

28-90 REVIEW AVE, QUEENS, NY

URBAN INDUSTRIAL SCHEMATIC DESIGN

28 JANUARY 2022

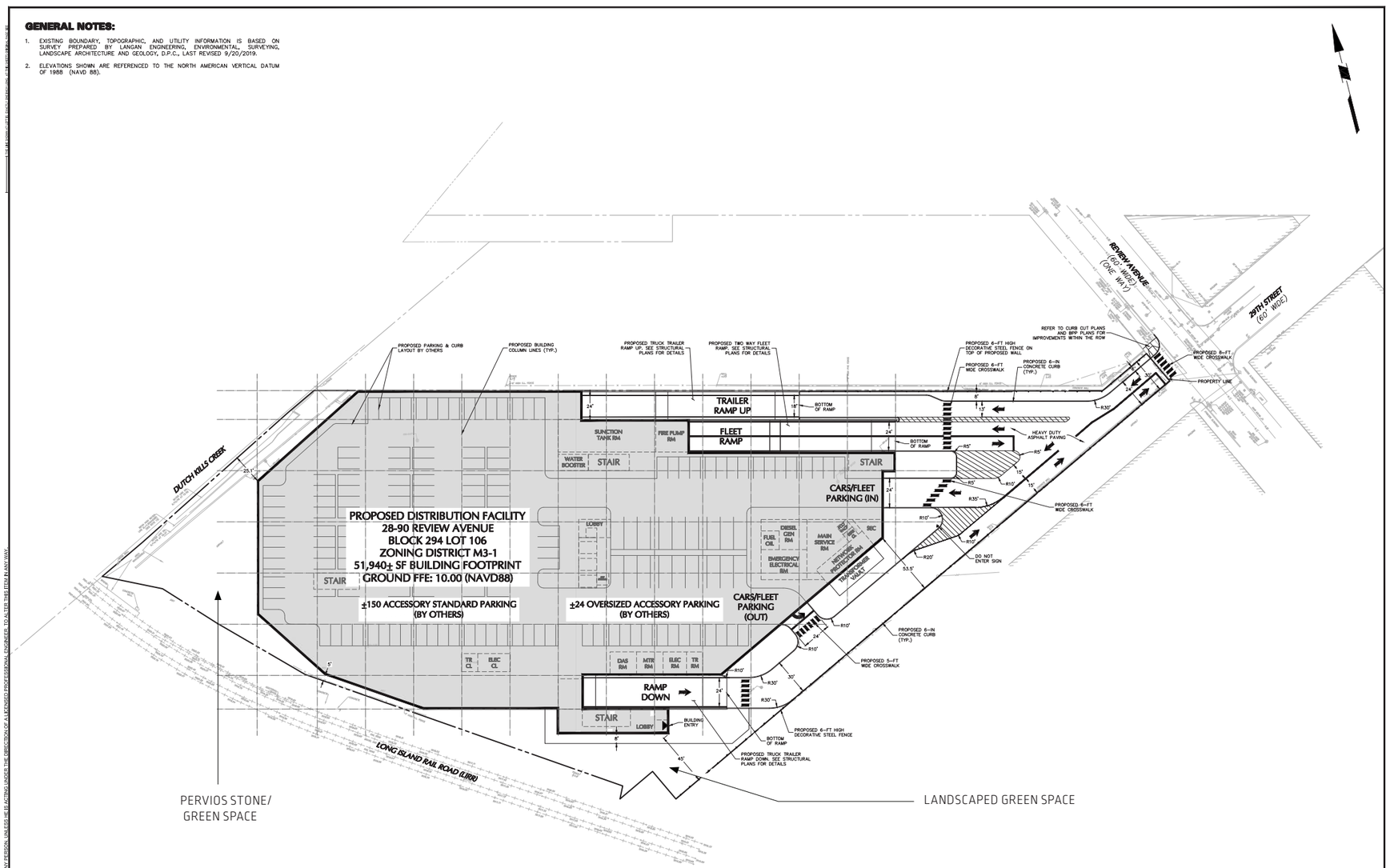
IPG

INNOVO PROPERTY GROUP

CIVIL SITE PLAN

GENERAL NOTES:

1. EXISTING BOUNDARY, TOPOGRAPHIC, AND UTILITY INFORMATION IS BASED ON SURVEY PREPARED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C., LAST REVISED 9/20/2019.
2. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).



30 0 15 30
SCALE: 1 INCH = 30 FEET

NOT FOR CONSTRUCTION

28-90 REVIEW AVENUE

INNOVO PROPERTY GROUP
28-90 REVIEW AVENUE
QUEENS, NY, 11101

No.	Date	Description

KSS ARCHITECTS
116 Nassau Street, Suite 613
New York, NY 10038

www.kssarchitects.com

DESIMONE (DCE)
140 BROADWAY, 25TH FL
NEW YORK, NY 10005
212.532.2211

M-E ENGINEERS
29 W 38TH STREET
NEW YORK, NY 10018
212.477.6770

LANGAN
300 KIMBALL DRIVE, 4TH FL
PARSIPPANY, NJ 07054
973.560.4900

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
300 Kimball Drive
Parsippany, NJ 07054
T: 973.560.4900 F: 973.560.4901 www.langan.com

KSS
PROGRESS

Project No.: 100652602
Issued: 01/12/2022
SITE PLAN

C-100

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.

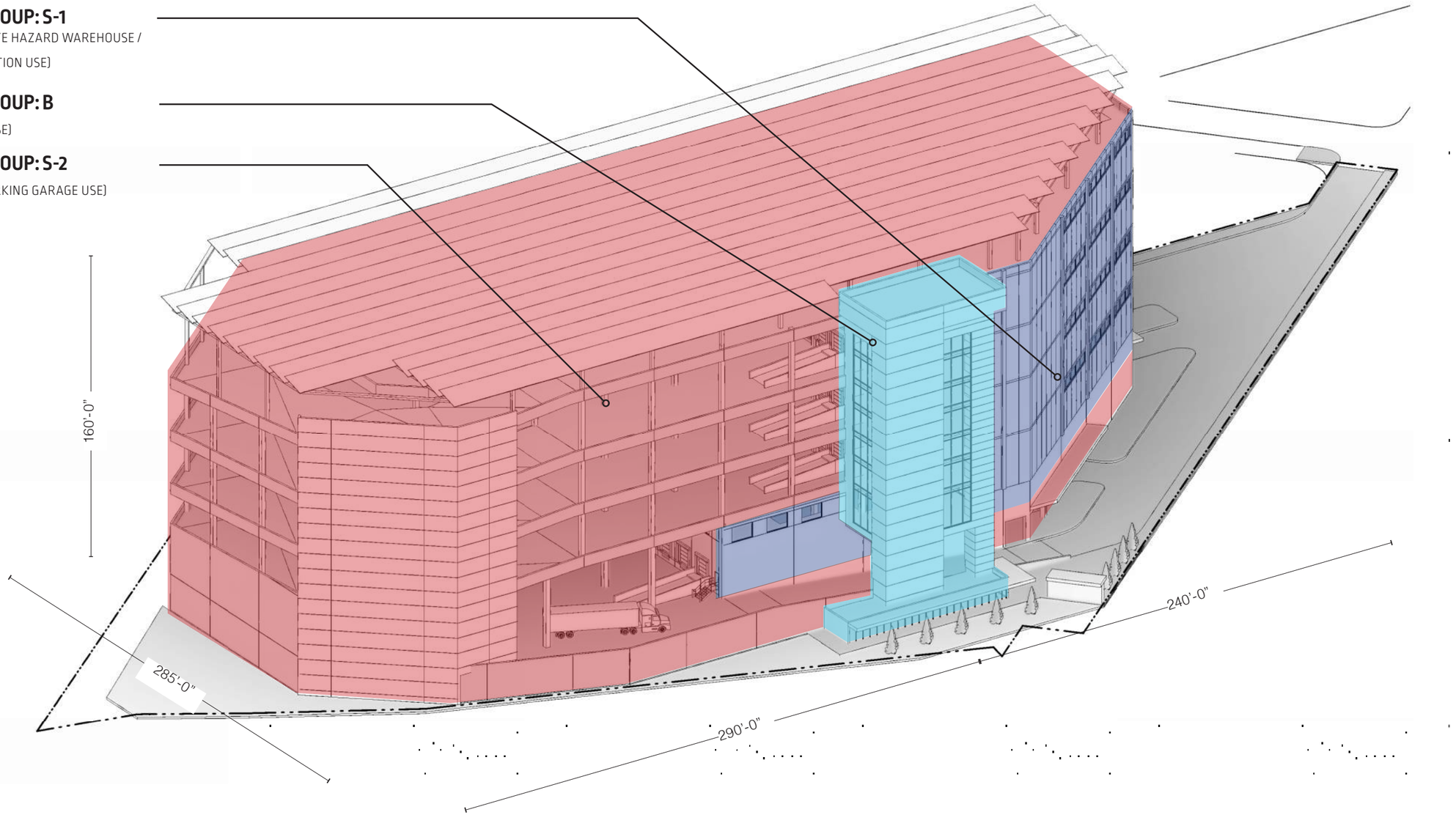
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NEW YORK CITY BUILDING CODE REVIEW - BUILDING PHYSICAL PROPERTIES, USE GROUPS

USE GROUP: S-1
(MODERATE HAZARD WAREHOUSE / DISTRIBUTION USE)

USE GROUP: B
(OFFICE USE)

USE GROUP: S-2
(OPEN PARKING GARAGE USE)



4 ARCHITECTURAL DESIGN

BUILDING SUMMARY

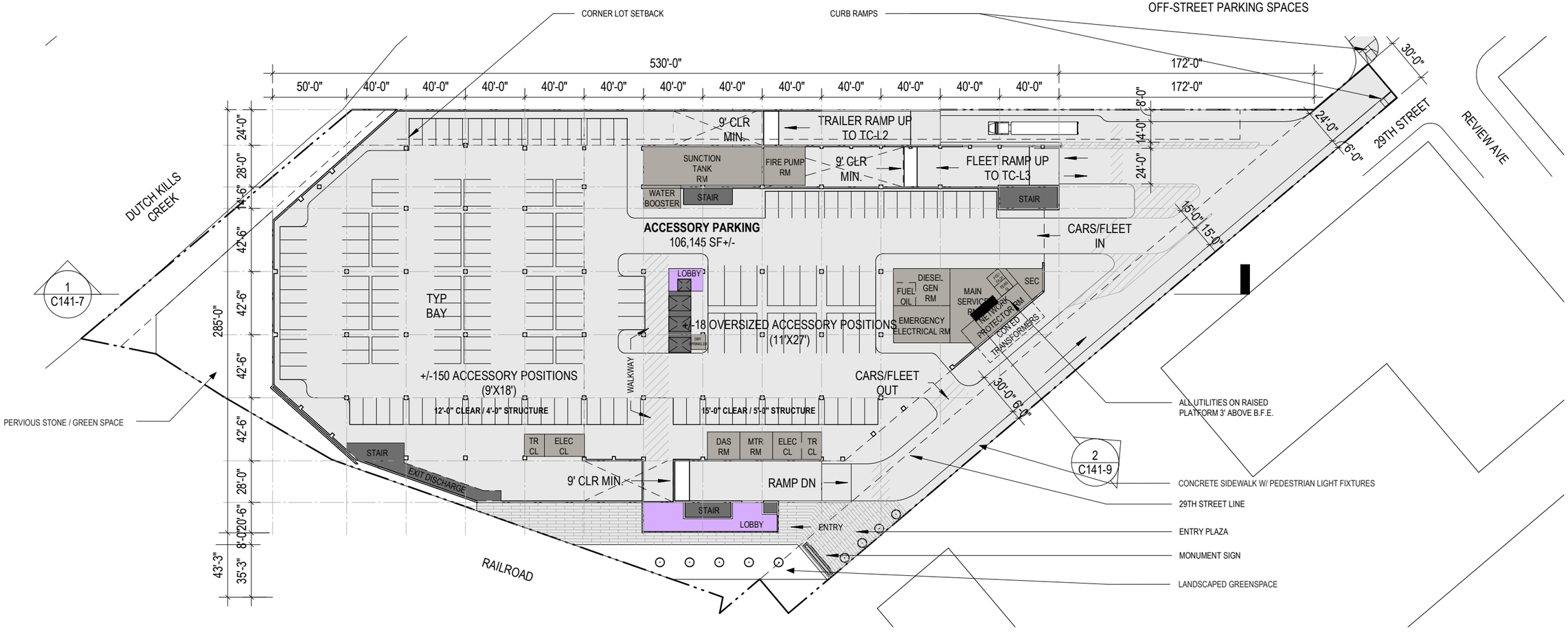
AREA CALCULATIONS

			SG 3/1/2022		SG Zoning Alt 3/1/2022					
Floor		**FAR**	**ZSF (SF+/-)**	**GSF (SF+/-)**	**ZSF (SF+/-)**	**GSF (SF+/-)**	**CAR (9'x18')**	**FLEET (11'x27')**	**TRAILER (12'X50')**	
	LEVEL 1									
	LOBBY	Y	1,425	1,425	1,340	1,340				
	EGRESS (STAIRS/ELEVS)	Y	2,755	2,755	2,755	2,755				
	UTILITIES (INCOMING SERVICES)	N	0	8,620	0	8,620				
	UTILITIES (ELEC CL, TR CL) 1/2	N	0	600	0	600				
	UTILITIES (ELEC CL, TR CL) 2/2	N	0	600	0	600				
	SURFACE ACCESSORY PARKING	N	0	96,640	0	96,640	*150*	**18**		
	TRUCK RAMPS <23' (RAMP UP TO TC-L2)	N	0	4,160	0	4,160				
	TRUCK RAMPS <23' (RAMP DN FROM TC-L2)	N	0	5,060	0	5,060				
	FLEET RAMPS <23' (PORTION OF RAMP TO TC-L3)	N	0	5,865	0	5,865				
	GROUND CIRCULATION	N	0	55,470	0	55,470				
	LEVEL 2									
	WAREHOUSE	Y	42,535	42,535	42,535	42,535				
	SHARED LOADING LOBBY	Y	3,165	3,165	3,165	3,165				
	EGRESS (STAIRS/ELEVS)	Y	2,410	2,410	2,410	2,410				
	UTILITIES (ELEC CL, TR CL, ARU) 1/2	N	0	875	0	875				
	UTILITIES (ELEC CL, TR CL, ARU) 2/2	N	0	875	0	875				
	TRUCK COURT	N	0	24,400	17,200	24,400				*7,200 SF LOADING
	ACCESSORY PARKING <23'	N	0	13,185	0	13,185			6	BERTH DEDUCTION
	VEHICLE CIRCULATION	N	0	7,940	0	7,940				
	FLEET RAMPS >23' (PORTION OF RAMP TO TC-L3)	N	0	21,885	0	21,885				
	LEVEL 2 MEZZ									
	STORAGE/LIGHT INDUSTRIAL	Y	3,140	3,140	0	0				
	LOBBY	Y	1,880	1,880	2,025	2,025				
	EGRESS (STAIRS/ELEVS)	Y	1,885	1,885	1,845	1,845				
	OFFICE 1/2	Y	2,520	2,520	2,125	2,125				
	OFFICE 2/2	Y	3,340	3,340	2,870	2,870				
	UTILITIES (BB ELEC CL, BB TR CL)	Y	0	320	0	2,660				
	LEVEL 3									
	WAREHOUSE	Y	37,010	37,010	37,010	37,010				
	SHARED LOADING LOBBY	Y	1,900	1,900	1,900	1,900				
	EGRESS (STAIRS/ELEVS)	Y	2,905	2,905	2,905	2,905				
	LOBBY	Y	1,830	1,830	1,685	1,685				
	UTILITIES (ELEC CL, TR CL, ARU) 1/2	N	0	1,000	0	1,000				
	UTILITIES (ELEC CL, TR CL, ARU) 2/2	N	0	1,000	0	1,000				
	COMMERCIAL VEHICLE STORAGE	Y	14,625	14,625	12,260	12,260		**15**		
	TRUCK COURT	Y	15,425	15,425	15,425	15,425				
	VEHICLE CIRCULATION	Y	8,500	8,500	8,500	8,500				
	FLEET RAMPS/LANDINGS (TC-L3 TO TC-L4)	N	0	18,260	0	18,260				
	LEVEL 3 MEZZ									
	STORAGE/LIGHT INDUSTRIAL	Y	1,945	1,945	0	0				
	LOBBY	Y	1,830	1,830	1,655	1,655				
	EGRESS (STAIRS/ELEVS)	Y	2,545	2,545	1,845	1,845				
	OFFICE 1/2	Y	3,220	3,220	3,260	3,260				
	OFFICE 2/2	Y	2,835	2,835	2,835	2,835				
	UTILITIES (BB ELEC CL, BB TR CL)	Y	0	320	0	865				
	LEVEL 4									
	WAREHOUSE	Y	37,010	37,010	37,010	37,010				
	SHARED LOADING LOBBY	Y	1,900	1,900	1,900	1,900				
	EGRESS (STAIRS/ELEVS)	Y	2,905	2,905	2,905	2,905				
	LOBBY	Y	1,830	1,830	1,685	1,685				
	UTILITIES (ELEC CL, TR CL, ARU) 1/2	N	0	1,000	0	1,000				
	UTILITIES (ELEC CL, TR CL, ARU) 2/2	N	0	1,000	0	1,000				
	COMMERCIAL VEHICLE STORAGE	Y	14,625	14,625	12,260	12,260		**15**		
	TRUCK COURT	Y	15,425	15,425	15,425	15,425				
	VEHICLE CIRCULATION	Y	8,500	8,500	8,500	8,500				
	FLEET RAMPS/LANDINGS (TC-L4 TO TC-L5)	Y	0	18,260	0	18,260				
	LEVEL 4 MEZZ									
	STORAGE/LIGHT INDUSTRIAL	Y	1,945	1,945	0	0				
	LOBBY	Y	1,830	1,830	1,655	1,655				
	EGRESS (STAIRS/ELEVS)	Y	2,545	2,545	1,845	1,845				
	OFFICE 1/2	Y	3,220	3,220	3,260	3,260				
	OFFICE 2/2	Y	2,835	2,835	2,835	2,835				
	UTILITIES (BB ELEC CL, BB TR CL)	Y	0	320	0	865				
	LEVEL 5									
	WAREHOUSE	Y	37,010	37,010	37,010	37,010				
	SHARED LOADING LOBBY	Y	1,900	1,900	1,900	1,900				
	EGRESS (STAIRS/ELEVS)	Y	2,905	2,905	2,905	2,905				
	LOBBY	Y	1,830	1,830	1,685	1,685				
	UTILITIES (ELEC CL, TR CL, ARU) 1/2	N	0	1,000	0	1,000				
	UTILITIES (ELEC CL, TR CL, ARU) 2/2	N	0	1,000	0	1,000				
	COMMERCIAL VEHICLE STORAGE	Y	14,625	14,625	12,260	12,260		**15**		
	TRUCK COURT	Y	15,425	15,425	15,425	15,425				
	VEHICLE CIRCULATION	Y	8,500	8,500	8,500	8,500				
	FLEET RAMPS/LANDINGS (TC-L5 TO ROOF)	Y	0	18,350	0	18,350				
	LEVEL 5 MEZZ									
	STORAGE/LIGHT INDUSTRIAL	Y	1,945	1,945	0	0				
	LOBBY	Y	1,830	1,830	1,655	1,655				
	EGRESS (STAIRS/ELEVS)	Y	2,545	2,545	1,845	1,845				
	OFFICE 1/2	Y	3,220	3,220	3,260	3,260				
	OFFICE 2/2	Y	2,835	2,835	2,835	2,835				
	UTILITIES (BB ELEC CL, BB TR CL)	Y	0	320	0	865				
	ROOF									
	COMMERCIAL VEHICLE STORAGE (OPEN)	N	0	84,135	0	84,135		**82**		*Fleet Spaces to be coordinated with Solar Array (+/-70 Positions)
	EGRESS (STAIRS/ELEVS)	Y	1,915	1,915	1,915	1,915				
	FLEET RAMPS/LANDINGS	N	0	0	0	0				
	TOTAL ZSF =		**350,680**		**348,025**					
	ALLOWABLE ZSF = 350,764									
			TOTAL GSF=	**743,140**	**TOTAL GSF=**	**727,260**				
			CAR (9'x18')		**CAR (9'x18')**		*150*			
			FLEET (11'x27')		**FLEET (11'x27')**			**145**		
			TRAILER (12'X50')		**TRAILER (12'X50')**				6	

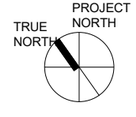
	Total	**Total**	**Delta**
Warehouse	162,430	162,430	0
Light Industrial	8,975	0	-8,975
Egress/Circulation	25,315	23,175	-2,140
Lobby	14,285	13,385	-900
Office Mezz	24,025	23,280	-745
Utilities/BOH	18,850	22,825	3,975
Parking	224,650	217,555	-7,095
TC & Circulation	264,610	264,610	0
	743,140	727,260	-15,880

LEVEL 1 FLOOR PLAN

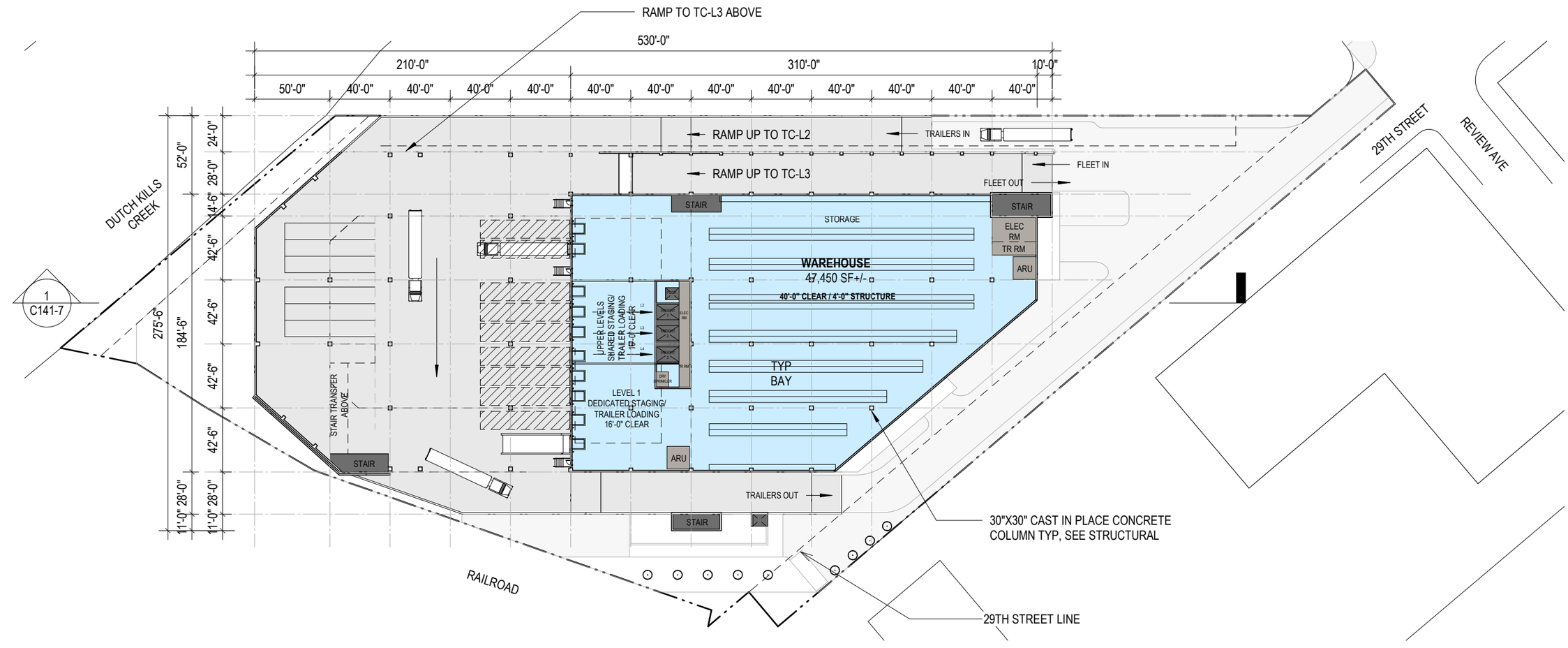
PARKING SPACES REQUIRED FOR STORAGE USE (USE GROUP 16):
1 PER 2,000 SF OF FLOOR AREA OR 1 PER 3 EMPLOYEES
PARKING SPACES REQUIRED FOR STUDIO USE:
1 PER 8 PERSONS RATED CAPACITY (DETERMINED BY COMM. OF BUILDINGS)
NYC ZR SEC 44-12
NO ACCESSORY GROUP PARKING FACILITY SHALL CONTAIN MORE THAN 150 OFF-STREET PARKING SPACES



1 C141-1 PLAN - LEVEL 1 - OPT 5G PARKING
1/64" = 1'-0"

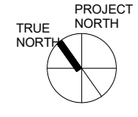


LEVEL 2 FLOOR PLAN

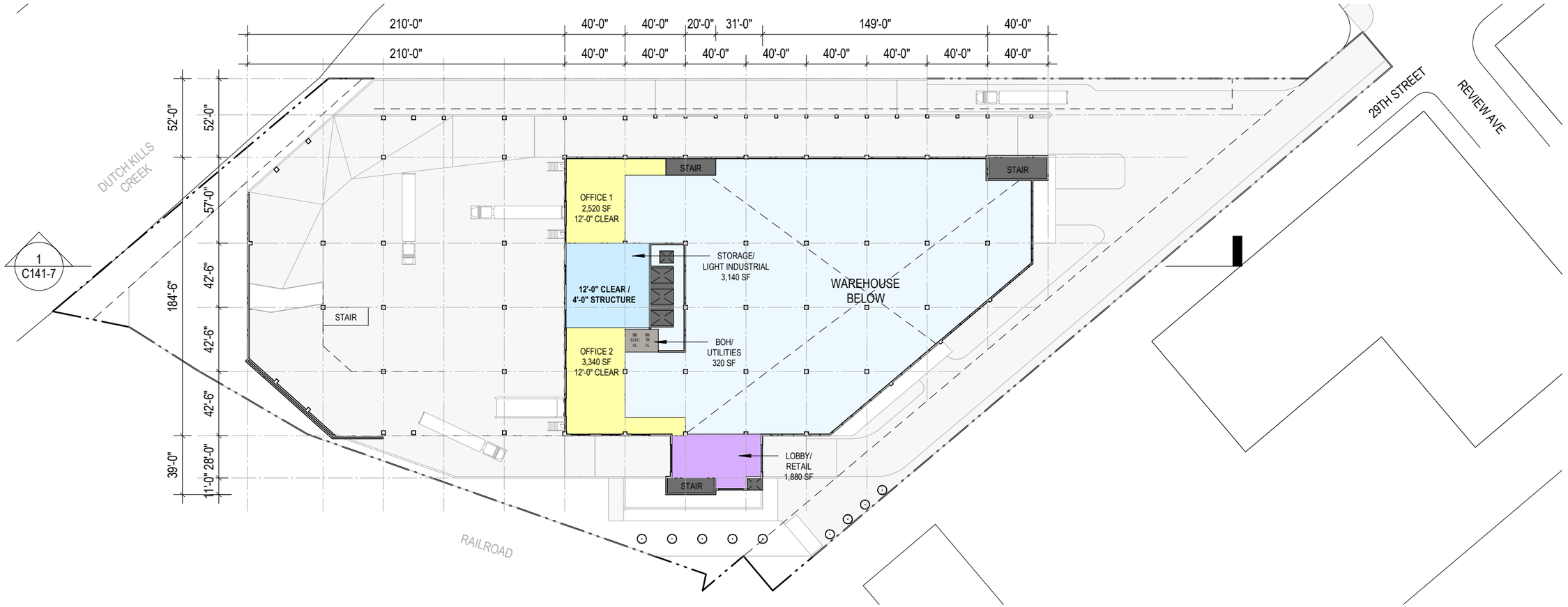


1 / C141-2 PLAN - LEVEL 2 - OPT 5G WH V2

1/64" = 1'-0"

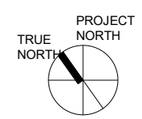


LEVEL 2 MEZZANINE FLOOR PLAN

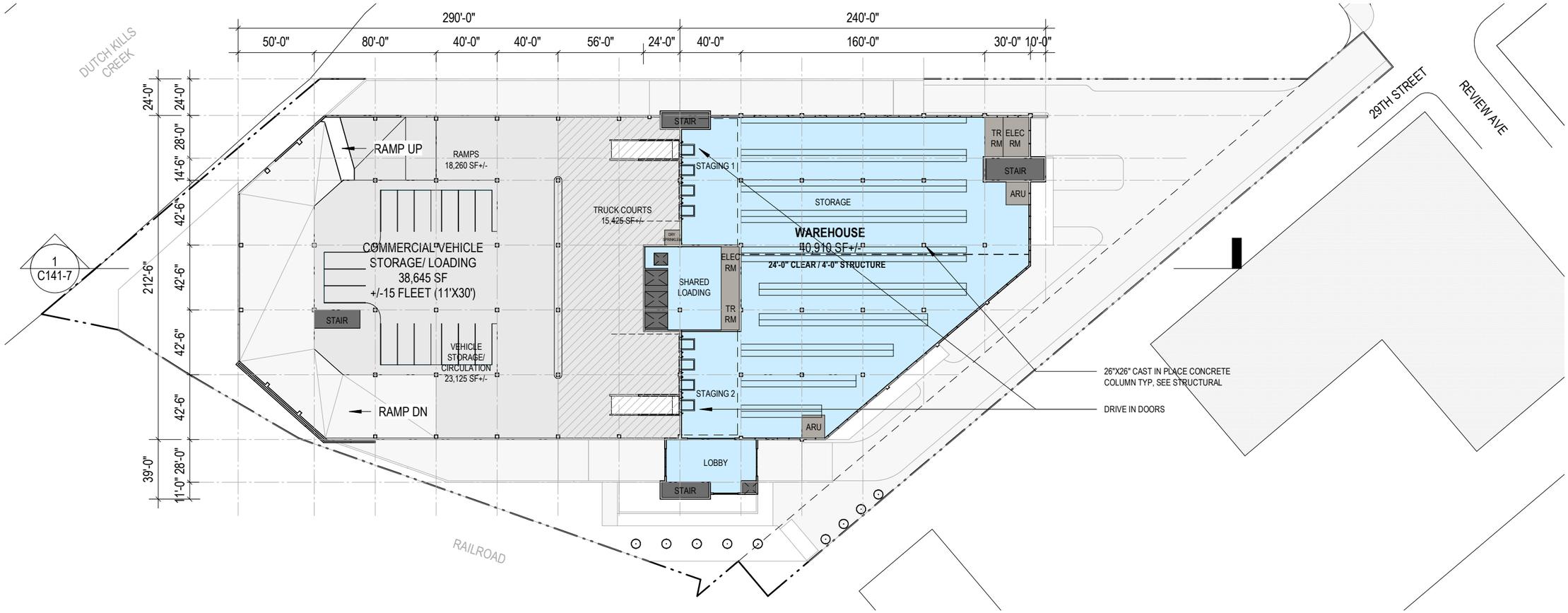


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C141-3 PLAN - LEVEL 2 MEZZ - OPT 5G

1/64" = 1'-0"

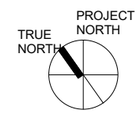


LEVEL 3/4/5 TYPICAL FLOOR PLAN

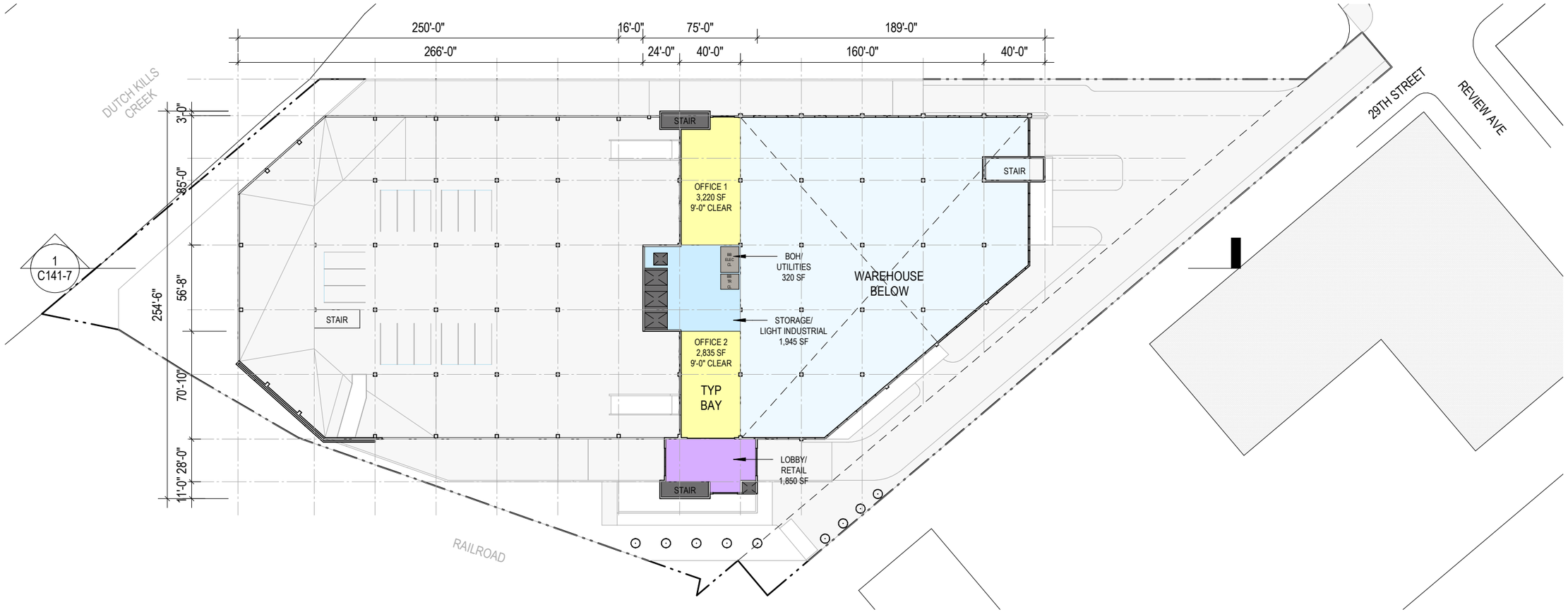


1 C141-4 PLAN - LEVEL 3/4/5 - OPT 5G

1/64" = 1'-0"

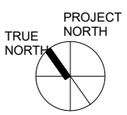


LEVEL 3/4/5 MEZZANINE TYPICAL FLOOR PLAN

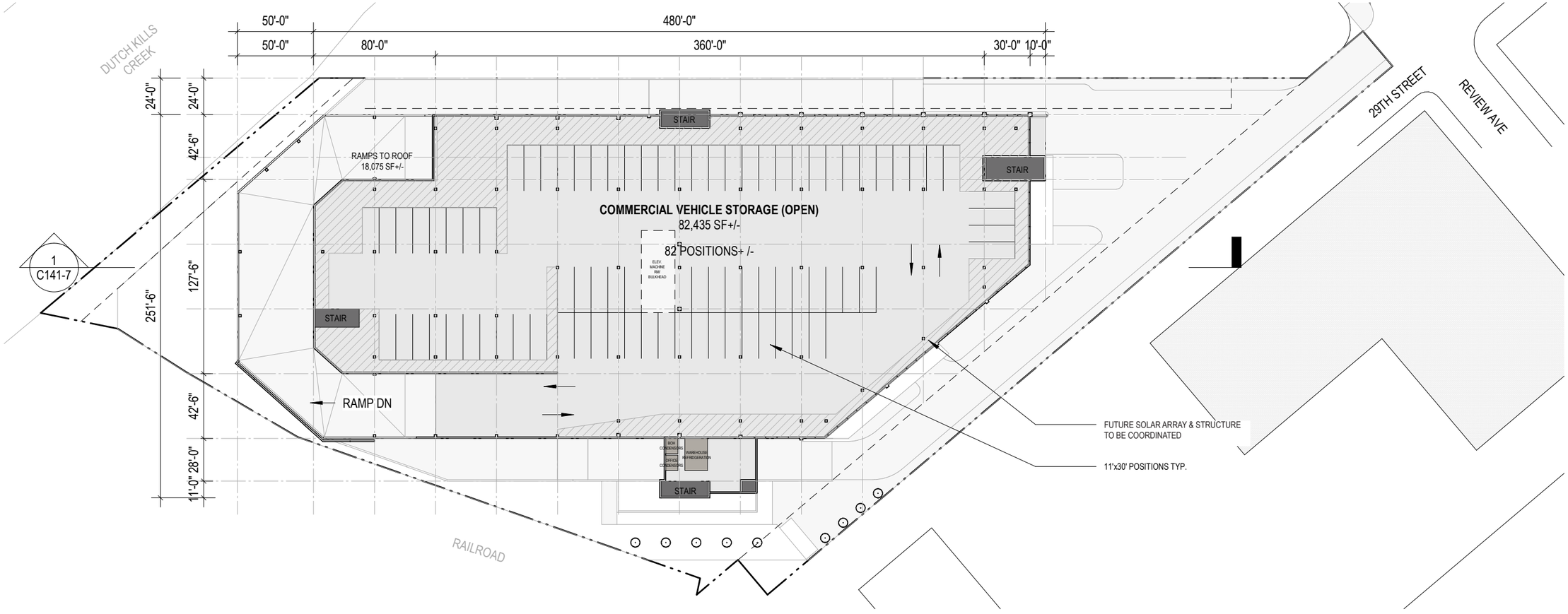


1 C141-5 PLAN - TYP OFFICE MEZZ - OPT 5G

1/64" = 1'-0"

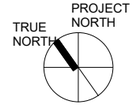


ROOF PLAN

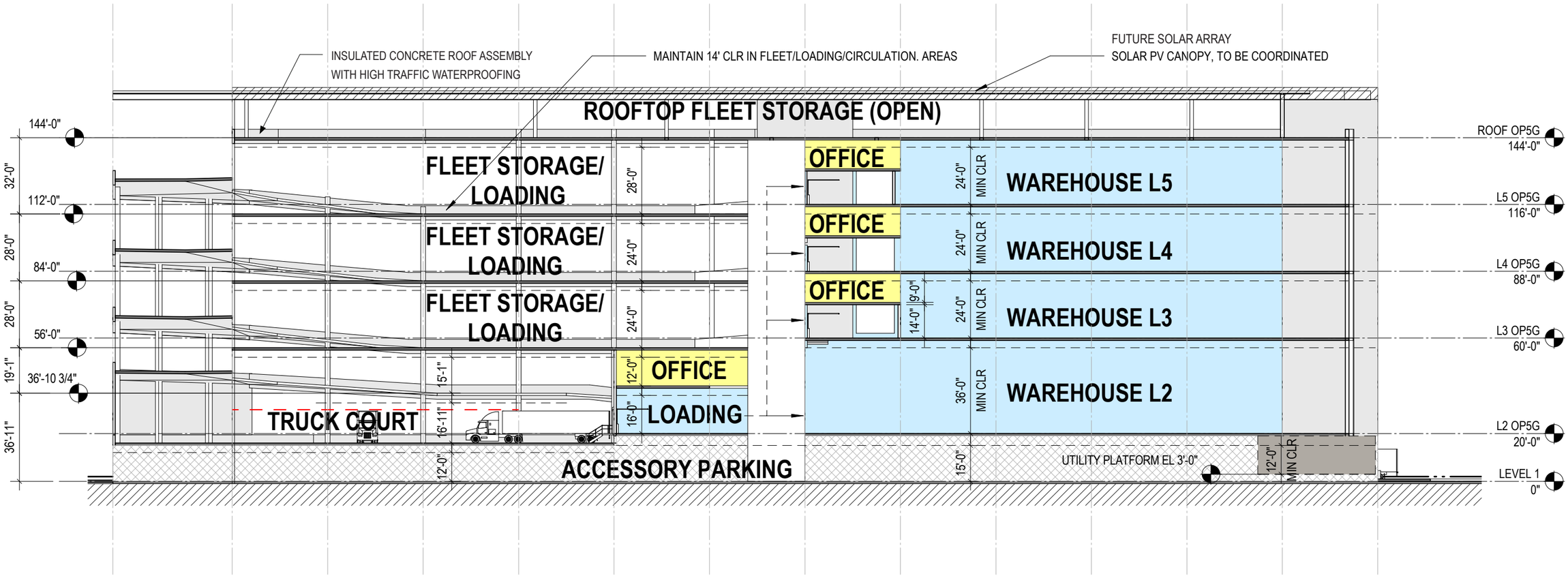


1 / C141-6 PLAN - ROOF - OPT 5G

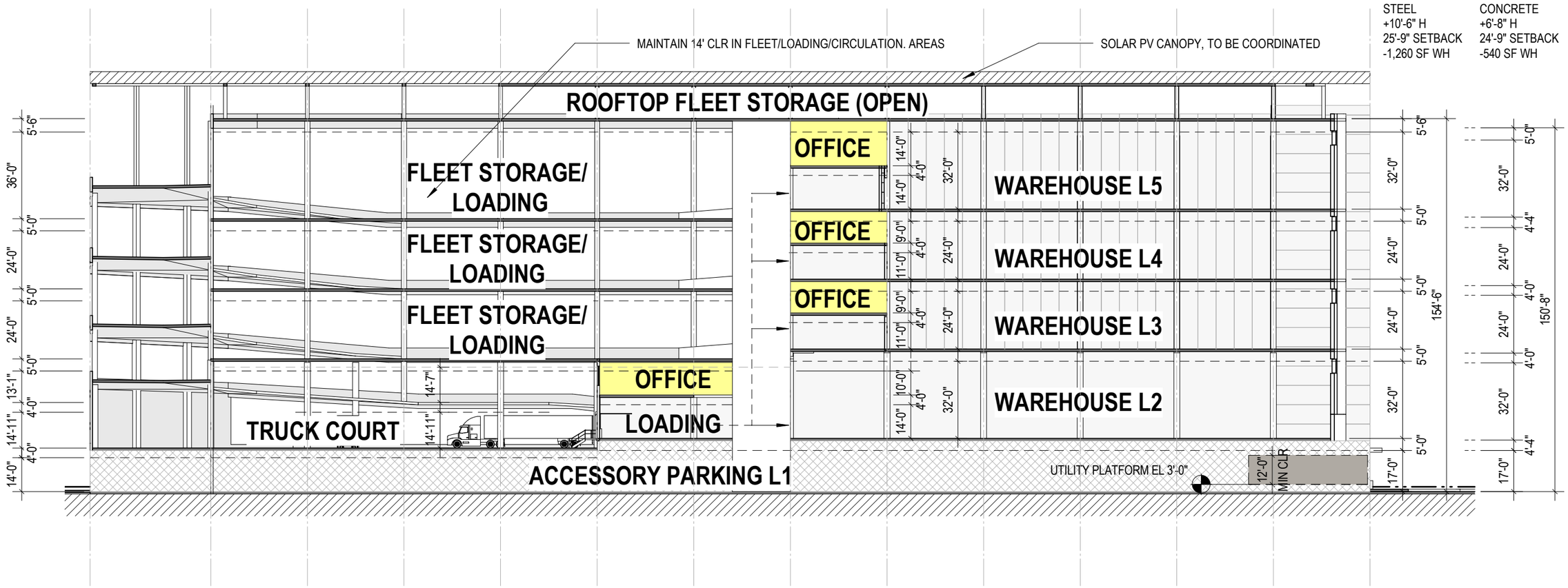
1/64" = 1'-0"



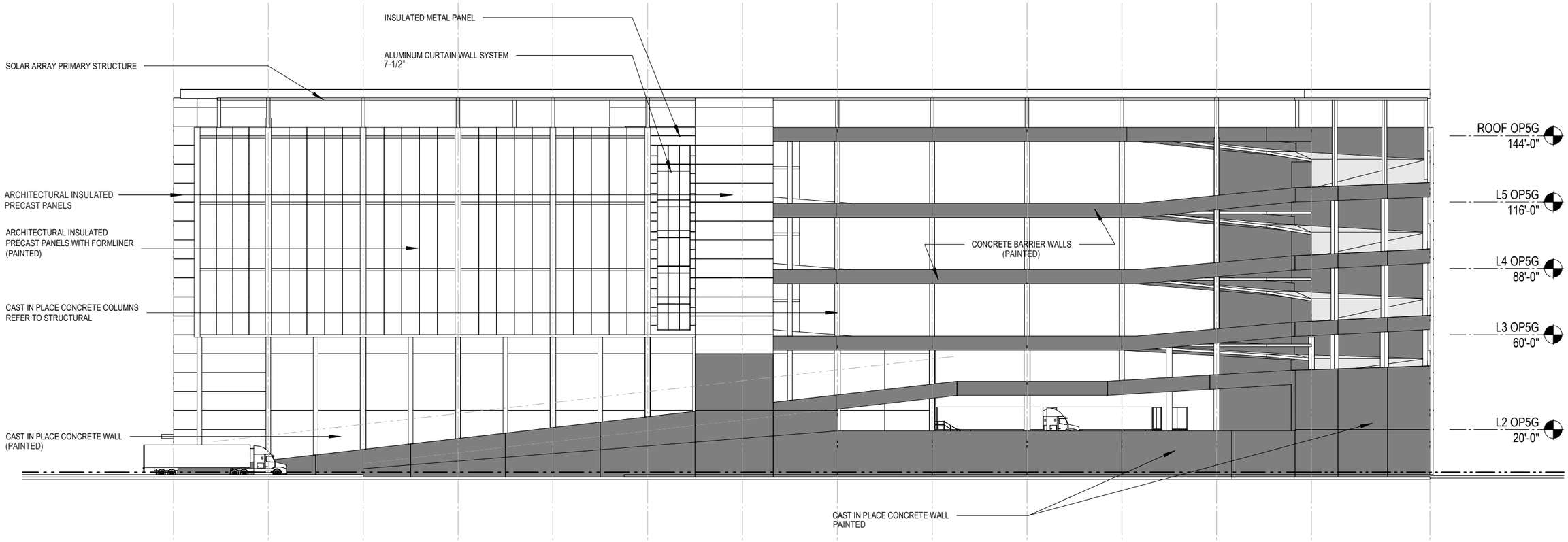
EAST - WEST BUILDING SECTION



E/W SECTION - STEEL V CONCRETE CLEAR HEIGHT COMPARISON



NORTH ELEVATION



1 / C141-37 North Elevation - OPT 5G Scheme 1.1
1" = 40'-0"

MATERIALS TOTALS

Type 1 Architectural Insulated Precast Panels w/ Formliner: +/- 64,925 SF

Type 1 Alternate: Thin Architectural Precast Panel Veneer system on insulated CMU/CIP Walls

Type 2 Architectural Insulated Precast Panels: +/-55,120 SF

Type 2 Alternate: Insulated Precast Panels with reveal patterns

Insulated Metal Panels: +/- 8,300 SF

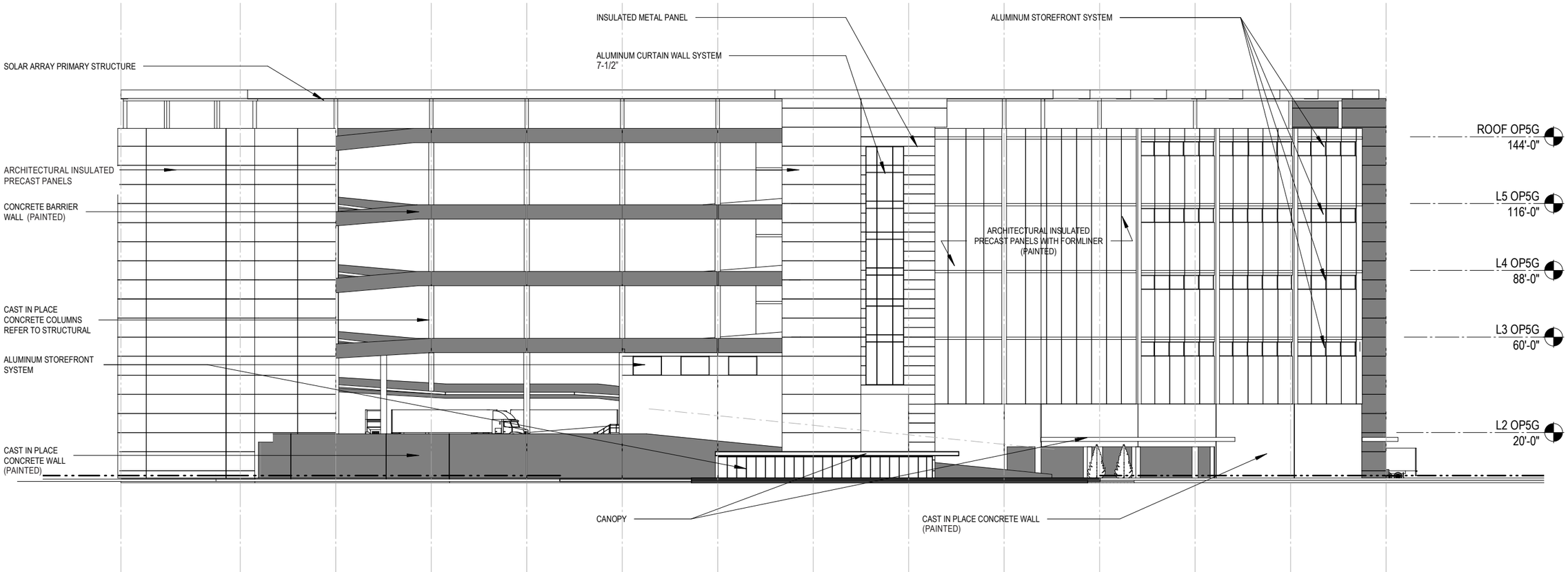
Cast in Place Concrete Walls (Painted) : +/-79,480 SF

Concrete Barrier Walls (Painted) : +/-17,400 SF

Curtain Wall: +/- 6,295 SF

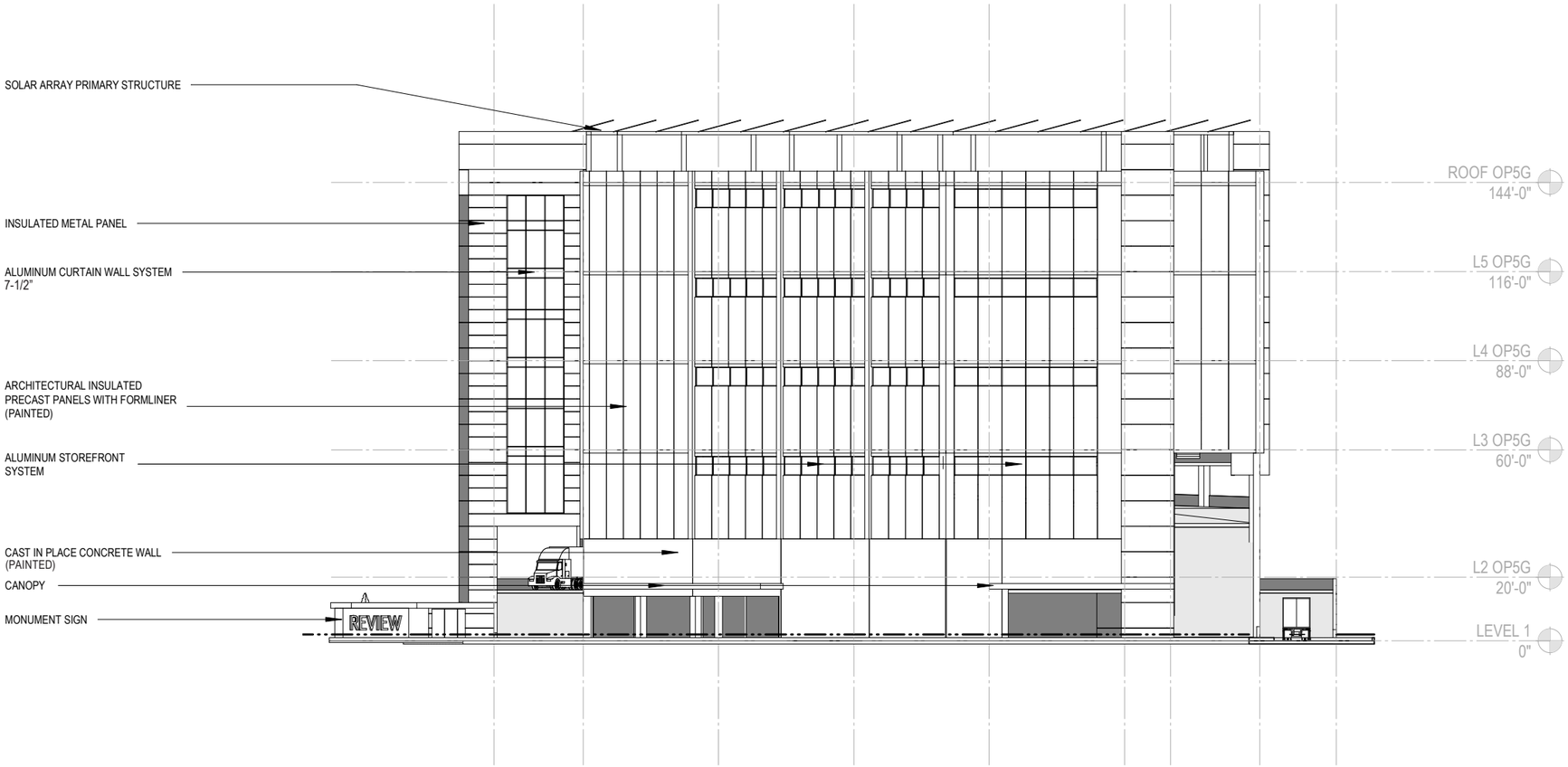
Storefront: +/-4,925 SF

SOUTH ELEVATION



1 / C141-36 South Elevation - OPT 5G Scheme 1.1
1" = 40'-0"

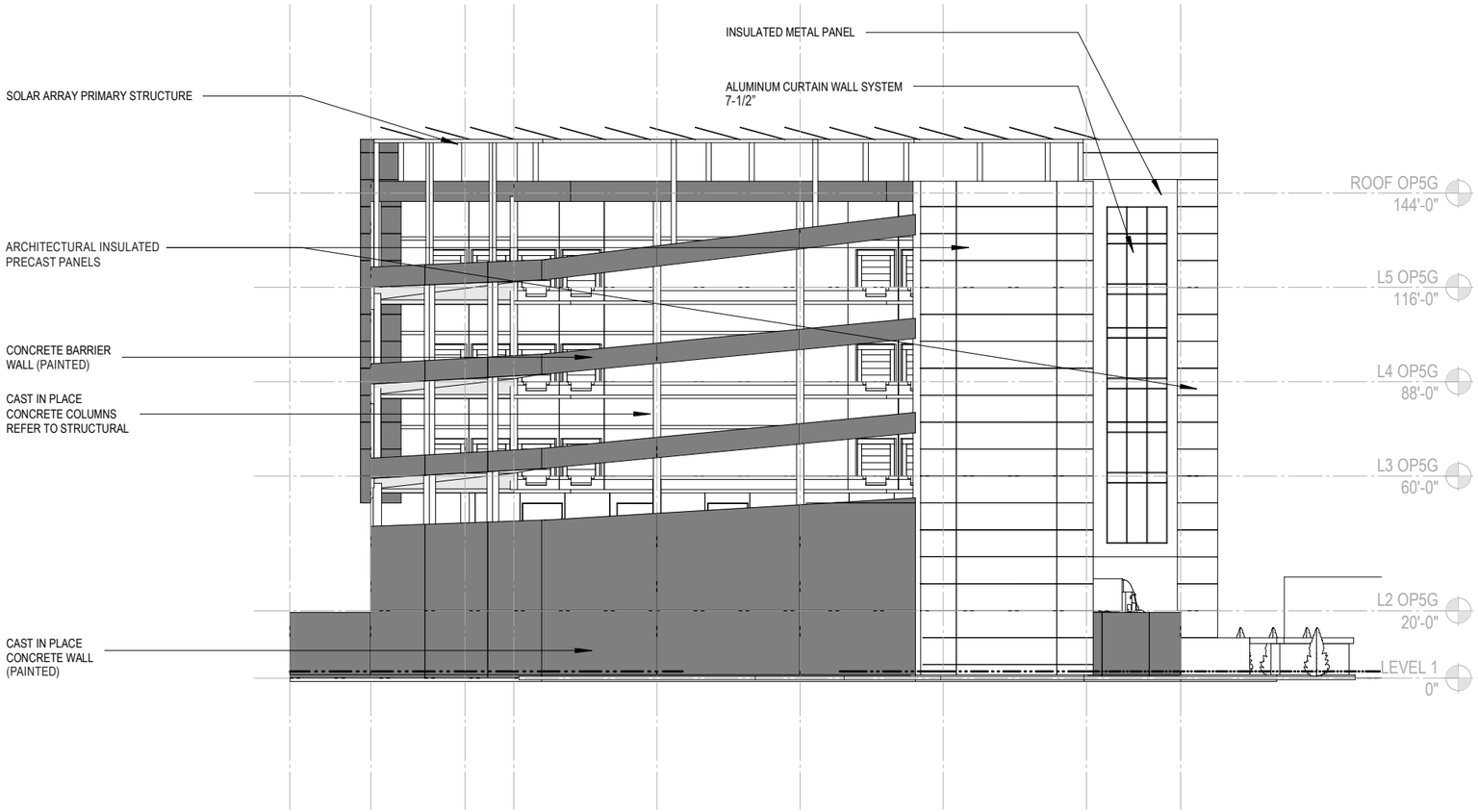
EAST ELEVATION



1 / C141-39 East Elevation Opt 5G Scheme 1.1

1" = 40'-0"

WEST ELEVATION



1
C141-38 West Elevation Opt 5G Scheme 1.1
1" = 40'-0"

APPENDIX C

Boring Logs and Well Construction Logs

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Log of Boring **LMW-31** Sheet 1 of 1

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation and Datum: Approx. 9' NAVD88
Drilling Company: AWT Environmental Services, Inc.	Date Started: 11/6/20 / Date Finished: 11/6/20
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft / Rock Depth: NE
Size and Type of Bit: 2in Direct Push	Number of Samples: Disturbed 4 / Undisturbed --- / Core ---
Casing Diameter (in): 3in / Casing Depth (ft): ---	Water Level (ft.): First ▽ 9 / Completion ▼ --- / 24 HR. ▼ ---
Casing Hammer: --- / Weight (lbs): --- / Drop (in): ---	Drilling Foreman: John Dixon
Sampler: 1.75" x 4' Long Acetate Lined Macrocore	Field Engineer: Brandon Reiner
Sampler Hammer: --- / Weight (lbs): --- / Drop (in): ---	

Material Symbol	Elev. (ft)	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.)
		Black GRAVEL [ASPHALT]	0					0.0	Started Drilling on 11/6/2020
		Dark brown to tan medium-coarse SAND and fine-coarse GRAVEL, trace concrete, trace asphalt [FILL]	1					0.0	
								0.0	
			2	M-1	Macrocore	24		0.0	
								0.0	
			3					0.0	
								0.0	
			4					0.0	
								0.0	
		Dark gray to gray medium-coarse SAND, some f-m gravel, trace concrete (dry) [FILL]	5					0.0	
								0.0	
			6					0.0	
								0.0	
			7	M-2	Macrocore	30		0.0	
								0.0	
			8					0.0	
								0.0	
		Dark gray to gray medium-coarse SAND, some f-m gravel, trace concrete (wet) [FILL]	9 ▽					2.0	Odors observed from 9-20 ft bgs
								2.0	
		Dark gray silty SAND, some f-m gravel, trace wood, trace coal (wet) [FILL]	10					94.8	Product observed in soil from 10-20 ft bgs
								143.0	
			11					82.1	
								149.1	
			12	M-3	Macrocore	30		73.5	
								69.7	
			13					67.5	
								49.6	
			14					48.2	
								45.6	
		Dark gray coarse SAND, trace wood, trace silt, trace f-m gravel (wet)[FILL]	15					42.4	
								44.8	
			16					43.9	
								43.8	
			17	M-4	Macrocore	30		48.6	
								47.5	
			18					50.1	
								14.2	
			19					14.8	Bottom of boring at 20 ft bgs
								14.0	
			20						

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Log of Boring **VEE-01** Sheet 1 of 1

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation and Datum: Approx. 7' NAVD88
Drilling Company: AWT Environmental Services, Inc.	Date Started: 11/5/20 / Date Finished: 11/5/20
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 15 ft / Rock Depth: NE
Size and Type of Bit: 2in Direct Push	Number of Samples: Disturbed 3 / Undisturbed --- / Core ---
Casing Diameter (in): 3in / Casing Depth (ft): ---	Water Level (ft.): First ▽ 7 / Completion ▼ --- / 24 HR. ▼ ---
Casing Hammer: --- / Weight (lbs): --- / Drop (in): ---	Drilling Foreman: John Dixon
Sampler: 1.75" x 4' Long Acetate Lined Macrocore	Field Engineer: Brandon Reiner
Sampler Hammer: --- / Weight (lbs): --- / Drop (in): ---	

Material Symbol	Elev. (ft)	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.)
		Black GRAVEL [ASPHALT]	0					0.0	Started Drilling on 11/5/2020
		Dark brown fine-coarse SAND, trace brick, trace f-c gravel, trace asphalt (dry) [FILL]	1					0.0	
								0.0	
			2					0.0	
								0.0	
			3	M-1	Macrocore	24		0.0	
								0	
			4					0.0	
								0.7	
								0.7	
		Dark brown fine-coarse SAND, trace brick, trace f-c gravel, trace asphalt (dry) [FILL]	5					0.4	
								0.4	
			6					0.4	
								0.4	
		▽	7					0.4	Odor observed from 7-10 ft bgs
		Dark brown silty SAND and medium-coarse GRAVEL, trace wood (wet) [NATIVE]		M-2	Macrocore	48		15.3	
			8					69.0	
								80.5	
			9					109.6	Staining observed from 9-10 ft bgs
								63.5	
		Dark brown silty SAND, some f-m gravel, trace wood (wet) [NATIVE]	10					20.1	Product and odor observed in soil and GW from 10-15 ft bgs
								20.1	
			11					22.8	
								22.8	
			12	M-3	Macrocore	12		21.5	
								21.5	
			13					7.6	
								7.6	
			14					41.3	Bottom of boring at 15 ft bgs
								41.3	
			15						
			16						
			17						
			18						
			19						
			20						

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Log of Boring **VEE-02** Sheet 1 of 1

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation and Datum: Approx. 7' NAVD88
Drilling Company: AWT Environmental Services, Inc.	Date Started: 11/5/20 / Date Finished: 11/5/20
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 20 ft / Rock Depth: NE
Size and Type of Bit: 2in Direct Push	Number of Samples: Disturbed 4, Undisturbed ---, Core ---
Casing Diameter (in): 3in / Casing Depth (ft): ---	Water Level (ft.): First ▽ 7, Completion ▼ ---, 24 HR. ▼ ---
Casing Hammer: --- / Weight (lbs): --- / Drop (in): ---	Drilling Foreman: John Dixon
Sampler: 1.75" x 4' Long Acetate Lined Macrocore	Field Engineer: Brandon Reiner
Sampler Hammer: --- / Weight (lbs): --- / Drop (in): ---	

Material Symbol	Elev. (ft)	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.)
		Dark brown fine-coarse SAND, some concrete, some f-c gravel, trace brick (dry) [FILL]	0	M-1	Macrocore	40		2.9	Started Drilling on 11/5/2020
			1					46.8	
								0.2	
			2					0.2	
								0.2	
			3					0.2	
								0.2	
			4					0.2	
								0.2	
		Dark gray to gray fine-medium SAND, trace f-m gravel (dry) [FILL]	5	M-2	Macrocore	30		6.5	
		Gray medium dense CLAY (moist) [FILL]						6.0	
		Dark gray to gray fine-medium SAND, trace glass, trace clay, trace coal [FILL]	6					12.2	Odor observed from 6-15 ft bgs
								12.8	
		Dark gray to gray fine-medium SAND, trace glass, trace clay, trace coal (wet) [FILL] ▽	7					32.8	
								20.9	
			8					52.4	
								30.0	
			9					24.5	
								26.0	
		Dark brown silty SAND, some f-m gravel (wet) [FILL]	10	M-3	Macrocore	24		10.0	Product in groundwater observed from 10-15 ft bgs
								10.0	
			11					37.9	
								37.9	
			12					33.2	
								33.2	
			13					41.6	
								41.6	
			14					35.8	
								35.8	
		Dark gray to gray medium dense CLAY, trace shells (moist) [NATIVE]	15	M-4	Macrocore	36		2.0	
								2.0	
			16					2.0	
								2.2	
			17					2.2	
								2.2	
			18					2.1	
		Dark brown medium dense CLAY (moist) [NATIVE]						2.1	
			19					2.1	Bottom of boring at 20 ft
								2.1	
			20						

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Log of Boring **VEE-03** Sheet 1 of 2

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation and Datum: Approx. 9' NAVD88
Drilling Company: AWT Environmental Services, Inc.	Date Started: 11/6/20 / Date Finished: 11/6/20
Drilling Equipment: Geoprobe 7822 DT	Completion Depth: 25 ft / Rock Depth: NE
Size and Type of Bit: 2in Direct Push	Number of Samples: Disturbed 5 / Undisturbed --- / Core ---
Casing Diameter (in): 3in / Casing Depth (ft): ---	Water Level (ft.): First ▽ 8 / Completion ▼ --- / 24 HR. ▼ ---
Casing Hammer: --- / Weight (lbs): --- / Drop (in): ---	Drilling Foreman: John Dixon
Sampler: 1.75" x 4' Long Acetate Lined Macrocore	Field Engineer: Brandon Reiner
Sampler Hammer: --- / Weight (lbs): --- / Drop (in): ---	

Material Symbol	Elev. (ft)	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.)
		Black GRAVEL [ASPHALT]	0					0.0	Started Drilling on 11/6/2020
		Dark brown fine-coarse SAND, trace concrete, trace brick, trace f-c gravel (dry) [FILL]	1					0.0	
								0.0	
			2	M-1	Macrocore	30		0.0	
								0.0	
			3					0.0	
								0.0	
			4					0.0	
								0.0	
		Dark brown medium-coarse SAND, some medium gravel, trace coal (dry) [FILL]	5					0.0	
								0.0	
			6					0.0	
								0.0	
			7	M-2	Macrocore	36		0.0	
								0.0	
		▽	8					0.0	
		Dark brown medium-coarse SAND, some medium gravel, trace coal (wet) [FILL]						0.0	
		Dark brown medium-coarse SAND, some medium gravel (wet) [FILL]	9					69.4	Product and odor observed in soil from 9-25 ft bgs.
								87.0	
		Dark brown silty SAND, some f-m gravel (wet) [NATIVE]	10					39.7	
								39.7	
			11					71.8	
								71.8	
			12	M-3	Macrocore	24		117.7	
								117.1	
			13					197.8	
								197.8	
			14					140.4	
								140.4	
		Dark brown fine-coarse SAND, some f-m gravel (wet) [NATIVE]	15					74.1	
								74.1	
			16					81.9	
								81.9	
			17					159.3	
				M-4	Macrocore	30		159.3	
		Dark gray silty SAND, trace wood, trace fine gravel (wet) [NATIVE]	18					88.9	
								88.9	
			19					73.1	
								73.1	
			20						

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Log of Boring **VEE-03** Sheet 2 of 2

Project	Project No.
28-90 Review Avenue	100652601
Location	**Elevation and Datum**
Queens, NY	Approx. 9' NAVD88

Material Symbol	Elev. (ft)	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.)
		Dark brown medium-coarse SAND, some f-m gravel (wet) [NATIVE]	20	M-5	Macrocore	24		103.8	
								103.8	
			21					52.5	
								52.5	
			22					58.6	
								58.6	
		Dark gray silty SAND, trace medium gravel (wet) [NATIVE]	23					16.6	
								16.6	
		Dark gray soft CLAY, trace medium gravel (wet) [NATIVE]	24					13.3	Bottom of boring at 25 ft bgs
								13.3	
			25						
			26						
			27						
			28						
			29						
			30						
			31						
			32						
			33						
			34						
			35						
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			39						
			40						
			41						
			42						
			43						
			44						
			45						

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WELL CONSTRUCTION SUMMARY

Well No. LMW-31

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation And Datum: 9.0 NAVD88
Drilling Agency: AWT Environmental Services, Inc.	Date Started: 11/6/2020 / Date Finished: 11/6/2020
Drilling Equipment: Geoprobe 7822 DT	Driller: John Dixon
Size And Type of Bit: 6-inch Hollow Stem Auger	Inspector: Brandon Reiner

Method of Installation

AWT installed a 10-slot Schedule 40 PVC screen from 5 to 20 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 4.5-feet bgs with No. 1 Sand, hydrated bentonite seal from 2.5 to 4.5 feet bgs, and bentonite grout from 0 to 2.5-feet bgs. A manhole was installed and encased in concrete at grade.

Method of Well Development

LMW-31 was developed with a whale pump using surge pumping techniques across the well screen in two- to three-foot increments. After surging, the well was purged via pumping until the water became clear.

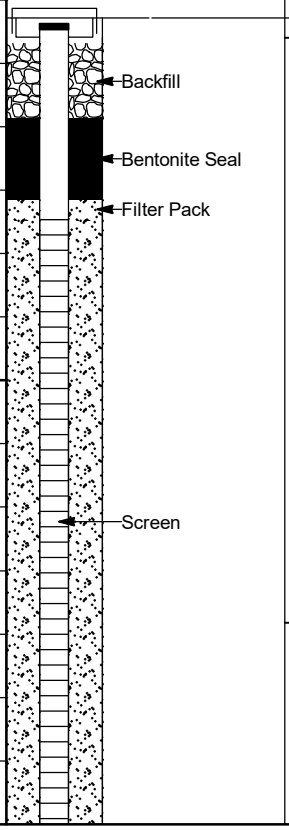
Type of Casing: — Diameter: —	Type of Backfill Material: Bentonite Grout
Type of Screen: Schedule 40 — Diameter: 2-inch	Type of Seal Material: Bentonite
Borehole Diameter: 6-inch	Type of Filter Material: No. 1 Sand

	Elevation	Depth
Top of Casing	8.37'	0.63' bgs
Top of Seal	6.50'	2.5' bgs
Top of Filter	4.50'	4.5' bgs
Top of Screen	4.00'	5' bgs
Bottom of Filter	-11.00'	20' bgs
Bottom of Well		20' bgs

Screen Length	Slot Size
15.0'	0.010

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
ASPHALT	0.63
FILL	2.5
	4.5
	5
SAND	20

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WELL CONSTRUCTION SUMMARY

Well No. VEE-01

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation And Datum: 7.0 NAVD88
Drilling Agency: AWT Environmental Services, Inc.	Date Started: 11/5/2020 / Date Finished: 11/5/2020
Drilling Equipment: Geoprobe 7822 DT	Driller: John Dixon
Size And Type of Bit: 6-inch Hollow Stem Auger	Inspector: Brandon Reiner

Method of Installation

AWT installed a 30-slot Schedule 40 PVC screen from 4 to 14 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 3.5-feet bgs with No. 3 Sand, hydrated bentonite seal from 2.5 to 3.5 feet bgs, and bentonite grout from 0 to 2.5-feet bgs. A manhole was installed and encased in concrete at grade.

Method of Well Development

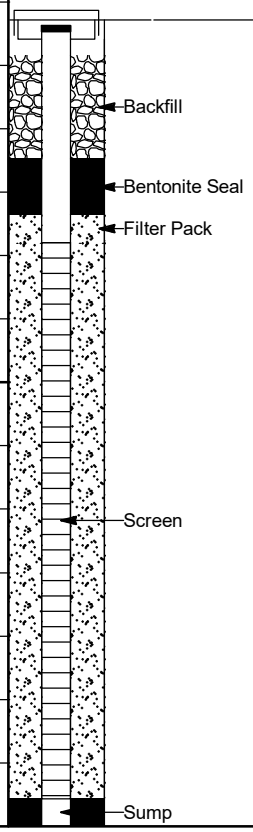
VEE-01 was developed with a whale pump using surge pumping techniques across the well screen in two- to three-foot increments. After surging, the well was purged via pumping until the water became clear.

Type of Casing:	Diameter:
Type of Backfill Material: Bentonite Grout	
Type of Screen: Schedule 40	Diameter: 4 inch
Type of Seal Material: Bentonite	
Borehole Diameter: 6-inch	Type of Filter Material: No. 3 Sand

	Elevation	Depth
Top of Casing	6.37'	0.63' bgs
Top of Seal	4.50'	2.5' bgs
Top of Filter	3.50'	3.5' bgs
Top of Screen	3.00'	4' bgs
Bottom of Filter	-7.00'	14' bgs
Bottom of Well		14.5' bgs
Screen Length: 10.0'		Slot Size: 0.030

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
ASPHALT	0.63
FILL	0.63
	2.5
	3.5
	4
SILTY SAND	
	14
	14.5

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WELL CONSTRUCTION SUMMARY

Well No. VEE-02

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation And Datum: 7.0 NAVD88
Drilling Agency: AWT Environmental Services, Inc.	Date Started: 11/5/2020 / Date Finished: 11/5/2020
Drilling Equipment: Geoprobe 7822 DT	Driller: John Dixon
Size And Type of Bit: 6-inch Hollow Stem Auger	Inspector: Brandon Reiner

Method of Installation

AWT installed a 30-slot Schedule 40 PVC screen from 4 to 14 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 3.5-feet bgs with No. 3 Sand, hydrated bentonite seal from 2.5 to 3.5 feet bgs, and bentonite grout from 0 to 2.5-feet bgs. A manhole was installed and encased in concrete at grade.

Method of Well Development

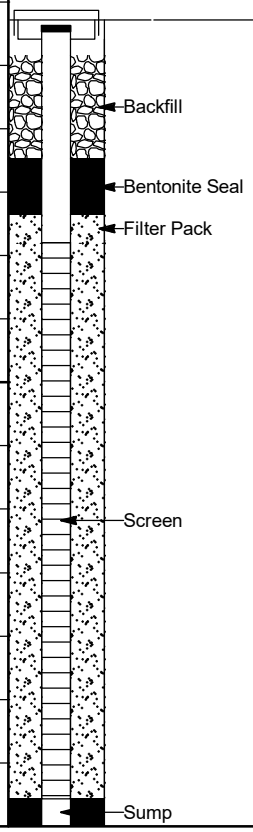
VEE-02 was developed with a whale pump using surge pumping techniques across the well screen in two- to three-foot increments. After surging, the well was purged via pumping until the water became clear.

Type of Casing: — Diameter: —	Type of Backfill Material: Bentonite Grout
Type of Screen: Schedule 40 — Diameter: 4 inch	Type of Seal Material: Bentonite
Borehole Diameter: 6-inch	Type of Filter Material: No. 3 Sand

	Elevation	Depth
Top of Casing	6.37'	0.63' bgs
Top of Seal	4.50'	2.5' bgs
Top of Filter	3.50'	3.5' bgs
Top of Screen	3.00'	4' bgs
Bottom of Filter	-7.00'	14' bgs
Bottom of Well		14.5' bgs
Screen Length: 10.0'		Slot Size: 0.030

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
FILL	0.63 0.63
SILTY SAND	2.5 3.5 4
SILTY SAND	14 14.5

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LANGAN

WELL CONSTRUCTION SUMMARY

Well No. VEE-03

Project: 28-90 Review Avenue	Project No.: 100652601
Location: Queens, NY	Elevation And Datum: 9.0 NAVD88
Drilling Agency: AWT Environmental Services, Inc.	Date Started: 11/6/2020 / Date Finished: 11/6/2020
Drilling Equipment: Geoprobe 7822 DT	Driller: John Dixon
Size And Type of Bit: 6-inch Hollow Stem Auger	Inspector: Brandon Reiner

Method of Installation

AWT installed a 30-slot Schedule 40 PVC screen from 6 to 21 feet bgs and Schedule 40 PVC riser to the surface. The annulus of the borehole was backfilled to 5.5-feet bgs with No. 3 Sand, hydrated bentonite seal from 2.5 to 5.5 feet bgs, and bentonite grout from 0 to 2.5-feet bgs. A manhole was installed and encased in concrete at grade.

Method of Well Development

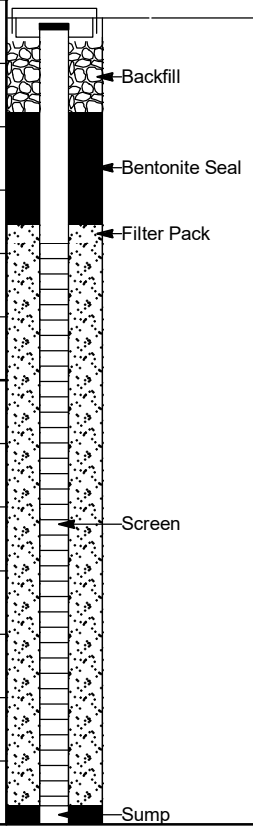
VEE-03 was developed with a whale pump using surge pumping techniques across the well screen in two- to three-foot increments. After surging, the well was purged via pumping until the water became clear.

Type of Casing:	Diameter:
Type of Backfill Material: Bentonite Grout	
Type of Screen: Schedule 40	Diameter: 4 inch
Type of Seal Material: Bentonite	
Borehole Diameter: 6-inch	Type of Filter Material: No. 3 Sand

	Elevation	Depth
Top of Casing	8.37'	0.63' bgs
Top of Seal	6.50'	2.5' bgs
Top of Filter	3.50'	5.5' bgs
Top of Screen	3.00'	6' bgs
Bottom of Filter	-12.00'	21' bgs
Bottom of Well		21.5' bgs
Screen Length: 15.0'		Slot Size: 0.030

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
ASPHALT	0
FILL	0.63
	2.5
	5.5
	6
SILTY SAND	
SAND	
SILTY SAND	
SAND SAND	21
	21.5

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APPENDIX D

Construction Health and Safety Plan

LANGAN

CONSTRUCTION HEALTH AND SAFETY PLAN

for

28-90 REVIEW AVENUE
Queens, New York
NYSDEC BCP Site No. C241236

Prepared For:

28-90 Review Avenue Owner, LLC
c/o Innovo Property Group
1370 Avenue of the Americas, 19th Floor
New York, New York

Prepared By:

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054

June 2021
100652601

ENVIRONMENTAL HEALTH AND SAFETY PLAN

Client:	**28-90 Review Avenue Owner, LLC**
Project:	**Construction Oversight During Remediation**
Location:	**28-90 Review Avenue, Queens, New York**
Chemical Hazards:	**Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), Polychlorinated Biphenyls (PCBs), Pesticides, Metals, Non-Aqueous Phase Liquid (NAPL)**
Prepared By:	**Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.**
Version:	**1**
Date:	**June 2021**

Client Contact:	**Stephen Kim**	**(212) 218-3158**
Langan Project Manager (PM):	**Amanda Forsburg**	**(973) 560 4574**
Langan Health & Safety Manager (HSM):	**Tony Moffa, CHMM**	**(215) 491-6545**
Langan Health and Safety Officer (HSO):	**Field Personnel**	
WorkCare:		**1-888-449-7787**
Langan Incident/Injury Hotline:		**1-800-952-6426 or 973-560-4699**

LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING, LANDSCAPE ARCHITECTURE AND GEOLOGY, D.P.C. (LANGAN), AND LANGAN SUBCONTRACTORS, DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION BY A TRAINED HEALTH AND SAFETY SPECIALIST.

APPROVALS

By signature, the personnel identified below hereby acknowledge that they have reviewed this Construction Health and Safely Plan (CHASP) and agree to comply with the requirements contained therein as well as the applicable provisions of 29 CFR Parts 1910 and 1926. The undersigned also acknowledge and accept that this CHASP is the project CHASP for the site work described in the Remedial Action Work Plan (RAWP). Furthermore, in reviewing and accepting this CHASP, as currently written, the undersigned agree that to the best of their knowledge, this CHASP adequately identifies the activities and hazards associated with work at this site and describes the appropriate and necessary precautions and protections for site workers required by the applicable OSHA statutes and regulations.

Amanda M. Forsburg	7/13/2021
LANGAN Project Manager - PM (Amanda Forsburg)	Date
LANGAN Health and Safety Manager (Tony Moffa, CHMM)	Date
LANGAN Health and Safety Officer – HSO	Date

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Table 4 Instrument Action Levels
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FIGURES

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ATTACHMENTS

Attachment A Health and Safety Briefing Statement
Attachment B Field Procedures Change Authorization Form
Attachment C Unsafe Conditions and Practices Form
Attachment D Calibration Log
Attachment E Emergency Notification Numbers
Attachment F Accident / Incident Report Form
Attachment G Material Safety Data Sheets (MSDS)
Attachment H Jobsite Safety Inspection Checklist
Attachment I Langan Guidelines

1.0 INTRODUCTION

1.1 Purpose and Policy

This Construction Health and Safety Plan (CHASP) has been developed to comply with the regulations under Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(b)(4), Hazardous Waste Operations and Emergency Response. It addresses foreseeable activities associated with the site work activities to be conducted at 28-90 Review Avenue, located in the Long Island City neighborhood in Queens, New York (see Figure 1). This CHASP establishes personnel protection standards and mandatory safety practices and procedures. Additionally, it assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted at known or suspected hazardous waste sites.

Langan personnel involved with inspection of site work activities which involve the displacement of soil and/or material or dewatering of excavations during the proposed development shall comply with the requirements of this CHASP. All Langan personnel engaged in onsite activities will read this document carefully and complete the Safety Briefing Form (Attachment A), a copy of which will be provided to Langan's Project files. Contractors and subcontractors conducting construction-related activities which will disturb or displace soil in the identified AOC are required to develop and follow their own HASP which must be equal or more stringent than the Langan CHASP. Contractors and subcontractors are responsible for their own workers Health and Safety and providing a safe working environment in accordance with all applicable federal, state and local requirements. Each Subcontractor will have a designated Site Health and Safety Manager who will be responsible for ensuring that the designated procedures are implemented in the field. Personnel who have any questions or concerns regarding implementation of this plan are encouraged to request clarification from the Langan Project Manager. Field personnel must follow the designated health and safety procedures, be alert to the hazards associated with working close to vehicles and equipment, and use common sense and exercise reasonable caution at all times.

This CHASP covers construction related field activities which have the potential to disturb and/or displace historic fill material impacted with VOCs, SVOCs, PCBs, pesticides, metals, and NAPL as identified in the 2019 Remedial Investigation Report (RIR) and 2020 Supplemental Remedial Investigation Report (SRIR).

This CHASP was prepared in accordance with the following documents and/or guidelines:

- Occupational Safety and Health Administration (OSHA) regulations for hazardous site workers (29 CFR 1910.120 and 29 CFR 1926); and,
- NIOSH/OSHA/USCG/USEPA *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.*

Langan's Health and Safety Program and Safe Operating Procedures support this site-specific CHASP.

The level of protection and the procedures specified in this CHASP represent the minimum health and safety requirements to be observed by site personnel engaged in the referenced inspection of construction related activities. Unknown conditions may exist, and known conditions may change. Should an employee find himself or herself in a potentially hazardous situation, the employee will immediately discontinue the hazardous procedures(s) and either personally effect appropriate preventative or corrective measures, or immediately notify the Health and Safety Officer or the Langan Project Manager of the nature of the hazard. In the event of an immediately dangerous or life threatening situation, the employee always has "stop work" authority. Any necessary revision to the Health and Safety procedures will be recorded in the Field Procedure Change Authorization Form (Attachment B), and will require authorization from the Langan Health and Safety Officer and Project Manager.

THE ULTIMATE RESPONSIBILITY FOR THE HEALTH AND SAFETY OF THE INDIVIDUAL EMPLOYEE RESTS WITH THE EMPLOYEE AND HIS OR HER COLLEAGUES. Each employee is responsible for exercising the utmost care and good judgment in protecting his or her own health and safety and that of fellow employees. Should any employee observe a potentially unsafe condition or situation, it is the responsibility of that employee to immediately bring the observed condition to the attention of the appropriate health and safety personnel as designated above and to follow-up the verbal notification by completing the

Unsafe Conditions and Practices Form provided in Attachment C, a copy of which will be provided to the Langan Health and Safety Officer.

"Extenuating" circumstances such as budget or time constraints, equipment breakdown, changing or unexpected conditions, never justify unsafe work practices or procedures. In fact, the opposite is true. Under stressful circumstances all project personnel must be mindful of the potential to consciously or unconsciously compromise health and safety standards, and be especially safety conscious. **ALL SITE PERSONNEL ARE EXPECTED TO CONSIDER "SAFETY FIRST" AT ALL TIMES.**

1.2 Site Descriptions

The Site is located in the Long Island City neighborhood of Queens, New York and is identified as Block 294 Lot 106. The Site is an approximately 192,792-square-foot parcel and is currently developed with two single-story warehouse structures recently operated as automotive repair and maintenance facilities, which are undergoing demolition. The remainder of the Site is comprised of asphalt-paved and asphalt milling-covered parking areas utilized by month-to-month tenants for vehicle storage, with several office trailers and storage containers present onsite. Vehicle storage ranges from passenger cars to tractor trailers. The Site is bound to the north by an asphalt-paved parking lot, to the east by 29th Street followed by an asphalt-paved parking lot associated with a 4-story storage facility, to the south by at-grade railroad tracks associated with the Metropolitan Transportation Authority Long Island Rail Road (MTA LIRR) lines, and to the west by the Dutch Kills Creek.

1.3 Scope of Work

The site work activities which will require the oversight by Langan personnel include the following tasks:

- Task 1 - Excavation and off-site disposal of soil/fill generated during Site remediation and construction of the proposed building foundation;
- Task 2 - Collection of confirmation/documentation soil samples;
- Task 3 - In-Situ Stabilization (ISS) of NAPL impacted soil; and,
- Task 4 - Installation of a sub-slab depressurization system;
- Task 5 - Construction of a composite cover system

Details of the scopes of work to be completed in each of the work areas for this project are provided within the 28-90 Review Avenue Remedial Action Work Plan (RAWP).

During construction, all soil/fill excavated or disturbed at the site will be either transported off site for disposal at an approved facility or reused on-site pending NYSDEC approval. Personnel conducting activities that will contact the impacted historic fill, petroleum impacted material associated with NYSDEC Spill No. 1809113, or other impacted materials shall abide by the provisions of this CHASP.

2.0 PROJECT TEAM ORGANIZATION AND RESPONSIBILITIES

This section specifies the Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) Project Organization.

2.1 Langan Project Manager

The Langan Project Manager (PM) is Amanda Forsburg. The PM responsibilities include:

Responsibilities:

- Prepares and organizes the background review of site conditions, the site HASP, and the field team.
- Obtains permission for site access and coordinates activities with appropriate officials.
- Briefs the field team on their specific assignments.
- Coordinates with the Health and Safety Officer (HSO) to ensure that health and safety requirements are met.
- Serves as the liaison with public officials.
- Ensuring that this HASP is developed and approved prior to on-site activities.
- Ensuring that all the tasks in the project are performed in a manner consistent with Langan's comprehensive Health and Safety Program for Hazardous Waste Operations and this HASP.

2.2 Health and Safety Manager (HSM)

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

- Serving as a resource in the development and implementation of HASPs;
- Assist in reviewing results of Jobsite Safety Inspections;
- Assisting site Health and Safety Officer (HSO) with development of the HASP, updating HASP as dictated by changing conditions, jobsite inspection results, etc.;
- Maintaining all records on personnel (medical evaluation results, training and certifications, accident investigation results, etc.).

2.3 Health and Safety Officer (HSO)

The Langan Health and Safety Officer (HSO) will be identified prior to the start of field work. The HSO responsibilities include:

- Participating in the development and implementation of this HASP;
- Conducting Jobsite Safety Inspections (Attachment H) and correcting any shortcomings in a timely manner;
- Helping to select proper PPE (Personal Protective Equipment) and periodically inspecting it;
- Ensuring that PPE is properly stored and maintained;
- Controlling entry into and exit from the contaminated areas or zones of the site;
- Confirming each team member's suitability for work based on a current physician's recommendation;
- Monitoring the work parties for signs of stress, such as heat stress, fatigue, and cold exposure;
- Monitoring site hazards and conditions;
- Knowing (and ensuring that all site personnel also know) emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department;
- Resolves conflicting situations which may arise concerning safety requirements and working conditions.
- Conducting daily tailgate meetings to review applicable JSAs as well as check-in with site personnel.

3.0 HAZARDS ANALYSIS

This section presents all assessment of the general, chemical, physical and biological hazards that may be encountered during the tasks specified under this CHASP (Section 1.3). A detail on types of potential contaminants of concerns Langan anticipates to encounter at different locations during the intrusive investigation is listed in Tables 1 and 2 of this CHASP.

3.1 General Hazard Assessment

A general hazard assessment was conducted for the required field work described in Section 1.3 and the following potential hazards have been identified:

- Inhalation of volatile contaminants;
- Skin and eye contact with contaminants;
- Ingestion of contaminants;
- Inhalation of dusts impacted with VOCs, SVOCs, pesticides, PCBs and/or metals;
- Physical hazards associated with the use of heavy equipment;
- Excavation hazards;
- Tripping hazards;
- Noise exposure;
- Heat stress (depending on weather conditions);
- Cold exposure (depending on weather conditions);
- Flammable hazards;
- Electrical hazards; and,
- Use of personal protective equipment.

These hazards are further described in the task-by-task hazard analysis in Table 3. Specific chemical, physical and biological hazards are discussed below.

Mitigation and controls will include as needed work procedures, work/rest regiment, dust control measures, personal protective equipment, and respiratory protection as appropriate.

3.2 Chemical Exposure Hazards

The following chemical hazard evaluation for the proposed site development activities is based on the previous environmental investigation of the site. The evaluation has been conducted to identify chemicals/materials that potentially may be present at the site, and to ensure that work activities, personnel protection, and emergency response are consistent with the specific contaminants that potentially could be encountered.

3.2.1 Specific Chemical Hazards Previously Detected at the Site

Contaminants identified during the 2019 and 2020 investigations completed for the site that may be encountered while conducting the remediation action include:

- VOCs, SVOCs, pesticides, PCBs, and metals commonly associated with historic urban fill.
- VOCs, SVOCs, and NAPL associated with petroleum impacts from Spill No. 1809113 and historical site use.
- Chlorinated VOCs at concentrations above the NYSDOH guidance criteria that would require additional mitigation actions.
- Petroleum-related VOCs in soil vapor.
- Some dewatering is anticipated during construction of the NAPL recovery system, foundation construction, and hotspot excavation.

Areas of Concern (AOCs) and hot spot locations and associated impacts are shown on Figure 2. Table 1 lists Contaminants of Concern and potentially affected media. The potential contaminants that might be encountered during the field activities and the exposure limits are listed in Table 2.

3.2.2 Chemical Hazard Exposure Routes

Potential hazards and their exposure routes include:

- Inhalation of organic vapors due to the disturbance of material containing volatile organic compounds or generated from diesel-powered equipment.

- Inadvertent ingestion of potentially toxic substances via hand to mouth contact or deliberate ingestion of materials inadvertently contaminated with potentially toxic materials such as VOCs, SVOCs, PCBs, pesticides and/or metals.

- Skin and eye contact with contaminants at the site and decontamination activities.

Exposure limits and health effects of selected chemicals are in Table 2. The probability of exposure for each task is outlined in Table 3.

3.2.3 Control of Exposure to Chemical Hazards

To protect personnel from potential exposures the following procedures and protocols will be adopted and used as needed: work procedures will be adhered to, work zones will be established, dust control will be utilized, respirators (if required) and personal protective equipment will be worn, area air monitoring will be conducted during times of disturbance of the impacted fill material and strict personnel decontamination procedures will be followed.

3.3 Physical Hazards

3.3.1 Temperature Extremes

Hot Temperatures

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE, in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. If onsite workers exhibit the signs of heat exhaustion or heat stroke, they should seek immediate medical attention.

Cold Temperatures

Workers may be exposed to the hazard of working in a cold environment. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, as well as slippery surfaces, brittle equipment, poor judgment, and unauthorized procedural changes. In order to prevent frostbite, hypothermia, trench foot and immersion foot, the workers are responsible for dressing warmly in layers with thick socks, gloves, and appropriate head and face gear. Upon the onset of discomfort

due to the cold, onsite workers should take regular five to ten minute breaks to warm up inside nearby buildings and to drink warm fluids. Please note that the NYCDEP statute prohibits idling an engine for more than three minutes (one-minute if adjacent to a school). This statue includes the use of a vehicle for the purpose of warming up employees. As such, all contractors and employees shall identify a place to warm up in advance. If discomfort continues and the onsite workers start to exhibit the signs of frostbite, hypothermia, trench foot or immersion foot, they should seek immediate medical attention.

3.3.2 Noise and Air Resources

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Hearing protection is required and shall be used in designated areas of the site as indicated by the posted signs.

3.3.3 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Hand and power tools will be inspected prior to use. Proper personal protective equipment shall be worn while utilizing hand and power tools. Ground Fault Circuit Interrupters (GFCIs) are required for all portable electric tools.

3.3.4 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to equipment, piping, slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Potential adverse health effects include falling to the ground and becoming injured or twisting an ankle. Good housekeeping at the site must be maintained at all times.

3.3.5 Fire and Explosion

Prior to starting all excavation work, a review of appropriate New York City maps will be conducted to identify potential hazards. The possibility of encountering fire and explosion hazards exists from underground utilities and gases. Therefore, all excavation equipment must be grounded.

3.3.6 Material Handling

Manual lifting of heavy objects may be required. Failure to follow proper lifting techniques can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery periods.

Whenever possible, heavy objects must be lifted and moved by mechanical devices rather than by manual effort. The mechanical devices will be appropriate for the lifting or moving task and will be operated only by trained and authorized personnel. Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects, such as a Master Rigger or equivalent. Lifting devices, including equipment, slings, ropes, chains, and straps, will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.

The wheels of any trucks being loaded or unloaded, and/or parked on an incline, will be chocked to prevent movement. If applicable, outriggers will be extended on a flat, firm surface during operation. The lift and swing path of a crane/equipment will be watched and maintained clear of obstructions. Personnel will not pass under a raised load, nor will a suspended load be left unattended. Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers.

All reciprocating, rotating, or other moving parts will be guarded at all times. Accessible fire extinguishers will be made available in all mechanical lifting devices. All material must be stored in tiers, racked, blocked, or otherwise secure to prevent sliding, falling, or collapse. All loads/material will be verified to be secure before transportation.

3.3.7 Confined Space/Excavation Hazards

Personnel entry into trenches or unshored (*e.g.,* lagging) excavations within the designated areas of concern will not be permitted. No other confined spaces are known to exist on Site. If entry into trenches or excavations is required, all work will stop until the CHASP has been revised to address the new hazards.

3.3.8 Working Near Equipment

Personnel working in the immediate vicinity of heavy equipment (*e.g.*, excavators, loaders, etc.) may encounter physical hazards resulting from contact with equipment. Field personnel should be aware of the presence of these hazards at all times and take appropriate action to avoid them. Due to the limited ability to communicate when wearing respiratory protection, the risk is increased. Workers must be careful to communicate with heavy equipment operators regarding their location, and should maintain a safe distance from operating equipment at all times. Prior to working around equipment, the site personnel will review appropriate hand signals with the operator.

Equipment will be equipped with back up alarms.

3.3.9 Electrical Safety

Personnel may utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Ground Fault Circuit Interrupters (GFCIs) are required for all portable electric tools.

3.3.10 Utilities

Prior to the start of any intrusive work, the location of above-ground and underground utilities and other structures will be completed by the contractor/subcontractor responsible for completing construction activities.

3.3.11 Vehicular Traffic

Portions of site activities (load in and load out) will be conducted in the street so vehicular and pedestrian traffic will be present. Appropriate precautions to protect the on-site workers and civilians should be used including the use of cones and traffic vests as appropriate.

3.4 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals and insects. As the potential for exposure to blood borne pathogens during site investigation is anticipated to be low, a Blood Borne Pathogen Exposure Plan (BBPEP) is not required. A BBPEP will be prepared if site operation requires its implementation.

3.4.1 Animals

During site operations, animals such as dogs, cats, pigeons, mice, and rats may be encountered. Workers shall use discretion and avoid all contact with animals. Bites and scratches from dogs and cats can be painful and if the animal is rabid, the potential for contracting rabies exists. Contact with rat and mice droppings may lead to contracting hantavirus. Inhalation of dried pigeon droppings may lead to psittacosis. Cryptococcosis and histoplasmosis are also diseases associated with exposure to dried bird droppings but these are less likely to occur in this occupational setting.

3.4.2 Insects

Insects, including bees, wasps, hornets, mosquitoes, spiders, and ticks may be present at the site. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. In addition, mosquito bites may lead to St. Louis encephalitis or West Nile encephalitis.

3.4.3 Wound Care

A source of occupational exposure may occur when an employee gives First Aid and or CPR to an individual who had infectious blood. The occupational exposure occurs when there is the possibility for an employee's eyes, mucous membranes, non-intact skin (i.e., cut and

abraded skin) to come into contact with potentially infectious materials from another employee. If an accident were to occur where First Aid would need to be administered, the person administering the First Aid will presume that any wounds and materials used are contaminated with BBP and should wear the appropriate PPE to prevent contact with these materials. Additionally, should the use of First Aid materials and or clothing that was potentially contaminated with BBP be encountered these materials should be property containerized and transported to the nearest hospital for proper disposal.

3.5 Coronavirus

General Preventative Measures

Field personnel must follow general proper hygiene measures while in the field including:

- Avoid touching eyes, nose and mouth.
- Cover cough or sneeze with tissue, and throw in trash.
- Wash hands often with soap and water for 20 seconds after going to bathroom, before eating, after blowing nose, coughing or sneezing.
- Use hand sanitizer with at least 60% alcohol if soap and water are not available.
- Avoid physical contact with other people (e.g., no handshakes).
- Maintain a safe distance of at least 6 feet from other people (social distancing).

Construction Trailers

Employees should avoid use of shared construction trailers or where employees cannot maintain a safe distance (minimum 6 feet) from other workers. If trailer use is needed, areas such as desks, phones, chairs and other common areas, should be cleaned and disinfected before and after use. Protocols should be developed to minimize trailer use to essential personal, restrict use from any workers who are ill or showing symptoms of being ill, and ensure a safe distance of 6 feet can be established between workers.

Communication

Include Coronavirus topics and prevention topics in daily tailgate meetings to ensure Coronavirus awareness is communicated daily. Discussions can focus on general topics including: social distancing, prevention measures for field personnel, signs and symptoms and recent news on the Coronavirus. Site-specific topics should include minimizing face-to-face contact, disinfecting/sterilizing field equipment, use of PPE to reduce exposure, site security and other potential exposure issues/concerns.

Sick/Ill Workers

No Langan employee is permitted to be onsite when ill and/or showing potential symptoms of the Coronavirus. Symptoms of the Coronavirus may appear 2-14 days after exposure and can range from mild to severe. The most common symptoms include: fever, fatigue, dry cough and shortness of breath. If an employee or subcontractor is observed being ill or exhibiting symptoms of Coronavirus, employees must immediately utilize their Stop Work Authority and contact their project manager to address the situation. If an employee observes another worker onsite exhibiting symptoms of Coronavirus, immediately utilize Stop Work Authority and notify their project manager and site construction manager or safety officer. Work should resume when the safety and health of Langan and subcontractors is adequately addressed.

3.6 Task Hazard Analysis

The tasks to be completed during the proposed site work activities, as summarized in Section 1.3, are listed in Table 3 with a Hazard Analysis for each task.

4.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

4.1 Levels of Protection

PPE must protect workers from the specific hazards they are likely to encounter on site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards. Based on anticipated site conditions and the proposed work activities to be performed at the Site, Level D Protection will be used. The upgrading/downgrading of these levels of protection will be based on

continuous air monitoring results as described in Section 5.0. The decision to modify standard PPE will be made by the HSO after conferring with the Langan Project Manager. The levels of protection are described below.

- **Level D Protection**

  a. Safety glasses with side-shields or chemical splash goggles
  b. Safety boots/shoes (toe-protected)
  c. Hard hat
  d. Long sleeve work shirt and work pants
  e. Nitrile gloves
  f. Hearing protection (as needed)
  g. Reflective traffic vest

- **Level D Protection (Modified)**

  a. Safety glasses with side-shields or chemical splash goggles
  b. Safety boots/shoes (toe-protected)
  c. Disposable chemical-resistant boot covers
  d. Coveralls (polycoated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)
  e. Hard hat
  f. Long sleeve work shirt and work pants
  g. Nitrile gloves
  h. Hearing protection (as needed)
  i. Reflective traffic vest

- **Level C Protection**

  a. Full face-piece, air-purifying, cartridge*-equipped, NIOSH-approved respirator [*combo cartridge P100/OV/CL/HC/SD/CD/HS (escape)]
  b. Inner (latex) and outer (nitrile) chemical-resistant glove
  c. Chemical-resistant safety boots/shoes (toe-protected)
  d. Disposable chemical-resistant boot covers
  e. Hard hat
  f. Long sleeve work shirt and work pants
  g. Coveralls (Tyvek or equivalent, poly-coated Tyvek will be worn when contact, or anticipated contact with wet contaminated soils, ground water, and/or non-aqueous phase liquids (NAPL) is anticipated)

h. Hearing protection (as needed)
i. Reflective traffic vest

The action levels used in determining the necessary levels of respiratory protection and upgrading to Level C are provided in Table 4. The written Respiratory Protection Program is maintained by Langan's H&S Department. The monitoring procedures and equipment are outlined in Section 5.0.

4.2 Respirator Fit-Test

All Langan employees and subcontractors performing site work who could be exposed to hazardous substances at the work site are in possession of a full face-piece, air-purifying respirator and have been successfully quantitative fit-tested within the past year. Quantitative fit-test records are maintained by Langan's H&S Department.

4.3 Respirator Cartridge Change-Out Schedule

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

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

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

5.0 AIR QUALITY MONITORING AND ACTIONS LEVELS

5.1 Monitoring During Site Operations

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

During site work involving disturbance of soil/fill at the site, real time air monitoring will be conducted for volatile organic compounds (VOCs) and particulates in accordance with the RAWP. A photoionization detector (PID) and/or flame ionization detector (FID) will be used to monitor concentrations of VOCs at personnel breathing-zone height. Dust monitoring will be accomplished with an aerosol monitor. Air monitoring will be the responsibility of the HSO or designee. Air monitoring will be conducted approximately every 30 minutes during ground intrusive activities on the project site. All manufacturers' instructions for instrumentation and calibration will be available onsite.

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

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

5.1.1 Volatile Organic Compounds

Monitoring with a PID, such as a MiniRAE 2000 (10.6v) or equivalent will occur during intrusive work within the work zone. Colormetric Indicator Tubes for benzene may be used as backup for the PID, if measurements remain above background monitor every 2 hours. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (odors, visible gases, etc.) since the last measurement. Instrument action levels for monitored gases are provided in Table 4.

5.1.2 Dust

During invasive procedures which have the potential for creating airborne dust, such as excavation of dry soils, a real time airborne dust monitor such as a Thermo Personal DataRam (pDR) or a TSI DustTrak will be used to monitor for air particulates in the work zone. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. Instrument action levels for dust monitoring are provided in Table 4.

5.2 Monitoring Equipment Calibration and Maintenance

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

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

5.3 Determination of Background Levels

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

Table 4 lists the instrument action levels.

6.0 COMMUNITY HEALTH AND SAFETY CONSIDERATIONS

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

The CAMP will include real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work zone when ground-intrusive work is in progress. Continuous monitoring will be required for all ground-intrusive work. The work zone is defined as the general area in which machinery is operating in support of remediation. Ground-intrusive work includes, but is not limited to, soil/fill excavation and handling and utility trenching. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. Periodic monitoring for VOCs may be required during non-intrusive work such as the collection of soil samples. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location and taking a reading prior to leaving a sample location.

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by a field engineer, scientist, or geologist under the supervision of the RE. The site perimeter will also be visually monitored for fugitive dust emissions.

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

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

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

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

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

7.0 WORK ZONES AND DECONTAMINATION

7.1 Site Control

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

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

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

HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

7.2 Contamination Control

7.2.1 Personnel Decontamination Station

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

7.2.2 Minimization of Contact with Contaminants

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

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

7.2.3 Personnel Decontamination Sequence

Decontamination will be performed by removing all PPE used in EZ and placing it in drums/trash cans at the CRZ. Baby wipes shall be available for wiping hands and face. Drums/trash cans will be labeled by the field crews in accordance with all local, state, and federal requirements. Management plans for contaminated PPE, tools and Investigative Derived Waste (i.e., soil cutting) are provided below.

7.2.4 Emergency Decontamination

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

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

7.2.5 Hand-Held Equipment Decontamination

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

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

7.2.6 Heavy Equipment Decontamination

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

7.3 Communications

The following communications equipment will be utilized as appropriate.

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

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip on partner's wrist or placement of both hands around partner's waist	Leave area immediately, no debate
Hands on top of head	Need assistance
Thumbs up	Okay, I'm all right, I understand
Thumbs down	No, negative

8.0 MEDICAL SURVEILLANCE

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

9.0 EMERGENCY RESPONSE PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency

site evacuation procedures. In case of emergency, in addition to 911 the Langan Incident/Injury Hotline (973-560-4699) should be called as soon as possible.

9.1 Responsibilities

9.1.1 Health and Safety Officer (HSO)

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

9.1.2 Emergency Coordinator

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

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

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

9.1.3 Site Personnel

Project site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could

constitute a site emergency. Project site personnel, including all subcontractors will be trained in the Emergency Response Plan.

9.2 Communications

Once an emergency situation has been stabilized or as soon as practically possible, the HSO will contact the Langan Incident/Injury Hotline (973-560-4699) and Project Manager of identify any emergency situation.

9.3 Local Emergency Support Units

In order to be able to deal with any emergency that might occur during investigative activities at the site, Attachment E will be available in the field vehicles and provided to all personnel conducting work within the EZ.

Figure 2 shows the hospital route map. Outside emergency number 911 and local ambulance should be relied on for response to medical emergencies and transport to emergency rooms. Due to traffic congestion that is prevalent in the New York metropolitan area, alternate hospital routes will need to be considered. The Emergency Coordinator will determine the appropriate route based on time of day and traffic patterns. Changes in the referenced primary facilities shall be documented with the CHASP Field Change Authorization Request Form (Attachment B).

The Emergency Phone Numbers listed are preliminary. Upon mobilization, the HSO shall verify all numbers and document the changes in the Site Logbook. Any changes shall also be documented with the CHASP Field Change Authorization Request Form.

Hospital route maps will be provided to all field personnel.

9.4 Pre-Emergency Planning

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

9.5 Emergency Medical Treatment

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

First Aid Kit:	Vehicles
Emergency Eye Wash:	Vehicles

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

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

Only in non-emergency situations will an injured person be transported to the hospital by means other than an ambulance.

Nearest hospital: **New York City Health, Elmhurst Hospital**
79-01 Broadway
Queens, New York 11373
Telephone: 718-334-4000
(directions from site to hospital found on Figure 2)

9.6 Non-Emergency Medical Treatment

In case of injury to personnel, which is not a medical emergency the employee will contact WorkCare at (1-888-449-7787). WorkCare provides access 24 hours / 7 days a week to experienced occupational health nurses and physicians who confer with employees at the onset of a work-related injury or illness. WorkCare will provide over the phone injury treatment or direct employees to medical treatment by third party provider, if appropriate.

9.7 Emergency Site Evacuation Routes and Procedures

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

9.8 Fire Prevention and Protection

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

9.8.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

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

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

9.9 Significant Vapor Release

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

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

9.10 Overt Chemical Exposure

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

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

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

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

9.11 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the

problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

9.12 Incident Reporting

Once first aid and/or emergency response needs have been met, the following parties are to be contacted:

- WorkCare (1-888-449-7787)
- Langan Incident/Injury Report Hotline (973-560-4699)
- Langan Project Manager, Amanda Forsburg (973-560-4574)
- Langan Health and Safety Manager, Tony Moffa (215-491-6500)
- The employer of any injured worker who is not a Langan employee

For emergencies involving personal injury and/or exposure including near-misses, the HSO or designee will complete and submit an Incident Report form (Attachment F) within 24 hours. If the employee involved is not a Langan employee, his employer shall receive a copy of the report.

9.13 Adverse Weather Conditions

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

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.

- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.
- Earthquakes.
- Other major incidents.

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

9.14 Spill Control and Response

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

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

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

1. Determine the nature, identity and amounts of major spills.
2. Make sure all unnecessary persons are removed from the spill area.
3. Notify the HSO immediately.
4. Use proper PPE in consultation with the HSO.

5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosion-proof equipment to contain or clean up the spill (diesel-only vehicles, air-operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material.
7. Remove all surrounding materials that can react or compound with the spill.

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

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

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

9.15 Emergency Equipment

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

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

9.16 Restoration and Salvage

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

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

10.0 TRAINING

10.1 General Health and Safety Training

Completion of an initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training program (or its equivalent) as detailed in OSHA's 29 CFR 1910.120(e) is required for all employees who will perform work in areas where the potential for a toxic exposure exists. Annual 8-hour refresher training is also required to maintain competencies to ensure a safe work environment.

10.2 Site-Specific Training

Prior to commencement of site activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the site operations. It will include a documented verbal review of the entire CHASP and all the provisions within the CHASP document. Should any new employees arrive on-site, they will also be given a documented full CHASP review – or one that address the appropriate tasks that remain at the time of the new employee's arrival.

10.3 Onsite Safety Briefings

Project personnel and visitors will participate in documented daily on-site health and safety briefings ("Tailgate Talks") led by the HSO to assist site personnel in safely conducting their work activities. The briefings will include information on operations to be conducted that shift, changes in work practices or changes in the site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity for the work crews to be updated on monitoring results. Prior to starting any new activity, a training session will be held for crew members

involved in the activity. The Safety Briefing form (Attachment A) can be used to facilitate this effort.

10.4 Hazard Communication

All material brought on-site will be in the appropriate containers and will be properly labeled. The MSDS for unleaded gasoline, diesel fuel, and hydraulic fluid are attached. Langan's written Hazard Communication program, in compliance with 29 CFR 1910.1200, is maintained by Langan's H&S Department.

11.0 RECORDKEEPING

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

11.1 Field Change Authorization Request

A field change authorization request is to be completed for requesting a change to this CHASP (Attachment B). Any changes to the work to be performed that is not included in the CHASP will require an Addendum that is approved by the Langan Project Manager and Langan HSM to be prepared. Approved changes will be reviewed with all field personnel at a safety briefing.

11.2 Medical and Training Records

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

11.3 Onsite Log

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

11.4 Daily Safety Meetings ("Tailgate Talks")

Completed Safety Briefing forms will be maintained by the HSO.

11.5 Exposure Records

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

11.6 Hazard Communication Program/SDS

Safety Data Sheets (SDS) have been obtained for applicable substances and are included in this CHASP (Attachment G). Langan's written Hazard Communication program, in compliance with 29 CFR 1910.1200, is maintained by Langan's H&S Department.

11.7 Documentation

Employees are required to contact WorkCare at (1-888-449-7787) to document incidents/injuries which are not medical emergencies. Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at (973-560-4699) and the client representative to report the incident or near miss. A written report must be completed and submitted to the client representative within 24 hours of the incident. For emergencies involving personnel injury and/or exposure, employee will complete and submit the Langan Incident/Injury Report to the Langan Corporate Health and Safety Manager as soon as possible following the incident. Accidents will be investigated in-depth to identify all causes and to recommend hazard control measures.

12.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have been verbally given a full CHASP review by Langan personnel, and understand the provisions of this EHS Plan. It is maintained on site by the HSO as a project record.

Each field team member shall sign this section after Site-specific training is completed and before being permitted to work onsite.

Name (Print and Sign)	***Company***	***Date***

TABLES

TABLE 1
SUSPECTED CONTAMINANTS OF CONCERN
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Contaminant Of Concern	Affected Media
VOLATILES	
1,2,4,5-Tetramethylbenzene	Groundwater
1,2,4-Trimethylbenzene	Soil / Groundwater / Soil Vapor
1,3,5-Trimethylbenzene	Soil Vapor
Acetone	Soil
Benzene	Soil / Groundwater / Soil Vapor
Carbon Tetrachloride	Soil Vapor
Chloroform	Soil
Ethylethylene	Soil / Groundwater / Soil Vapor
Isopropylbenzene	Groundwater
Methyl Ethyl Ketone	Soil
Methylene Chloride	Soil
n-Butylbenzene	Soil / Groundwater
n-Propylbenzene	Soil / Groundwater
Sec-Butylbenzene	Soil / Groundwater
Tetrachloroethylene	Soil Vapor
Toluene	Soil / Groundwater / Soil Vapor
Vinyl Chloride	Soil Vapor
Xylenes (m,p-Xylene, and o-Xylene)	Soil / Groundwater / Soil Vapor
SEMI-VOLATILES	
Benzo(a)anthracene	Soil / Groundwater
Benzo(a)pyrene	Soil / Groundwater
Benzo(b)flouranthene	Soil / Groundwater
Benzo(k)flouranthene	Soil / Groundwater
Chrysene	Soil / Groundwater
Dibenzo(a,h)anthracene	Soil
Indeno (1,2,3-cd) pyrene	Soil / Groundwater
Naphthalene	Soil
Phenanthrene	Soil
Pyrene	Soil
PESTICIDES	
4,4'-DDD	Soil
4,4'-DDE	Soil
4,4'-DDT	Soil
Chlordane	Soil / Groundwater

TABLE 1
SUSPECTED CONTAMINANTS OF CONCERN
28-90 REVIEW AVENUE
QUEENS, NEW YORK

PCBs	
Total PCBs	Soil
METALS	
Antimony	Groundwater
Arsenic	Soil / Groundwater
Barium	Soil
Cadmium	Soil
Chromium, Hexavalent	Soil
Chromium, Trivalent	Soil
Copper	Soil
Iron	Groundwater
Lead	Soil / Groundwater
Magnesium	Groundwater
Manganese	Groundwater
Mercury	Soil
Nickel	Soil
Selenium	Soil / Groundwater
Silver	Soil
Sodium	Groundwater
Zinc	Soil

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
1,2,4-Trimethylbenzene	> 0 ppm	---	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)
1,3,5-Trimethylbenzene	> 0 ppm	---	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)
Acetone	1000 ppm	2500 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis
Benzene	1 ppm	50 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, skin, nose; respiratory system; giddiness; head, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depression; [carcinogenic]
Carbon Tetrachloride	10 ppm	200 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, skin; central nervous system depression; nausea, vomiting; liver, kidney injury; drowsiness, dizziness, incoordination; [potential occupational carcinogen]

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Chloroform	50 ppm	500 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]
Ethylbenzene	100 ppm	800 ppm (10% LEL)	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, mucous membrane; headache, dermatitis; narcosis, coma
Methylene Chloride	25 ppm	2300 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]
Tetrachloroethene	15 ppm	150 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Nausea, vomiting, abdominal pain, tremor fingers, jaundice, hepatitis, liver tenderness, dermatitis, monocytosis, kidney damage [potential occupational carcinogen]
Toluene	200 ppm	500 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; nervousness, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage; mucous membrane; narcosis, coma

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Total Volatile Organics	15 ppm	150 ppm	Inhalation, skin absorption, ingestion	Irritate eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]
Vinyl Chloride	5 ppm over 15 minutes	> 0 ppm	Inhalation, skin and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]
Xylenes	100 ppm	900 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corn vacuolization; anorexia, nausea, vomit, abdominal pain; dermatitis
Benzo(a)anthracene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Benzo(a)pyrene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Benzo(b)fluoranthene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Benzo(k)fluoranthene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Chrysene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Dibenzo(a,h)anthracene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Indeno (1,2,3-cd) pyrene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Naphthalene	10 ppm	250 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage
Phenanthrene	0.2 mg/m^3	80 mg/m^3	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]
Pyrene	0.2 mg/mg^3	80 mg/m^3	Inhalation, skin absorption, ingestion	Irritate eyes, skin, upper respiratory system, cough
Pesticides	1 mg/mg^3	500 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]
Aroclor 1242	1 mg/m^3	5 mg/m^3	Inhalation, skin adsorption, ingestion, skin and/or eye contact	Irritation eyes; chloracne; liver damage; reproductive effects; [potential occupational carcinogen]
Aroclor 1254	0.5 mg/m^3	5 mg/m^3	Inhalation, skin adsorption, ingestion, skin and/or eye contact	Irritation eyes; chloracne; liver damage; reproductive effects; [potential occupational carcinogen]

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Antimony	0.5 mg/m^3	50 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly
Arsenic	0.010 mg/m^3	5 mg/m^3	Inhalation, ingestion, skin absorption, skin and/or eye contact	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Barium	0.5 mg/m^3	50 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia
Cadmium	0.005 mg/m^3	9 mg/m^3	Inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Copper	1 mg/m^3	100 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing; [potential occupational carcinogen]
Iron	10 mg/m^3	2,500 mg/m^3	Inhalation	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)
Lead	0.05 mg/m^3	100 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension
Magnesium	15 mg/m^3	750 mg/m^3	Inhalation, skin and/or eye contact	Irritate eyes, nose; metal fume fever: cough, chest pain, flu-like fever
Manganese	5 mg/m^3	500 mg/m^3	Inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Mercury	0.1 mg/m^3	10 mg/^{3}	Inhalation, ingestion, skin absorption, skin and/or eye contact	Irritate eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria
Nickel	1 mg/m^3	10 mg/m^3	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritate eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria
Selenium	0.2 mg/m^3	1 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage
Silver	0.01 mg/m^3	10 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance
Sodium	2 mg/m^3	10 mg/m^3	Inhalation, ingestion, skin and/or eye contact	Irritate eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair

TABLE 2
SELECTED POTENTIAL CHEMICAL EXPOSURE LIMITS AND HEALTH EFFECTS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Chemical	Permissible Exposure Limit	IDLH Limit	Exposure Routes	Exposure Symptoms
Zinc	5 mg/m^3	500 mg/m^3	Inhalation	Metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function

--- No exposure limits listed in the NIOSH Pocket Guide to Chemical Hazards dated November 2010.

TABLE 3
HAZARD ANALYSIS
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Task	Potential Risk	Description	Control Measure
1, 2, 3, 4, 5	Lifting equipment	Improper lifting/carrying of equipment and materials	Follow safe lifting and general material handling
1, 2, 3, 4, 5	Noise	Loud sounds caused by the machines during drilling, or excavation	Wear proper PPE (hearing protection)
1, 2, 3, 4, 5	Working near heavy machinery	Close proximity to drill rig and/or construction equipment	Be aware of surroundings, wear safety vest and hard hat
1, 2, 3, 4, 5	Slips, trips, and falls	Any number of injuries from slips, trips, and falls in carrying out these tasks	Good housekeeping at site, constant awareness and focus on the task
1, 2, 3, 4, 5	Inhalation of Dust	Breathing in visible dust from earthwork using drills or excavators	Wear proper PPE, monitor air for dust concentrations, use dust suppression techniques
1, 2, 3, 4, 5	Inhalation of Volatiles	Breathing in volatiles from earthwork using drills or excavators causing dust	Wear proper PPE, monitor air for volatile concentrations, use dust suppression techniques
1, 3, 4, 5	Utilities	Hitting utility lines during drilling and or excavating	Use proper mark out of underground utilities before beginning earthwork
1, 2, 3, 4, 5	Skin contact with contaminated material	Material falls on skin; gets in eye	Wear proper PPE; follow safe work practices
1, 2, 3, 4, 5	Ingestion of contaminated material	Material falls on skin; gets into mouth	Wear proper PPE; follow safe work practices
1, 2, 3, 4, 5	Skin and eye contact with contaminated material	Material falls on skin; gets in eye	Wear proper PPE; follow safe work practices
1, 2, 3, 4, 5	Heat Stress	Stress or exhaustion related to high temperatures	Hydrate and rest as needed
1, 2, 3, 4, 5	Cold Stress	Stress or exhaustion related to low temperatures; hypothermia	Wear proper PPE; follow safe work practices
1, 2, 3, 4, 5	Bites and stings	Bee stings, ticks, snake bites	Wear proper PPE, be watchful, follow safe work practices
1, 2, 3, 4, 5	Lacerations and abrasions	Many opportunities working with hand tools	Inspect equipment being used for sharp edges, wear proper PPE; follow safe work practices

TABLE 4
INSTRUMENTATION ACTION LEVELS
28-90 AVENUE
QUEENS, NEW YORK

Instrument	Action Level	Level of Protection / Action Required
PID	Background to 5 ppm	Level D/No respirator; no further action required
	> 5 ppm for > 5 minutes	1. Temporarily discontinue all activities and evaluate potential causes of the excessive readings. If these levels persist and cannot be mitigated (i.e., by slowing drilling or excavation activities), contact HSO to review conditions and determine source and appropriate response action. 2. If PID readings remain above 5 ppm, temporarily discontinue work and upgrade to Level C protection. 3. If sustained PID readings fall below 1 ppm, downgrading to Level D protection may be permitted
	> 5 ppm but < 150 ppm for > 5 minutes	Level C/ 1. Discontinue all work; all workers shall move to an area upwind of the jobsite. 2. Evaluate potential causes of the excessive readings and allow work area to vent until VOC concentrations fall below 5 ppm. 3. Level C protection will continue to be used until PID readings fall below 1 ppm.
	> 30 ppm (steady state condition) within AOC zone	Stop Work / Suppress Emissions / Evacuate and re-evaluate.
	> 150 ppm	Evacuate the work area
Total Dust Aerosol Monitor	> 0.100 mg/m3 above BKD (steady state condition) at perimeter of AOC zone for 15-minutes or visible dust.	Stop Work / Implement dust control / Continue dust monitoring if dust levels are less than 150 mg/m3
	< 0.150 mg/m3 above BKD (following dust suppression measures)	Stop Work / implement dust control, continue work once levels are <150 mg/m3
	>5 mg/m3	Level C

Notes:

1. 1 ppm level based on OSHA Permissible Exposure Limit (PEL) for benzene.
2. 5 ppm level based on OSHA Short Term Exposure Limit (STEL) maximum exposure for vinyl chloride for any 15 minute period.
3. 150 ppm level based on NIOSH Immediately Dangerous to Life and Health (IDLH) for tetrachloroethylene

TABLE 5
PERSONAL PROTECTIVE EQUIPMENT
28-90 REVIEW AVENUE
QUEENS, NEW YORK

Respiratory Protection*:*

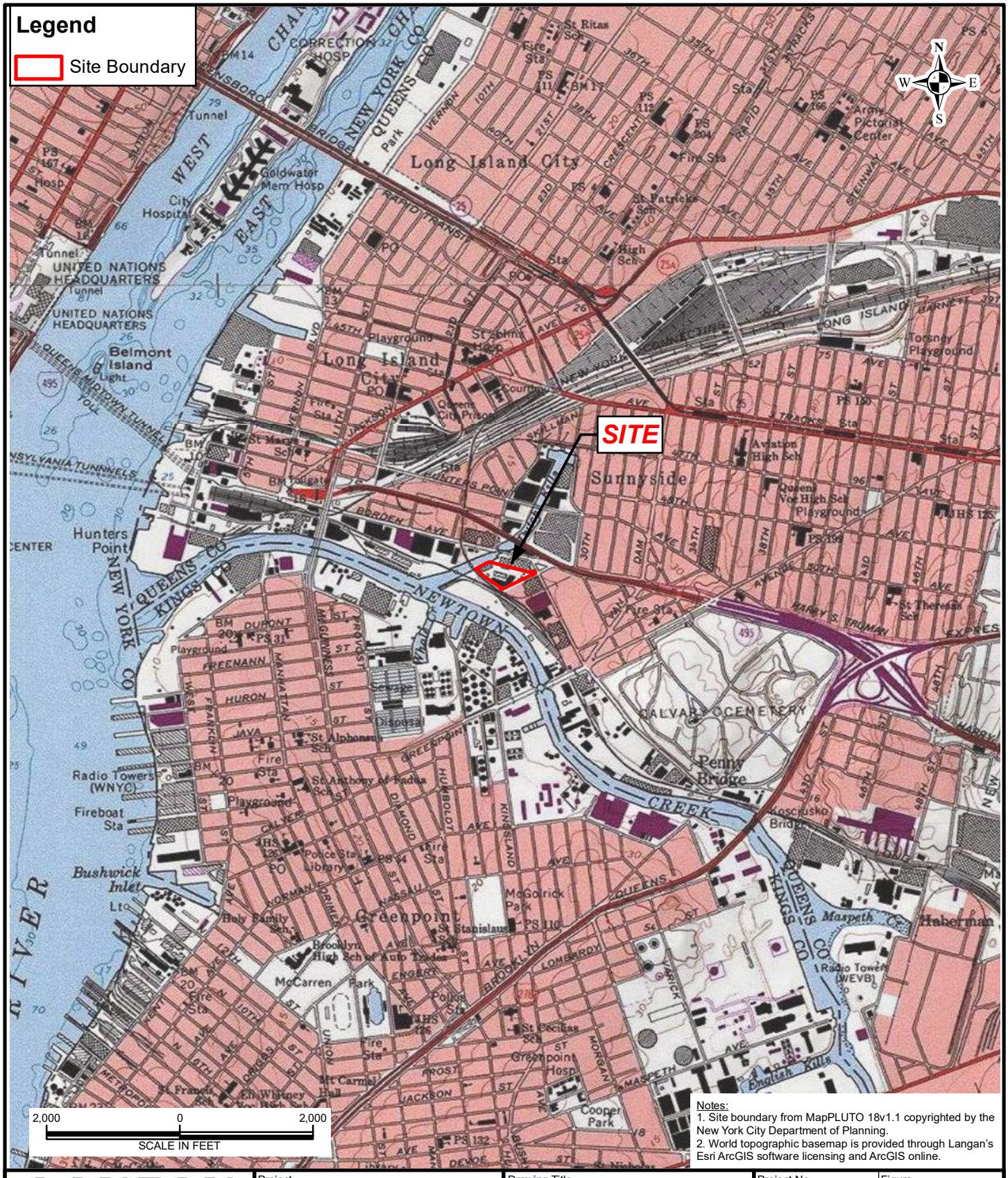
Level D:	No respirator required.
Level C:	Half-face, Air Purifying Respirator (APR) with combination HEPA (dusts, fumes, aerosols) and organic vapor cartridges. The respirator will be NIOSH-approved.
Level C - supplemental by task	Fullface, Air Purifying Respirator (APR) with combination HEPA (dusts, fumes, aerosols), acid gas, organic vapor cartridges. The respirator will be NIOSH-approved.

Personal Protective Clothing*:*

Level D:	Hard-hat, traffic vest (if working on or adjacent to the roadway), long sleeve work shirt & work pants of natural fibers, safety glasses or goggles, steel-toed boots, hearing protection (if needed), nitril inner gloves and leather outer gloves.
Level D - supplemental PPE by task	Tyvek disposal suit
Level C:	Chemically resistant outer boots and Chemical resistant Tyvek disposal suite.

\\LANGAN.COM\DATA\PAR\DATA6\100652601\ENGINEERING DATA\ENVIRONMENTAL\REPORTS\2021-01 - BCP RAWP\APPENDIX D - CHASP\TABLES\HASP TABLE 5 - PPE.DOC

FIGURES



Notes:
1. Site boundary from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
2. World topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.

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Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

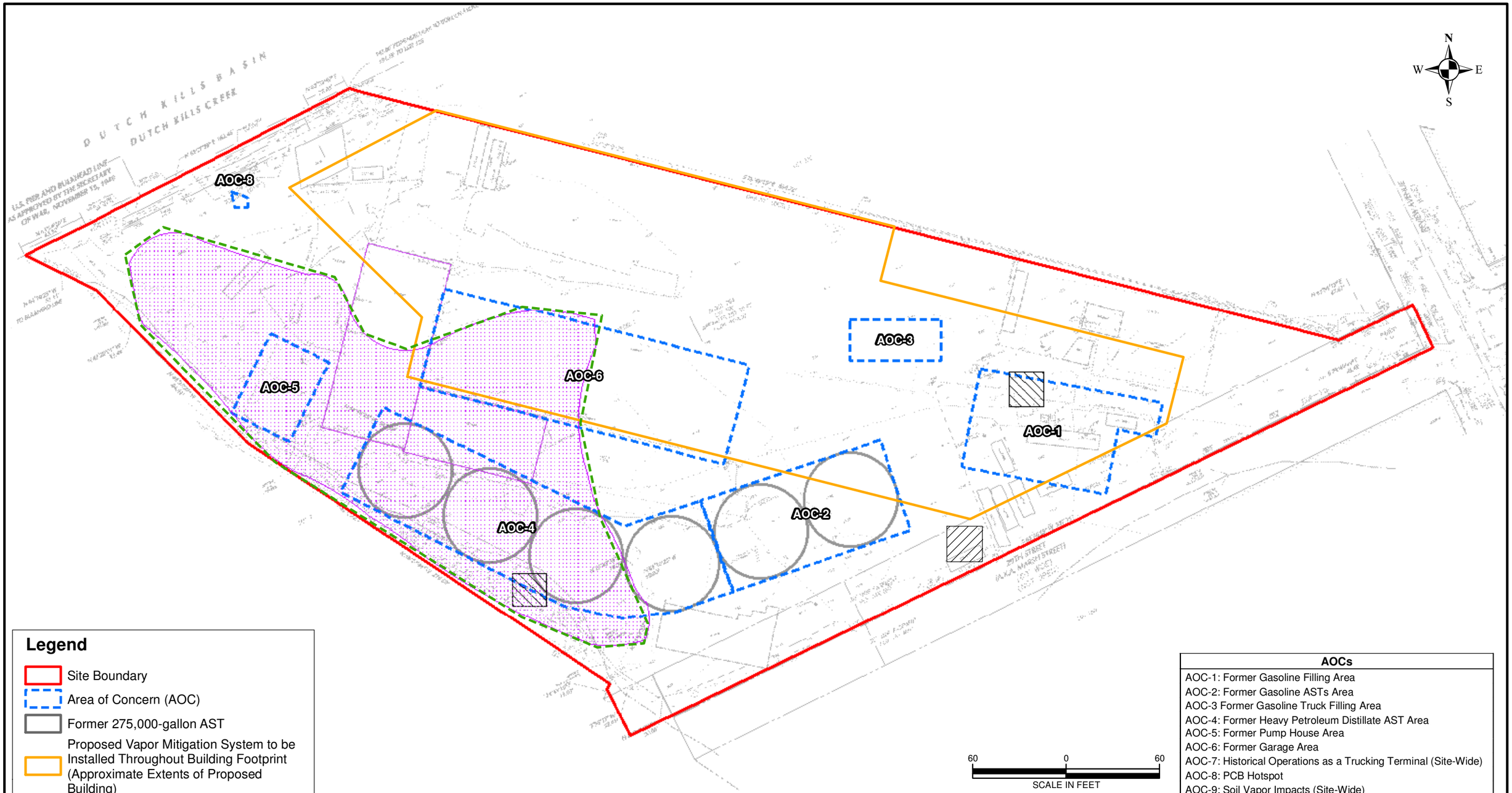
Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
USGS SITE LOCATION MAP

Project No. 100652601	Figure 1
Date 1/8/2021	
Scale 1"=2,000'	
Drawn By AR	
Last Revised 1/22/2021	

© 2013 Langan

Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 1 - Site Location Map1.mxd Date: 1/22/2021 User: ibaker Time: 1:36:27 PM



Legend

- Site Boundary
- Area of Concern (AOC)
- Former 275,000-gallon AST
- Proposed Vapor Mitigation System to be Installed Throughout Building Footprint (Approximate Extents of Proposed Building)
- Zinc hotspot to be excavated to 13 feet bgs
- Lead Hotspot to be excavated to 14 feet bgs
- NAPL Impacts
- Lateral Extents of ISS Remedy

AOCs
AOC-1: Former Gasoline Filling Area
AOC-2: Former Gasoline ASTs Area
AOC-3 Former Gasoline Truck Filling Area
AOC-4: Former Heavy Petroleum Distillate AST Area
AOC-5: Former Pump House Area
AOC-6: Former Garage Area
AOC-7: Historical Operations as a Trucking Terminal (Site-Wide)
AOC-8: PCB Hotspot
AOC-9: Soil Vapor Impacts (Site-Wide)

Notes:
1. Basemap from "Draft Topographic, Boundary and Utility Survey" by Langan, dated 8/1/2018.
2. Building Extents from KSS Architects "Launch Pad Pickup" dated 1/19/2021.
3. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
4. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map.

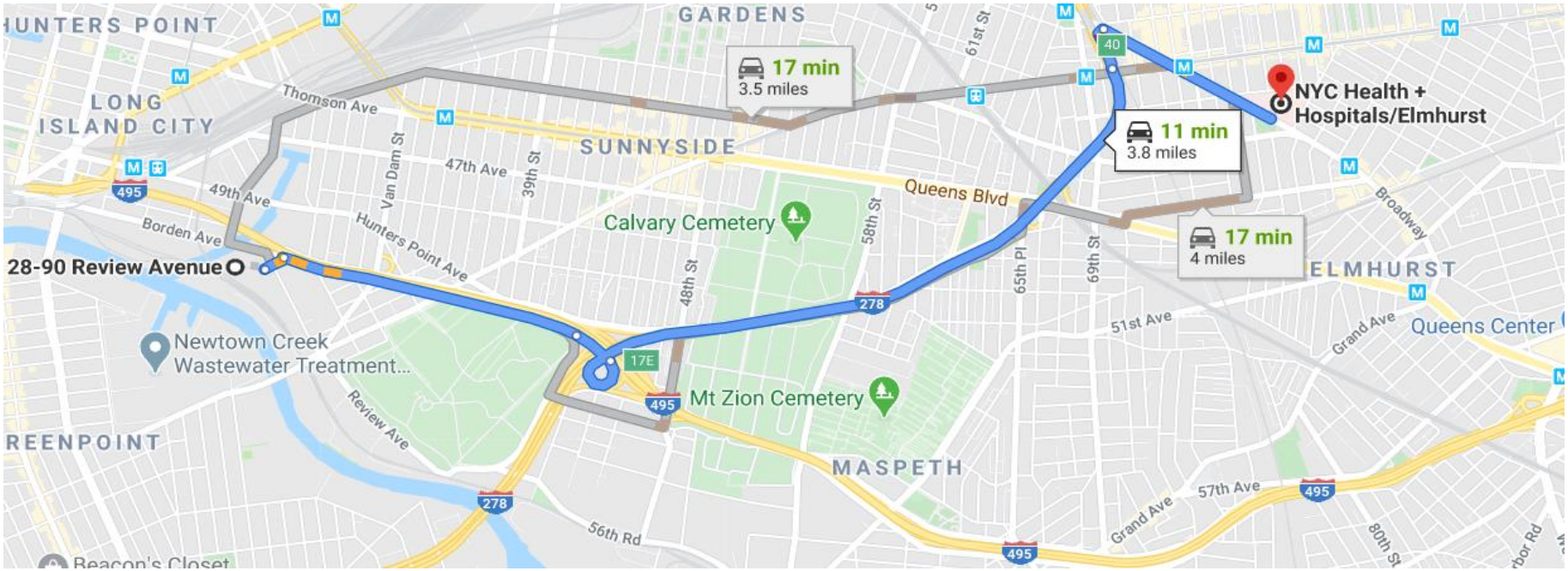
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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
AREAS OF CONCERN MAP

Project No.	Figure
100652601	2
Date: 1/20/2021	
Scale: 1"=60'	
Drawn By: IHB	
Last Revised: 7/13/2021	

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Emergency Route to New York City Health, Elmhurst Hospital (Phone # (718) 334-4000) :

1 Start traveling Northeast on 29th Street towards Borden Avenue
2 Turn Right at the 2nd cross street onto Borden Avenue
3 Use the Right lane to keep right at the fork and continue to merge onto Interstate 278 East
4 Keep right at the fork to continue on Exist 17E follow signs for 1-278/La Guardia Airport/Bronx
5 Take exit 40 towatd Roosevelt Ave
6 Turn Right onto Broadway
7 Elmhurst Hospital Emergency Room is on the left.

MAP REFERENCE: Google Maps

LANGAN

Project

28-90 REVIEW AVENUE
EMERGENGY HOSPITAL ROUTE MAP

Queens **New York**

Project	DATE	SCALE	FIGURE NO.
100652601	**12/22/2020**	**NTS**	**3**

\\langan.com\data\PAR\data6\100652601\Engineering Data\Environmental\Reports\2020-11 - BCP RAWP\Appendix D - CHASP\Figures\Figure 3 - Hospital Route

ATTACHMENT A

Health and Safety Briefing Statement

LANGAN

ATTACHMENT A

HEALTH AND SAFETY BRIEFING STATEMENT

The following personnel were present at a pre-job safety briefing conducted at _____ (time) on _____ (date) at _____ (location), and have read this Health and Safety Plan for the above Site and are familiar with its provisions:

Name	Signature
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Fully charged ABC class fire extinguisher available on Site? _____
Fully stocked First Aid Kit available on Site? _____
All project personnel advised of location of nearest phone? _____
All project personnel advised of location of designated medical facility? _____

_____
Name of Field Team Leader or Site Safety Officer

_____
Signature Date

ATTACHMENT B

Field Procedures Change Authorization Form

LANGAN

ATTACHMENT B

FIELD PROCEDURES CHANGE AUTHORIZATION FORM

Section to be changed: _____

Duration of Authorization Requested Date: _____

_____ Today only

_____ Duration of Task

_____ Other_____

_____

_____

Description of Procedures Modification:

_____

_____

_____

Justification:

_____ _____

Person Requesting Change Verbal Authorization Received From:

_____ _____

Name Name Time

_____ _____

Title Title

_____

Signature

Approvals:

_____

_____

_____

ATTACHMENT C

Unsafe Conditions and Practices Form

LANGAN

ATTACHMENT C

UNSAFE CONDITIONS AND PRACTICES FORM

DESCRIPTION OF CIRCUMSTANCES REGARDING UNSAFE CONDITION OR PRACTICE:

_____

_____

_____

_____

_____

_____

_____

IS THIS CONDITION EXISTING OR POTENTIAL? _____

REPORTED TO: _____

REPORTED BY: _____

DATE REPORTED: _____

COMMENTS: _____

_____

_____

ATTACHMENT D

Calibration Log

LANGAN

ATTACHMENT D

PROJECT: _____

DATE: _____

CALIBRATION LOG

Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calib Reading	Performed By:

ATTACHMENT E

Emergency Notification Numbers

LANGAN

ATTACHMENT E

EMERGENCY NOTIFICATION NUMBERS

The following list provides names and telephone numbers for emergency contact personnel.

ORGANIZATION	CONTACT	TELEPHONE
New York City Police		911
New York City Fire		911
New York City Health, Elmhurst Hospital		718-334-3050
WorkCare (Non-Emergency Medical Treatment)		1-888-449-7787
Langan Incident / Injury Hotline		973-560-4699
Langan Project Manager	Amanda Forsburg	973-560-4574
National Response Center		800-424-8802
Center for Disease Control		404-488-4100
CHEMTREC		800-424-9300
TSCA HOTLINE		202-554-1404
RCRA HOTLINE		800-424-9346
CDC	(DAY) (NIGHT)	404-452-4100 404-329-2888
BUREAU OF ALCOHOL, TOBACCO & FIREARMS		800-424-9555 202-566-7777
NATIONAL RESPONSE CENTER		800-424-8802
PESTICIDE INFORMATION SERVICE		800-424-9346
BUREAU OF EXPLOSIVES, A.A. RAILWAYS		202-835-9500
FEDERAL EXPRESS - HAZARDOUS MATERIAL INFO		901-922-1666

ATTACHMENT F

Accident / Incident Report Form

LANGAN

ATTACHMENT F

INCIDENT REPORT

LANGAN EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT
(Submit a Separate Report for Each Employee and/or Incident)

Date: _____

Employee's Name: _____ Employee No: _____

Sex: M _____ F _____ Age: _____

Region: _____ Location:_____

Project: _____ Project No: _____

Incident: _____

Type: Possible Exposure _____ Exposure _____ Physical Injury _____

Location: _____

Date of Incident: _____ Time of Incident: _____

Date of Report Incident: _____

Person(s) to Whom Incident was Reported: _____

Weather Conditions During Incident: Temperature _____ Humidity _____

Wind Speed and Direction: _____ Cloud Cover: _____

Clear: _____ Precipitation: _____

Materials Potentially Encountered: _____

Chemical (give name of description - liquid, solid, gas, vapor, fume, mist):

_____

_____

Radiological: _____

Other: _____

Nature of the Exposure/Injury: (State the nature of the exposure/injury in detail and list the parts of the body affected. Attach extra sheets if necessary).

_____

_____

_____

_____

_____

Did you receive medical care? Yes _____ No _____ If so, when _____

Where? On-Site _____ Off-Site _____

By Whom: Name of Paramedic: _____

Name of Physician: _____

Other: _____

If Off-Site, name facility (hospital, clinic, etc):_____

_____

Length of stay at the facility? _____

Was the Site Safety Officer contacted? Yes _____ No _____ When?_____

Was the Corporate Health and Safety Officer contacted? Yes _____ No _____

If so, who was the contact? _____

Did the exposure/injury result in permanent disability? Yes _____ No _____

If so, explain: _____

_____

_____

_____

Has the employee returned to work? Yes _____ No _____

List the names of other persons affected during this incident:

_____

_____

_____

_____

_____

_____

List the names of persons who witnessed the exposure/injury incident:

_____

_____

_____

_____

_____

_____

_____

Possible cause of the exposure/injury incident: _____

_____

_____

_____

_____

_____

What was the name and title of the field team leader or immediate supervisor at the site of the incident?

_____

Was the operation being conducted under an established Health and Safety Plan?

Yes _____ No _____ If yes, attach a copy. If no, explain

_____

_____

_____

_____

_____

_____

Describe protective equipment and clothing used by the employee:

_____

_____

_____

_____

_____

_____

Did any limitations in safety equipment or protective clothing contribute to or affect exposure? If so, explain:

_____

_____

_____

What was the employee doing when the exposure/injury occurred? (Describe briefly as Site Reconnaissance, Site Characterization, or Sampling, etc.):

_____

_____

_____

_____

Where exactly on site or off site did the exposure/injury occur?

_____

_____

_____

_____

_____

How did the exposure/injury occur? (Describe fully what factors led up to and/or contributed to the incident):

_____

_____

_____

_____

_____

Name of person(s) initiating report, job title, phone number:

_____

_____

_____

_____ _____

Employee Signature Date

_____ _____

Site Safety Officer Signature or Field Team Leader Signature Date

ATTACHMENT G

Safety Data Sheets
(SDS)

LANGAN

ATTACHMENT G

MATERIAL SAFETY DATA SHEETS

SAFETY DATA SHEETS

All Langan Field Personnel Completing This Work Plan Are To Have Real Time Accessibility To Material Safety Data Sheet (MSDs) or Safety Data Sheet (SDSs) Through Their Smart Phone.

The link is http://www.msds.com/
The login name is "drapehead"
The password is "2angan987"

If You Are Unable To Use the Smart Phone App, You Are To Bring Printed Copies of the MSDs/SDSs to the Site

ATTACHMENT H

Jobsite Safety Inspection Checklist

LANGAN

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JOBSITE SAFETY INSPECTION CHECKLIST

Client: _____ Inspection Date: _____

Site: _____ Inspector: _____

Employees: _____

Notes:_____

_____

_____

Check one of the following: **A:** Acceptable **NA**: Not Applicable **D**: Deficiency

	A	NA	D	Remarks
GENERAL				
Appropriate PPE being worn by Langan employees and subcontractors?				
Air monitoring instruments calibrated daily and results recorded on the Daily Instrument Calibration check sheet?				
Air monitoring readings recorded on the air monitoring data sheet/field log book?				
Incident reporting procedures known?				
Site security an issue?				
Vehicle /pedestrian traffic issue?				
Adequate size/type fire extinguisher supplied?				
Evidence that drilling operator is responsible for the safety of his rig.				
First Aid kit available?				
PERSONAL PROTECTIVE EQUIPMENT				
Eye Protection?				
Head protection?				
Safety Shoes?				
Safety vests?				
Hand protection?				
Other?				
Deficiencies??				
HOUSEKEEPING				
Work area kept clean/tidy to minimize potential hazards?				
Waste being disposed of quickly and properly				
Adequate lighting for job?				
Portable water available?				
HAND TOOLS				
Are tools in good condition and properly used? (INSPECT)				
Are proper tools being used?				
Are tools safety stored when not in use?				
Have tools been inspected prior to use?				
Are employees familiar with using tools?				
Is additional PPE required for tools? Available?				
POWER TOOLS				
Are tools in good condition and properly used? (INSPECT)				
Are tools properly grounded?				
Safety guards in place and used correctly?				
Competent instruction / supervision?				
Cords include in inspection?				

HAZWOPER				
Employees have current 40-hr./8-hr./Supervisor HAZWOPER training?				
Project staff medically cleared to work in hazardous waste sites and fit-tested to wear respirators, if needed?				
Respiratory protection readily available?				
Subcontract workers have current 40-hr./8-hr./Spvsr. HAZWOPER training, as appropriate?				
Subcontract workers medically cleared to work on site, and fit-tested for respirator wear?				
Subcontract workers have respirators readily available?				
HEALTH & SAFETY PLAN				
HASP available on site for inspection?				
Health & Safety Compliance agreement (in HASP) appropriately signed by Langan employees and subcontractors?				
Hospital route map with directions posted on site?				
Emergency Notification List posted on site?				
Personnel trained in CPR/First Aid on site?				
MSDSs readily available, and all workers knowledgeable about the specific chemicals and compounds to which they may be exposed?				
Project site safe practices ("Standing Orders") posted?				
Health & Safety Incident Report forms available?				
Decontamination procedures being followed as outlined in HASP?				
UNDERGROUND UTILITY				
Mark outs of underground utilities done prior to initiating any subsurface activities?				
Underground utilities located and authorities contacted before digging?				
Visually observed mark-outs?				
Is subsurface work within three feet of underground utilities?				
- Is so, is or was soft dig techniques used?				
Drilling performed in areas free from underground utilities?				
EXCAVATION / TRENCH				
Are excavations/trenches over 5 feet deep sloped, shored or a trench box used?				
Operations supervised by a Competent Person?				
Is Competent Person preforming daily inspections of excavation/trench?				
Adequate barricades in place?				
Have underground utilities been identified?				
Ladders / means of egress in trench with 25-foot of every worker?				
Has PE designed or approved protective system?				
Excavated material and other objects placed more than 2 feet away from excavation edge?				
Public protected from exposure to open excavation?				
CONFINED / PERMIT-ENTRY CONFINED SPACE				
People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?				
Confined space entry permit is completed and posted?				
All persons knowledgeable about the conditions and characteristics of the confined space?				
All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?				
Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?				
Attendant and/or supervisor certified in basic first aid and CPR?				
Confined space atmosphere checked before entry and continuously while the work is going on?				
Results of confined space atmosphere testing recorded?				
Evidence of coordination with off-site rescue services to perform entry rescue, if needed?				
ELECTRICAL SAFETY				
Equipment at least 10 feet from overhead power lines?				
Is equipment grounded?				
GFCI used and tested where required?				
Are extension cords rated for this work being used and are they properly maintained?				
Electrical dangers posted at site?				

FLAMMABLE LIQUIDS				
Are flammable liquids used at site?				
Are flammable liquids stored in appropriate containers?				
Are flammable liquids kept away from combustion sources?				
Do flammable liquid containers have warning labels?				
LADDERS				
Are ladders used at site?				
Were ladders inspected prior to use?				
Are ladders in good working condition?				
Are ladders secured to prevent slipping, sliding or falling?				
Do side rails extend three feet above top of landing area?				
Are top two steps of stepladders being used?				
Is extension on ladder facing out?				
Are ladders sufficient for task?				
Are ladders sufficient for task?				

Unsafe acts observed? _____

_____

_____

_____

_____

_____

Additional remarks _____

_____

_____

_____

_____

_____

_____

Notes:_____

_____

_____

_____

_____

_____

_____

Distribution: Project Manager - Name: _____

Health & Safety Officer - Name: _____

Health & Safety Manager- Name: Anthony Moffa, CHMM

ATTACHMENT I

Langan Guidelines

LANGAN

ATTACHMENT I

LANGAN GUIDELINES

GENERAL

- No smoking, eating, or drinking in this work zone.
- Upon leaving the work zone, personnel will thoroughly wash their hands and face.
- Minimize contact with contaminated materials through proper planning of work areas and decontamination areas, and by following proper procedures. Do not place equipment on the ground. Do not sit on contaminated materials.
- No open flames in the work zone.
- Only properly trained and equipped personnel are permitted to work in potentially contaminated areas.
- Always use the appropriate level of personal protective equipment (PPE).
- Maintain close contact with your buddy in the work zone
- Contaminated material will be contained in the Exclusion Zone (EZ).
- Report any unusual conditions.
- Work areas will be kept clear and uncluttered. Debris and other slip, trip, and fall hazards will be removed as frequently as possible.
- The number of personnel and equipment in the work zone will be kept to an essential minimum.
- Be alert to the symptoms of fatigue and heat/cold stress, and their effects on the normal caution and judgment of personnel.
- Conflicting situations which may arise concerning safety requirements and working conditions must be addressed and resolved quickly by the site HSO.

TOOLS AND HEAVY EQUIPMENT

- Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carrying passengers.
- Loose-fitting clothing or loose long hair is prohibited around moving machinery.
- Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.
- Drilling/excavating within 10 feet in any direction of overhead power lines is prohibited.
- The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.
- Check to insure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.
- If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.
- Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as a signalman to direct backing as necessary.
- Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done, and that such equipment is completely decontaminated before moving it into the clean area of the work zone.
- Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.

APPENDIX E

Quality Assurance Project Plan

LANGAN

QUALITY ASSURANCE PROJECT PLAN

for

28-90 REVIEW AVENUE
QUEENS, NEW YORK
NYSDEC BCP No. C241236

Prepared For:

28-90 Review Avenue Owner, LLC
c/o Innovo Property Group
1370 Avenue of the Americas, 19th Floor
New York, New York 10019

Prepared By:

Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054

February 2021
100652601

LANGAN

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1.0 PROJECT DESCRIPTION

1.1 Introduction

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) has prepared this Quality Assurance Project Plan (QAPP) on behalf of 28-90 Review Avenue Owner, LLC (the Volunteer) for the 28-90 Review Avenue Site in the Long Island City neighborhood of Queens, New York (Tax Block 294, Lot 106) (the Site). A Site Location Map is included as Figure 1.

This QAPP specifies analytical methods to be used to ensure that data collected during the Remedial Action (RA) are precise, accurate, representative, comparable, complete, and meet the sensitivity requirements of the project.

1.2 Project Objectives

The Remedial Action Work Plan (RAWP) covers earthwork to be completed during construction of the proposed development at the site. A Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) for the protection of on-site workers, the community, and the environment has been developed and will be implemented during remediation and construction activities. These objectives have been established in order to meet standards that will protect public health and the environment for the site.

This QAPP addresses sampling and analytical methods that will be necessary in support of remedial activities. These objectives have been established in order to meet standards that will protect public health and the environment for the site.

1.3 Scope of Work

The selected remedy will include the following elements:

- Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations.
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive Site work.

- Excavation, stockpiling, off-Site transport, and disposal of soil exhibiting petroleum impacts associated with Spill No. 1809113, soil in the vicinity of metals hotspots located in isolated locations on-Site, and any grossly contaminated soil source areas that may be encountered such as potentially around any encountered USTs. Excavation, stockpiling, off-Site transport, and disposal of excess non-hazardous contaminated fill as needed resulting from localized excavations for construction of proposed redevelopment structures.
- Appropriate off-Site disposal of material removed from the Site in accordance with federal, state and local rules and regulations for handling, transport, and disposal.
- Removal and decommissioning of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and disposal off-Site during Site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Collection and analysis of documentation soil samples to document soil quality remaining at the Site, to document the remediation of and support closure of Spill No. 1809113, and to document removal of hotspots impacted by lead and zinc.
- Reuse of Site soil meeting Industrial RUSCOs or Site-specific SCOs to raise Site grades.
- Importation of material meeting the Unrestricted Use SCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone for backfilling of remediated areas and of utility trenches.
- Importation of material meeting the Commercial RUSCOs, recycled concrete aggregate (RCA), or virgin, native crushed stone to raise Site grade.
- Installation of a Site-wide engineered impermeable composite cover system (i.e., concrete building foundations and/or asphalt pavement.
- Placement of a demarcation barrier in residual soil areas not covered with impermeable surfaces and within utility trenches prior to backfilling with imported material.
- Importation of fill material meeting the Commercial RUSCOs or virgin, native crushed stone for construction of a one-foot clean fill cap in areas outside of impermeable cover.
- Completion of a survey to document the extents of the Site-wide composite cover system.

- Construction of a SSDS below any proposed building slab, including installation of a vapor barrier membrane below the slab of the proposed building and along sidewalls of any subgrade foundation elements. The SSDS will be installed as a passive system with the capability of conversion to an active system, based on findings of a post-installation soil vapor intrusion evaluation.
- In-Situ Stabilization (ISS) of NAPL impacted soil.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved SMP to ensure long-term management of engineering and institutional controls, including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the Site continue to maintain these controls as required and to restrict the Site to industrial and commercial uses.

2.0 DATA QUALITY OBJECTIVES AND PROCESS

Data Quality Objectives (DQOs) are qualitative and quantitative statements to help ensure that data of known and appropriate quality are obtained during the project. The overall objective is to prevent additional environmental impacts to site media (soil and groundwater) by removal of metals hotspots, localized excavation needed for construction of building elements, ISS of NAPL impacted soil, and construction of a sub-slab depressurization system beneath the future building slab. DQOs for sampling activities are determined by evaluating five factors:

- Data needs and uses: The types of data required and how the data will be used after it is obtained.
- Parameters of Interest: The types of chemical or physical parameters required for the intended use.
- Level of Concern: Levels of constituents, which may require remedial actions or further investigations.

- Required Analytical Level: The level of data quality, data precision, and quality assurance/quality control (QA/QC) documentation required for chemical analysis.
- Required Detection Limits: The detection limits necessary based on the above information.

The quality assurance and quality control objectives for all measurement data include:

- Precision – an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and/or matrix spike duplicates.
- Accuracy – a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. For soil samples, accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), internal standards, laboratory method blanks, instrument calibration, and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.
- Representativeness – expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is accomplished by following all applicable methods, laboratory-issued standard operating procedures (SOPs), the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

- Completeness – the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.
- Comparability – expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for sampling and analysis as documented in the QAPP, using standard reporting units and reporting formats, and data validation.
- Sensitivity – the ability of the instrument or method to detect target analytes at the levels of interest. The project manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

Implementation of the RAWP will be overseen by Langan for 28-90 Review Avenue Owner, LLC. The environmental consultant will also arrange data analysis and reporting tasks. The analytical services will be performed by an Environmental Laboratory Approval Program (ELAP)-certified laboratory. Data validation services will be performed by approved data validation contractor(s).

For the required sampling as stated in the RAWP, sampling will be conducted by Langan, the analytical services will be performed by York Analytical Laboratories, Inc. of Stratford, CT. (New York State Department of Health [NYSDOH] ELAP certification number 10854). Data validation services will be performed by Joseph Conboy; résumé attached (Attachment A).

Key contacts for this project are as follows:

28-90 Review Avenue Owner, LLC	Stephen Kim Telephone: (212) 218-3158
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4.0 QUALITY ASSURANCE OBJECTIVES FOR COLLECTION OF DATA

The overall quality assurance objective is to develop and implement procedures for sampling, laboratory analysis, field measurements, and reporting that will provide data of sufficient quality to evaluate soil impacts at the site. The sample set, chemical analysis results, and interpretations must be based on data that meet or exceed quality assurance objectives established for the site. Quality assurance objectives are usually expressed in terms of accuracy or bias, sensitivity, completeness, representativeness, comparability, and sensitivity of analysis. Variances from the quality assurance objectives at any stage of the investigation will result in the implementation of appropriate corrective measures and an assessment of the impact of corrective measures on the usability of the data.

Precision

Precision is a measure of the degree to which two or more measurements are in agreement. Field precision is assessed through the collection and measurement of field duplicates. Laboratory precision and sample heterogeneity also contribute to the uncertainty of field duplicate measurements. This uncertainty is taken into account during the data assessment process. For field duplicates, results less than 2x the reporting limit (RL) meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 2X the RL, the acceptance criteria is a relative percent difference (RPD) of ≤50% (soil), and <30% (groundwater). RLs and method detection limits (MDL) are provided in Attachment B.

Accuracy

Accuracy is the measurement of the reproducibility of the sampling and analytical methodology. It should be noted that precise data may not be accurate data. For the purpose of this QAPP, bias is defined as the constant or systematic distortion of a measurement process, which manifests itself as a persistent positive or negative

deviation from the known or true value. This may be due to (but not limited to) improper sample collection, sample matrix interferences, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.

Accuracy in the field is assessed through the use of field blanks and through compliance to all sample handling, preservation, and holding time requirements. All field blanks should be non-detect when analyzed by the laboratory. Any contaminant detected in an associated field blank was evaluated against laboratory blanks (preparation or method) and evaluated against field samples collected on the same day to determine potential for bias.

Laboratory accuracy is assessed by evaluating the percent recoveries of MS/MSD samples, LCS/LCSDs, surrogate compound recoveries, internal standard responses and the results of method preparation blanks. MS/MSD, LCS/LCSD, internal standard responses and surrogate percent recoveries were compared to either method-specific control limits or laboratory-derived control limits. Sample volume permitting, samples displaying outliers should be reanalyzed. All associated method blanks should be non-detect when analyzed by the laboratory.

Completeness

Laboratory completeness is the ratio of total number of samples analyzed and verified as acceptable compared to the number of samples submitted to the fixed-base laboratory for analysis, expressed as a percent. Three measures of completeness are defined:

- Sampling completeness, defined as the number of valid samples collected relative to the number of samples planned for collection;
- Analytical completeness, defined as the number of valid sample measurements relative to the number of valid samples collected; and
- Overall completeness, defined as the number of valid sample measurements relative to the number of samples planned for collection.

Soil and groundwater data will meet a 90% completeness criterion. If the criterion is not met, sample results will be evaluated for trends in rejected and unusable data. The effect of unusable data required for a determination of compliance will also be evaluated.

Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a

process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is dependent upon the adequate design of the sampling program and was satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. This is performed by following applicable standard operating procedures (SOPs) and this QAPP. All field technicians will be given copies of appropriate documents prior to sampling events and will be required to read, understand, and follow each document as it pertains to the tasks at hand.

Representativeness in the laboratory is ensured by compliance to nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is performed by following all applicable EPA and standard methods, laboratory-issued SOPs, the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

Comparability

Comparability is an expression of the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and was satisfied by ensuring that the sampling plan is followed and that sampling is performed according to the SOPs or other project-specific procedures. Analytical data were comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability was controlled by requiring the use of specific nationally-recognized analytical methods and requiring consistent method performance criteria. Comparability is also dependent on similar quality assurance objectives. Previously collected data were evaluated to determine whether they may be combined with contemporary data sets.

Sensitivity

Sensitivity is the ability of the instrument or method to detect target analytes at the levels of interest (e.g., at the NJDEP SRS). The Project Manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection and QC acceptance limits that meet established performance criteria. Concurrently, the Project Manager will select the level of data assessment to ensure that only data meeting the project DQOs are used in decision-making.

Field equipment will be used that can achieve the required levels of detection for analytical measurements in the field. In addition, the field sampling staff will collect and submit full volumes of samples as required by the laboratory for analysis, whenever possible. Full

volume aliquots will help ensure achievement of the required limits of detection and allow for reanalysis if necessary. The concentration of the lowest level check standard in a multi-point calibration curve will represent the reporting limit.

Analytical methods and quality assurance parameters associated with the sampling program are presented in Attachment C. The frequency of associated field blanks and duplicate samples will be based on the recommendations listed in DER-10 and as described in Section 5.3.2.

5.0 SAMPLE COLLECTION AND FIELD DATA ACQUISITION PROCEDURES

Soil sampling will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). The following sections describe procedures to be followed for specific tasks. The sampling program is summarized in Attachment C.

5.1 Field Documentation Procedures

Field documentation procedures will include summarizing field data in field books and proper sample labeling. These procedures are described in the following sections.

5.1.1 Field Data and Notes

Field notebooks contain the documentary evidence regarding procedures conducted by field personnel. Hard cover, bound field notebooks will be used because of their compact size, durability and secure page binding. The pages of the notebook will not be removed.

Entries will be made in waterproof, permanent blue or black ink. No erasures will be allowed. Incorrect entries will be crossed out with a single strike mark and the change initialed and dated by the team member making the change.

Each entry will be dated. Entries will be legible and contain accurate and complete documentation of the individual or sampling team's activities or observations made. The level of detail will be sufficient to explain and reconstruct the activity conducted. Each entry will be signed by the person(s) making the entry.

The following types of information will be provided for each sampling task, as appropriate:

- Project name and number;
- Reasons for being on-site or taking the sample;
- Date and time of activity;
- Sample identification numbers;
- Geographical location of sampling points with references to the site, other facilities or a map coordinate system. Sketches were made in the field logbook when appropriate;
- Physical location of sampling locations such as depth below ground surface;
- Description of the method of sampling including procedures followed, equipment used and any departure from the specified procedures;
- Description of the sample including physical characteristics, odor, etc.;
- Readings obtained from health and safety equipment;
- Weather conditions at the time of sampling and previous meteorological events that may affect the representative nature of a sample;
- Photographic information including a brief description of what was photographed, the date and time, the compass direction of the picture and the number of the picture on the camera;
- Other pertinent observations such as the presence of other persons on the site, actions by others that may affect performance of site tasks, etc.; and,
- Names of sampling personnel and signature of persons making entries.

Field records will also be collected on field data sheets including boring logs, which will be used for geologic and drilling data during soil boring activities. Field data sheets will include the project-specific number and stored in the field project files when not in use. At the completion of the

field activities, the field data sheets will be maintained in the central project file.

5.1.2 Sample Labeling

Each sample collected will be assigned a unique identification number and placed in an appropriate sample container. Each sample container will have a sample label affixed to the outside with the date and time of sample collection and project name. In addition, the label will contain the sample identification number, analysis required and chemical preservatives added, if any. All documentation will be completed in waterproof ink. Sample nomenclature procedures are included in Attachment D.

5.2 Equipment Calibration and Preventative Maintenance

A photoionization detector (PID) will be used during the sampling activities to evaluate work zone action levels and screen soil samples. Field calibration and/or field checking of the PID will be the responsibility of the field team leader and the site HSO, and will be accomplished by following the procedures outlined in the operating manual for the instrument. At a minimum, field calibration and/or field equipment checking will be performed once daily, prior to use. Field calibration will be documented in the field notebook. Entries made into the logbook regarding the status of field equipment will include the following information:

- Date and time of calibration
- Type of equipment serviced and identification number (such as serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent utilization. The equipment will be properly tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated to the manufacturer's specifications by qualified personnel. Equipment that cannot be repaired will be replaced.

Off-site calibration and maintenance of field instruments will be conducted as appropriate throughout the duration of project activities. All field instrumentation, sampling equipment and accessories will be maintained in accordance with the manufacturer's recommendations and specifications and established field equipment practice. Off-site calibration and maintenance will be performed by qualified personnel. A logbook will be kept to document that established calibration and maintenance procedures have been followed. Documentation will include both scheduled and unscheduled maintenance.

5.3 Sample Collection

5.3.1 Soil Samples

Soil samples will be visually classified and field screened using a PID to assess potential impacts from VOCs and for health and safety monitoring. Soil samples collected for analysis of VOCs will be collected using Terra Core® sampling equipment. For analysis of non-volatile parameters, samples will be homogenized and placed into glass jars. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Section 5.4. Analysis and/or extraction and digestion of collected soil samples will meet the holding times required for each analyte as specified in Attachment C. In addition, analysis of collected soil sample will meet all quality assurance criteria set forth by this QAPP and DER-10.

Soil samples analyzed for per- and poly-fluoro alkyl substances (PFAS) will be collected in 250-milliliter (mL) high-density polyethylene (HDPE) containers provided by the laboratory and analyzed by using USEPA Method 537 modified. The reporting limit for PFAS in soil is 1 microgram per kilogram (ug/kg). The laboratory standard operating procedures (SOP) for the analysis of PFAS is included in Attachment E. Soil samples analyzed for 1,4-dioxane will be collected in an 8 ounce jar provided by the laboratory and analyzed using USEPA Method 8270. The reporting limit for 1,4-dioxane in soil is 0.1 milligram per kilogram (mg/kg).

5.3.1.1 Sample Field Blanks and Duplicates

Use of dedicated sampling equipment is planned; therefore, collection of field blanks is not anticipated. If the use of reusable sampling equipment is required, proper decontamination procedures will be employed (as further described in Section 5.7) and field blanks will be collected for quality assurance purposes at a rate of one per 20 investigative soil samples. If required, field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blanks will be collected at a rate of one per 20 samples and will be analyzed for the complete list of analytes on the day of sampling. If less than 20 samples are collected during a particular sampling event, one field blank sample will be collected. Equipment blanks will be collected at a rate of one per day when soil samples are analyzed for PFAS. Trip blanks will be collected at a rate of one per day if soil samples are analyzed for VOCs during that day.

Duplicate soil samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative soil samples and will be submitted to the laboratory as "blind" samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. If less than 20 samples are collected during a particular sampling event, one MS/MSD sample will be collected. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes.

5.3.2 Groundwater Samples

Groundwater sampling is not anticipated during the remedial action. In the event that groundwater sampling is required, groundwater samples will be collected into laboratory-supplied containers and will be sealed, labeled, and placed in a cooler containing ice (to maintain a temperature of approximately 4 degrees Celsius) for delivery to a NYSDOH ELAP-certified analytical laboratory. Analysis and/or extraction and digestion of collected groundwater samples will meet the holding times required for each analyte as specified in Attachment C. In addition, analysis of collected groundwater samples will meet all quality assurance criteria set forth by this QAPP and DER-10.

Groundwater samples analyzed for PFAS will be collected in two 250-mL HDPE containers provided by the laboratory and analyzed using USEPA Method 537 modified. The reporting limit for PFAS in groundwater is 2 nanograms per liter (ng/L). The laboratory SOP for the analysis of PFAS is included in Attachment E. Groundwater samples also be analyzed for 1,4-dioxane will be collected in a one-liter amber glass jar and analyzed using USEPA Method 8270 SIM. The reporting limit for 1,4-dioxane in groundwater is 0.35 micrograms per liter (ug/L).

5.3.2.1 Sample Field Blanks and Duplicates

Use of dedicated sampling equipment is planned; therefore, collection of field blanks is not anticipated. If the use of reusable sampling equipment is required, proper decontamination procedures will be employed (as further described in Section 5.7) and field blanks will be collected for quality assurance purposes at a rate of one per 20 investigative groundwater samples. If required, field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blanks will be collected at a rate of one per 20 samples and will be analyzed for the complete list of analytes on the day of sampling. If less than 20 samples are collected during a particular sampling

event, one field blank sample will be collected. Equipment blanks will be collected at a rate of one per day when groundwater samples are analyzed for PFAS. Trip blanks will be collected at a rate of one per day if groundwater samples are analyzed for VOCs during that day.

Duplicate groundwater samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative soil samples and will be submitted to the laboratory as "blind" samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. If less than 20 samples are collected during a particular sampling event, one MS/MSD sample will be collected. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes.

5.3.3 Soil Vapor Samples

Soil vapor sampling is not anticipated during the remedial action. In the event that soil vapor sapling is required, samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006). Soil vapor implants will be set at a depth which corresponds to the depth interval immediately above the groundwater table. Each vapor probe will consist of a new, dedicated stainless steel screen implant connected to polyethylene or Teflon™ tubing extending to the target depth. About 1 foot of clean sand filter pack will be placed around the screen implant, and the remaining annular space will be backfilled to grade with hydrated bentonite. Sampling will occur for the duration of 2 hours.

Samples will be collected in appropriate sized Summa canisters that have been certified clean by the laboratory and samples will be analyzed by using USEPA Method TO-15. Flow rate for both purging and sampling will not exceed 0.2 L/min. 24-hours following soil vapor probe installation, one

to three implant volumes shall be purged prior to the collection of any soil-gas samples. A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, identity of samplers, sampling methods and devices, soil vapor purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody protocols.

As part of the vapor intrusion evaluation, a tracer gas will be used in accordance with NYSDOH protocols to serve as a quality assurance/quality control (QA/QC) device to verify the integrity of the soil vapor probe seal. A container (box, plastic pail, etc.) will serve to keep the tracer gas in contact with the probe during testing. A portable monitoring device will be used to analyze a sample of soil vapor for the tracer gas prior to sampling. If the tracer sample results show a significant presence of the tracer, the probe seals will be adjusted to prevent infiltration. At the conclusion of the sampling round, tracer monitoring will be performed a second time to confirm the integrity of the probe seals.

5.3.3.1 Soil Vapor Sample Duplicates

Duplicate soil vapor samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative soil samples and will be submitted to the laboratory as "blind" samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

5.3.4 PFAS Sampling Procedures

Soil sampling for PFAS analysis will be completed during the remedial action. The 76 documentation soil samples collected to evaluate soil to remain in place after the development will be analyzed for PFAS. Field personnel conducting PFAS sampling will wear clothing and use equipment which does not contain PFAS materials including: powderless nitrile gloves, natural rubber overboots, and synthetic and natural fiber clothing. Clothing advertised as waterproof, water-repellant, and/or dirt and/or stain resistant will not be worn. Personal hygiene products with conditioning agents will be avoided prior to the sampling event. Insect repellent and sunscreen will be avoided. Consumption of food and/or beverages will be strictly

prohibited during sampling activities, excluding bottled water for hydration. Ballpoint pens will be used as the sole writing instrument to complete labels and record field notes. The use of waterproof field books, including "Rite-in-Rain"™ will be avoided during sampling activities.

Only sampling equipment known to be devoid of PFAS containing materials will be used. In general, PFAS-free pumps, tubing, interface probes, soil sampling equipment, and bottleware will be considered prior to the sampling event. It is not anticipated that groundwater samples will be collected for PFAS analysis; however, if required, peristaltic pumps will be utilized as the depth of groundwater is less than 20-feet. If groundwater is determined to be greater than 20 feet deep, bladder pumps (QEDSample Pro, or equivalent) with a fluoropolymer-free bladder will be used. HDPE will be used for tubing, soil sampling equipment, and bottleware.

Field personnel will follow standard discrete soil sampling and low flow procedures when sampling for PFAS. When possible, disposable and dedicated equipment will be used for each sample location to avoid potential cross contamination and limit errors from inadequate decontamination between samples. Bladder pumps and/or peristaltic pump tubing will not be re-used and therefore decontamination of sampling equipment between samples will not be necessary. Nitrile gloves will be changed between each step during set up and sampling.

Whenever an action occurs outside of procedure, such as the writing of field notes, nitrile gloves will be changed. Sampling equipment will be staged 5-feet away from the boring or open wellhead. Equipment not directly related to sampling will be staged in a separate area away from the boring or open wellhead. When inserting the tubing into the well, the surrounding platform will be avoided as a source of transference. While stabilizing the well, the pump will not be allowed to stop as backflow from the water quality meter can pose a risk to cross contamination. Once stability has been achieved, sampling will occur. PFAS sample bottleware must be made of HDPE and bottleware must be filled to the container neck. Soil sample bottleware must only be filled half-way. The PFAS field and equipment blanks will be collected immediately following completion of PFAS sampling at the frequency discussed above (Sections 5.3.1.1 and 5.3.2.1).

The PFAS compounds to be analyzed includes: perfluorobutanesulfonic acid, perfluorohexanesulfonic acid, perfluoroheptanesulfonic acid, perfluorooctanessulfonic acid, perfluorodecanesulfonic acid, perfluorobutanoic acid, perfluoropentanoic acid, perfluorohexanoic acid, perfluoroheptanoic acid, perfluorooctanoic acid, perfluorononanoic acid, perfluorodecanoic acid, perfluoroundecanoic acid, perfluorododecanoic acid, perfluorotridecanoic acid, perfluorotetradecanoic acid, 6:2 fluorotelomer sulfonate, 8:2 fluorotelomer sulfonate, perfluroroctanesulfonamide, n-methyl perfluorooctanesulfonamidoacetic acid, and n-ethyl perfluorooctanesulfonamidoacetic acid.

5.4 Sample Containers and Handling

Certified, commercially clean sample containers will be obtained from the analytical laboratory. The laboratory will also prepare and supply the required field blank sample containers and reagent preservatives. Sample containers, including the field blank containers, will be placed in plastic coolers by the laboratory. These coolers will be received by the field sampling team within 24 hours of their preparation in the laboratory. Prior to the commencement of field work, Langan field personnel will fill the plastic coolers with ice in Ziploc® bags (or equivalent) to maintain a temperature of 4°C±2° C.

Samples collected in the field for laboratory analysis will be placed directly into the laboratory-supplied sample containers. Samples will then be placed and stored on-ice in laboratory provided coolers until shipment to the laboratory. The temperature in the coolers containing samples and associated field blanks will be maintained at a temperature of 4°C±2°C while on-site and during sample shipment to the analytical laboratory.

Possession of samples collected in the field will be traceable from the time of collection until they are analyzed by the analytical laboratory or are properly disposed. Chain-of-custody procedures, described in Section 5.9, will be followed to maintain and document sample possession. Samples will be packaged and shipped as described in Section 5.6.

5.5 Sample Preservation

Sample preservation measures will be used in an attempt to prevent sample decomposition by contamination, degradation, biological transformation, chemical interactions and other factors during the time between sample collection and

analysis. Preservation will commence at the time of sample collection and will continue until analyses are performed. Should chemical preservation be required, the analytical laboratory will add the preservatives to the appropriate sample containers before shipment to the office or field. Samples will be preserved according to the requirements of the specific analytical method selected, as shown in Attachment C.

5.6 Sample Shipment

5.6.1 Packaging

Sample containers will be placed in plastic coolers. Ice in Ziploc® bags (or equivalent) will be placed around sample containers. Cushioning material will be added around the sample containers if necessary. Chains-of-custody and other paperwork will be placed in a Ziploc® bag (or equivalent) and placed inside the cooler and custody seals will be affixed to one side of the cooler at a minimum. If the samples are being shipped by an express delivery company (third-party courier, e.g., FedEx) then laboratory address labels will be placed on top of the cooler.

5.6.2 Shipping

Standard procedures to be followed for shipping environmental samples to the analytical laboratory are outlined below.

- All environmental samples will be transported to the laboratory from the site or Langan office by a laboratory provided courier under the chain-of-custody protocols described in Section 5.9. A third-party courier may be used if necessary.
- Prior notice will be provided to the laboratory regarding when to expect shipped samples. If the number, type or date of shipment changes due to site constraints or program changes, the laboratory will be informed.

5.7 Decontamination Procedures

Though not anticipated, decontamination procedures will be used if non-dedicated sampling equipment is utilized during the remedial action. Field sampling equipment that is to be reused will be decontaminated in the field in accordance with the following procedures:

1. Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
2. Generous tap water rinse
3. Distilled/de-ionized water rinse

5.8 Residuals Management

Debris (e.g., paper, plastic and disposable PPE) will be collected in plastic garbage bags and disposed of as non-hazardous industrial waste. Debris is expected to be transported to a local municipal landfill for disposal.

5.9 Chain of Custody Procedures

A chain-of-custody protocol has been established for collected samples was and will be followed during sample handling activities in both field and laboratory operations. The primary purpose of the chain-of-custody procedures is to document the possession of the samples from collection through shipping, storage and analysis to data reporting and disposal. Chain-of-custody refers to actual possession of the samples. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except for third-party shipping couriers, is responsible for sample integrity and safe keeping. Chain-of-custody procedures are provided below:

- Chain-of-custody will be initiated by the laboratory supplying the pre-cleaned and prepared sample containers. Chain-of-custody forms will accompany the sample containers.
- Following sample collection, the chain-of-custody form will be completed for the samples collected. The sample identification number, date and time of sample collection, analysis requested and other pertinent information (e.g., preservatives) will be recorded on the form. Entries will be made in waterproof, permanent blue or black ink.
- Langan field personnel will be responsible for the care and custody of the samples collected until the samples are transferred to another party, dispatched to the laboratory, or disposed. The sampling/Field Team Leader will be responsible for enforcing chain-of-custody procedures during field work.
- When the form is full or when all samples have been collected that will fit in a single cooler, the sampling/Field Team Leader will check the form for

possible errors and sign the chain-of-custody form. Any necessary corrections will be made to the record with a single strike mark, dated, and initialed.

Samples will be packaged for shipment or pickup via courier to the laboratory with the appropriate chain-of-custody form. If applicable, a shipping bill will be completed for each cooler and the shipping bill number recorded on the chain-of-custody form. A copy of the form will be retained by the Langan sampling team for the project file, and the original will be sent to the laboratory with the samples. Bills of lading will also be retained as part of the documentation for the chain-of-custody records, if applicable. When transferring custody of the samples, the individuals relinquishing and receiving custody of the samples will verify sample numbers and condition and will document the sample acquisition and transfer by signing and dating the chain-of-custody form. This process documents sample custody transfer from the sampler to the analytical laboratory.

Laboratory chain-of-custody will be maintained throughout the analytical processes as described in the laboratory's Quality Assurance Manual. The analytical laboratory will provide a copy of the chain-of-custody in the analytical data deliverable package. The chain-of-custody becomes the permanent record of sample handling and shipment.

5.10 Laboratory Sample Storage Procedures

The subcontracted laboratory will use a laboratory information management system (LIMS) to track and schedule samples upon receipt by the analytical laboratories. Any sample anomalies identified during sample log-in must be evaluated on individual merit for the impact upon the results and the data quality objectives of the project. When irregularities do exist, Langan must be notified to discuss recommended courses of action and documentation of the issue must be included in the project file.

For samples requiring thermal preservation, the temperature of each cooler will be immediately recorded. Each sample and container will be assigned a unique laboratory identification number and secured within the custody room walk-in coolers designated for new samples. Samples will be, as soon as practical, disbursed in a manner that is functional for the operational team. The temperature of all coolers and freezers will be monitored and recorded using a certified temperature sensor. Any temperature excursions outside of acceptance criteria

(i.e., below 2°C or above 6°C) will initiate an investigation to determine whether any samples may have been affected. Following analysis, the laboratory's specific procedures for retention and disposal will be followed as specified in the laboratory's SOPs and/or QA manual.

6.0 DATA REDUCTION, VALIDATION, AND REPORTING

6.1 Introduction

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

6.2 Data Reduction

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the American Standard Code for Information Interchange (ASCII) format from the LIMS. If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

6.3 Data Validation

Data validation will be performed in accordance with the USEPA validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results;
- Verification of the identification of sample results (both positive hits and non-detects);
- Recalculation of 10 percent of all investigative sample results; and,
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
- Target compound identification;

- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and,
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;
- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- Inductively couple plasma (ICP) serial dilutions; and,
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
- "UJ" - Not detected. Quantitation limit may be inaccurate or imprecise;
- "J" - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method;
- "N" – Tentative identification. Analyte is considered present in the sample;
- "R" – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and,
- No Flag - Result accepted without qualification.

7.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

7.1 Introduction

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

7.2 System Audits

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

7.3 Performance Audits

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

7.4 Formal Audits

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria.

Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

8.0 CORRECTIVE ACTION

8.1 Introduction

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.2 Procedure Description

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and,
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups, monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 8.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of

CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

FIGURE 8.1

CORRECTIVE ACTION REQUEST
Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOWUP: CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

9.0 REFERENCES

NYSDEC. Division of Environmental Remediation. DER-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

NYSDOH. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

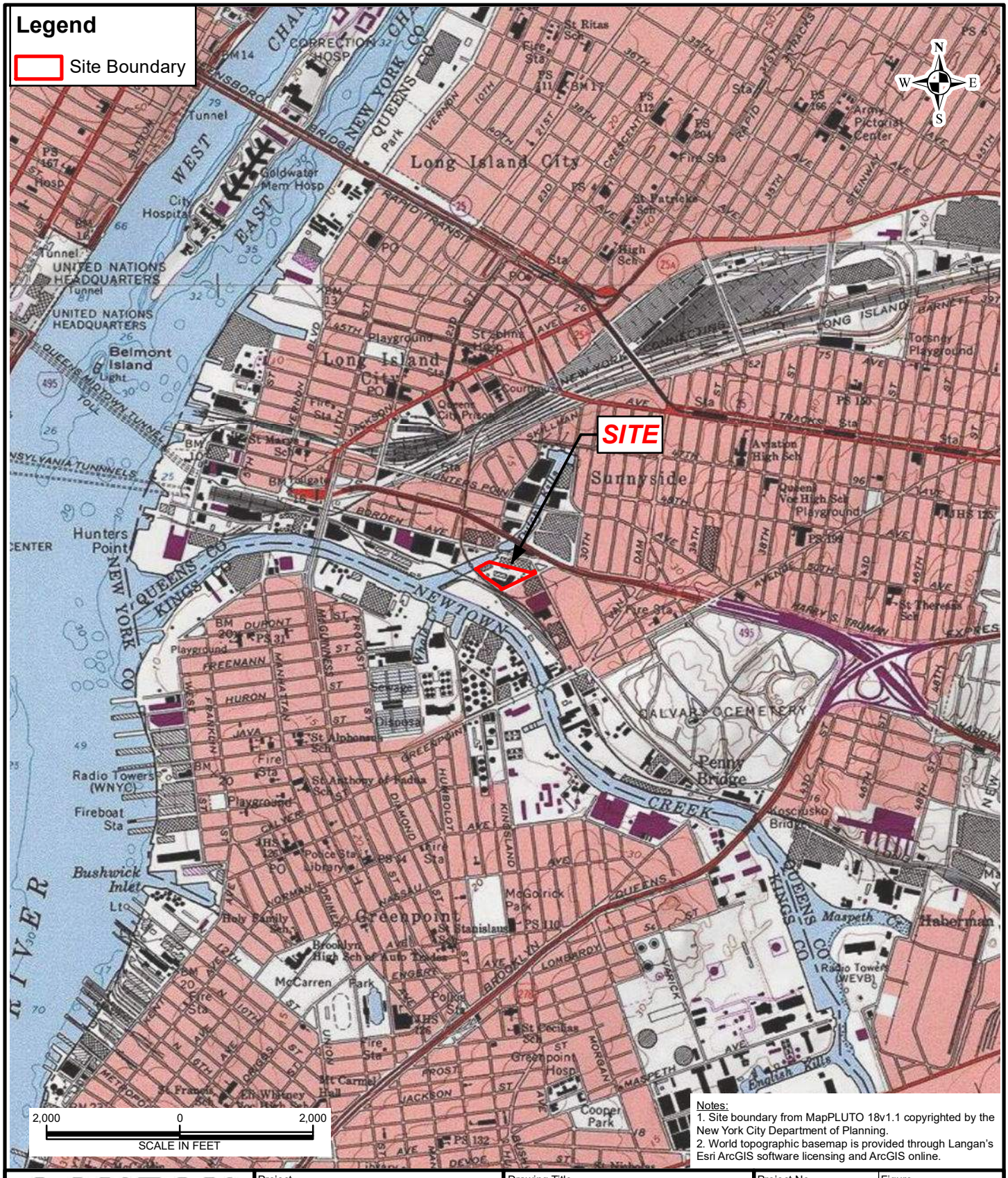
USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7 - U.S. Environmental Protection Agency, Washington, D.C.

USEPA, 1992a. CLP Organics Data Review and Preliminary Review. SOP No. HW-6, Revision #8, dated January 1992. USEPA Region II.

USEPA, 1992b. Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90. SOP No. HW-2, Revision XI, dated January 1992. USEPA Region II.

USEPA. Hazardous Waste Support Section. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15. SOP No. HW-31, Revision #6, dated June 2014.

FIGURES



Notes:
1. Site boundary from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
2. World topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.

LANGAN
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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project
28-90 REVIEW AVENUE
NYSDEC BCP Site No.: C241236
BLOCK No. 294, LOT No. 106
LONG ISLAND CITY
QUEENS COUNTY NEW YORK

Drawing Title
USGS SITE LOCATION MAP

Project No. 100652601	Figure 1
Date 1/8/2021	
Scale 1"=2,000'	
Drawn By AR	
Last Revised 1/22/2021	

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 1 - Site Location Map1.mxd Date: 1/22/2021 User: ibaker Time: 1:36:27 PM



Legend

- Site Boundary
- Area of Concern (AOC)
- NAPL Impacts
- Lead Hotspot to be excavated to 14 feet bgs
- Zinc hotspot to be excavated to 13 feet bgs
- Proposed Bottom Documentation Sample Locations
- Proposed Perimeter Documentation Sample Locations
- Proposed Hotspot Delineation Sample Locations

Notes:
1. Basemap from "Topographic, Boundary and Utility Survey" by Langan, signed 3/8/2019..
2. Parcel information from MapPLUTO 18v1.1 copyrighted by the New York City Department of Planning.
3. Areas of Concern (AOCs) digitized from figures provided in historical reports and 1936 Sanborn Fire Insurance Map.
4. Metals hotspot locations are estimated and subject to change based on analytical results.

LANGAN
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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC
Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project	28-90 REVIEW AVENUE NYSDEC BCP Site No.: C241236 BLOCK No. 294, LOT No. 106 LONG ISLAND CITY QUEENS COUNTY NEW YORK
Drawing Title	PROPOSED ENDPOINT CONFIRMATION SAMPLING
Project No.	100652601
Date	1/8/2021
Scale	1"=60'
Drawn By	IHB
Last Revised	1/22/2021
Figure	2

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Path: \\langan.com\data\PAR\data6\100652601\ArcGIS\ArcMap_Documents\2020-11 -BCP RAWP\Figure 9 - Proposed Endpoint Documentation Sampling.mxd Date: 1/22/2021 User: ibaker Time: 3:32:41 PM

ATTACHMENT A

Resumes

JOSEPH CONBOY

STAFF CHEMIST

ENVIRONMNETAL

Mr. Conboy has seven years of environmental chemistry, quality assurance, and environmental database management experience, with a current emphasis on validation of laboratory data for submittal to NJDEP via the New Jersey Data of Known Quality Protocols and to NYSDEC. Previous work experience includes performing validation of data for projects in USEPA Regions 2 and 3 while employing appropriate validation guidelines for each region, managing large data sets, updating appropriate regulatory limits, performing statistical evaluations, and preparing electronic data deliverables and report deliverables using the Earthsoft EQuIS database program, and acted as an intermediary between project managers, field staff, and laboratories. Mr. Conboy also has experience in field sampling techniques and maintains current OSHA HAZWOPER certification.



EDUCATION

B.Sc., Chemistry with a minor in Mathematics
Rowan University

CERTIFICATIONS & TRAINING

OSHA 40-Hour HAZWOPER 29 CFR 1910.120(e)(4) Certification

NJ Analytical Guidance and Data Usability Training

USEPA Data Validation Training

Earthsoft EQuIS Environmental Database Training

SELECTED PROJECTS

- 1400 Ferris, Bronx, NY – Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs and SVOCs including 1,4-dioxane, and tangentially used based on professional judgment to perform validation of PFAS data.
- Broome Street Parking Lot, NY - Completed validation of waste characterization data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs, SVOCs, herbicides, PCBs, pesticides, metals including mercury, ignitability temperature, pH, reactive cyanide, reactive sulfide, cyanide, and hexavalent chromium. Toxicity characteristic leachate procedure extraction data for VOCs, SVOCs, herbicides, pesticides, metals, and mercury were also validated.
- 215 North 10th Street, Brooklyn, NY - Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data.
- 35 Commercial Street, Brooklyn, NY - Completed validation of soil data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.
- Suffolk Street, Lower East Side, NY- Completed validation of soil, groundwater, and soil vapor data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II

guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, VOCs by USEPA TO-15, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.

- Managed a database for a confidential client containing 10+ years of environmental chemical data from multiple laboratories, requiring select data validation in accordance with New Jersey Data of Known Quality Protocols and identifying areas of delineation from historic field information. Once identified, NJDEP designated groundwater, surface water, soil, sediment, soil vapor, and custom screening criteria were researched and applied to each area, requiring individualized flagging for reporting.*
- Prepared the New Jersey Data of Known Quality Protocol Data Usability Evaluation and managed the database for a confidential client for a data set greater than 20 years old. A DUE or any validation effort was not prepared in the 20 years prior to current. This included data from variations of methods for volatile organic compounds, semivolatile organic compounds, total and dissolved metals, pesticides, herbicides, natural attenuation parameters, and per- and polyfluoroalkyl substances in multiple media.*
- Performed 200+ Stage 2a validations for a combined 87-acre USEPA designated Corrective Action site under the Resource Conservation and Recovery Act, including a quick-turn USEPA required PCB by soxhlet extraction investigation across multiple plants. Once a former train car painting facility, USEPA required a quick-turn PCB by soxhlet extraction soil investigation.
- Preparation of a quality assurance program for a confidential client in West Virginia. A quick turn QAPP was prepared in a service location new to the consultant, resulting in research into state requirements for data usability and auditing newly employed laboratories. The QAPP was understood to be prepared for groundwater only, but the client did not reveal the need for sediment and soil. Two QAPPs were submitted for review to governing agencies.*
- Used statistical software to determine a localized background upper confidence limit of chromium for a confidential client's sand and gravel site. Validation was used to confirm laboratory procedures, and data was used in ProUCL calculations to compare to researched background chromium levels for Pennsylvania soils. *
- Prepared daily perimeter dust and air monitoring summaries and validation of low level mirex data for a confidential client's superfund site. Low level mirex data was generated by university laboratories and subject to validation following national functional guidelines to aide in river clean-up, including sediment, surface water, and treatment system water matrices.*

**Project completed prior to employment at LANGAN.*

DANA MONZ

DATA ANALYST

CAD/GIS

1 year in the industry

Proposed Title: Field Technician

Ms. Monz is a data analyst with experience in database design, management and visualization using EarthSoft's EQuIS™ database in support of environmental site characterizations for sites regulated under federal and state compliance programs. Her expertise includes integration of analytical databases and coordination with GIS users.

In her current role Dana, assists project teams with planning and implementation of project databases and data visualization. This includes coordinating with field staff and laboratories to define, workflows, SOPs and ensure the receipt of the proper deliverables for field and lab data; reviewing and managing project data and information using EQuIS™, Microsoft® Access, and Excel; generating data reports including tables, graphs, charts, and GIS compatible files; and generating and reviewing electronic data deliverables following project or agency specific formats.

SELECTED PROJECTS

Gowanus Canal Northside, Brooklyn, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

2 Ingraham Street, Brooklyn, NY – Data Analyst. Collected soil samples to investigate Areas of Concern (AOCs) established in the Supplemental Remedial Investigation Work Plan (SRIWP). Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a supplemental remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables, including sample summary tables and tag tables. Submitted data to NYSDEC.

Willets Point, Brooklyn, NY – Data Analyst. Coordinated with project team and determined appropriate sample nomenclature for the site, which contained multiple areas of concern. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Responsible for coordination with GIS team to get data from EQuIS into the site specific GIS web viewer. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.



Education

B.A., Environmental Studies
Colgate University

Professional Registration

OSHA 40-Hour HAZWOPER

OSHA 10-Hour Construction

Work History

Langan
Data Analyst
7/16/2018 – Present

41 Kensico Drive, Mount Kisco, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Review NYSDEC Screening and Assessment of Contaminated Sediment (SACS) Freshwater Sediment Guidance Values and NYSDEC Part 703.5, Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) Class C criteria and load both sets to EQuIS database to use as comparison criteria for the analysis of data.

550 W 20th Street, New York, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a Phase II Environmental Site Investigation. Review New York City Department of Environmental Protection (NYCDEP) Limitations for Effluent to Sanitary or Combined Sewers and load comparison criteria to EQuIS for analysis of DEP Effluent Discharge Sample. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

EQuIS Management and NYSDEC deliverables – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS. Completed this work for the following projects:

- **82 King Street, New York, NY**
- **416 Kent Avenue, Brooklyn, NY**
- **420 Kent Avenue, Brooklyn, NY**
- **702 Nostrand Avenue, Brooklyn, NY**
- **ABC Block 25, 4-40 44th Avenue, Long Island City, NY**
- **ABC Block 26, 5-25 46th Avenue, Long Island City, NY**
- **ABC Block 27, 5-46 46th Avenue, Long Island City, NY**
- **335 Bond Street, Brooklyn, NY**
- **29 53rd Street, Brooklyn, NY**
- **Kings Plaza Shopping Center, Brooklyn, NY**
- **DuPont Stauffer Landfill, Newburgh, NY**
- **175-225 Third Street, New York, NY**
- **Silvercup West - NYPA, Queens, NY**
- **Greenpoint Marina, Brooklyn, NY**
- **491 Wortman Avenue, Brooklyn, NY**
- **Gerard and 146th Street, The Bronx, NY**
- **12 Franklin Street, Brooklyn, NY**
- **27-01 Jackson Avenue, Long Island City, NY**
- **627 Smith Street, Brooklyn, NY**
- **561 Greenwich Avenue, New York, NY**
- **23-10 Queens Plaza South, Long Island City, NY**
- **473 President Street, Brooklyn, NY**
- **4650 Broadway, New York, NY**
- **2420 Amsterdam Avenue, New York, NY**
- **10-37 Beach Street, New York, NY**
- **538-544 Hudson Street, New York, NY**
- **26-32 Jackson Avenue, Long Island City, NY**
- **1095 Southern Boulevard, The Bronx, NY**
- **432 Rodney Street, Brooklyn, NY**
- **300 West 122nd, New York, NY**

Ashley Sandve

Staff Engineer
Environmental Engineering



4 years in the industry ~ 3 years with Langan

Ms. Sandve's experience includes field work and office work on environmental investigation and remediation projects. Her field work experience includes soil, soil vapor, indoor air and groundwater sampling; drilling oversight; air monitoring; soil management; and remediation oversight, including excavation and off-site soil disposal. Her office work experience includes environmental site background research, state environmental database research, EQuIS database management, data evaluation, remedial design, and report work, including, but not limited to, Phase I ESAs, Preliminary Assessment/Site Investigations, Spill Closure Reports, Remedial Investigation Reports, Remedial Action Work Plans, and Remedial Action Reports. Ms. Sandve is proficient in excel and database management and has ample experience researching sites through the online NJDEP and NYSDEC portals.

Education

B.E., Environmental Engineering
Stevens Institute of Technology

Professional Registration

OSHA 29 CFR 1910.120
Certification (HAZWOPER)

Selected Projects

- 540 West 26th Street, NYSDEC Spills Redevelopment, Remedial Action, New York, NY
- 412 Greenwich Street, NYCOER E-Designation Remediation, New York, NY
- 125 Greenbush Road, Soil and Groundwater Investigation, Orangeburg, NY
- 12 West 48th Street, Phase II Environmental Investigation, New York, NY
- 68 Charlton Street, NYCOER E-Designation Remediation, New York, NY
- Phase I Environmental Site Assessments and Due Diligence Investigations, Various Sites, NJ and NY
- Former Penick Corporation Facility RCRA Site, Data Management, Remedial Investigation, and Remedial Action, Montville, NJ
- Former Hess Terminal, Remediation Oversight, Edgewater, NJ
- Stop & Shop, Soil Vapor Intrusion Investigation, Emerson, NJ
- ThorLabs, Groundwater and Soil Vapor Intrusion Investigation, Andover, NJ
- Bright Horizons, Preliminary Assessment and Site Investigation, Roseland, NJ
- Former Flintkote Facility, East Rutherford, NJ
- Paragon, Site Investigation, Cherry Hill, NJ

Amanda Forsburg, CHMM

Project Scientist

Environmental Oversight, Remedial Investigation, Remedial Action



9 years in the industry ~ 9 years with Langan

Ms. Forsburg has over nine years of experience that includes working on environmental projects, particularly investigation and remediation of environmental contamination. She has assisted in remedial investigations and has been involved in the collection of field data and assisted in the preparation of reports and other environmental regulatory documents for projects in New Jersey and New York.

Ms. Forsburg's field experience includes investigation and remediation of contaminated sites including the collection of soil, groundwater, and air samples for environmental analysis, supervision of injections and remedial excavations, and the completion of air monitoring to ensure OSHA compliance on HAZWOPER sites. Office experience includes management of field investigation and remediation as well as completion of proposals, Phase I Environmental Site Assessments, remedial investigation reports, and remedial closure reports in support of these activities. Ms. Forsburg has worked on projects under regulatory oversight of the New Jersey Department of Environmental Protection (NJDEP), New York State Department of Environmental Conservation (NYSDEC), and New York City Office of Environmental Remediation (NYCOER).

Selected Projects

NYSDEC Brownfield Redevelopment, Remedial Investigation and Remediation Action – 363 and 365 Bond Street, Brooklyn, NY
NYSDEC Brownfield Redevelopment, Remedial Investigation – Fashion Outlets of Niagara Falls, NY
NYSDEC Spills Redevelopment, Remedial Action – 540 West 26th Street, New York, NY
NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 101 Murray Street, New York, NY
NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 110 University Place, New York, NY
NYSDEC Spills Redevelopment, Remedial Action, Lowe's Home Centers, Kings Plaza Site Redevelopment – Brooklyn, NY
NYSDEC Spills Remediation, Con Edison Soil Remediation - Bronx, NY
NYSDEC Spills Remediation, Con Edison NAPL Monitoring and Removal, Various Sites – Manhattan, NY
NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 400 Park Avenue South, New York, NY
NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 540 West 53rd Street, New York, NY
Remedial Action – 508 West 24th Street, New York, NY

Education

B.A., Environmental Studies
Bucknell University

B.A., Environmental Geology
Bucknell University

Professional Registration

Certified Hazardous Materials Manager (CHMM)

OSHA 29 CFR 1910.120 Certification (HAZWOPER)

Professional Affiliations

New Jersey Society of Women Environmental Professionals (NJSWEP)

Association of Environmental and Engineering Geologists – *New York-Philadelphia Chapter Secretary*

Professional Women in Construction - *New York Chapter Program Committee*

Alliance of Hazardous Materials Professionals New Jersey Chapter (AHMPNJ)

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NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 53 West 53rd Street (MoMA Expansion), New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 508 West 24th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 68 Charlton Street, New York, NY
NYCDEP Remediation, Remedial Investigation and Remedial Action – 225 East 39th Street, New York, NY
Sky View Parc Mixed-Use Construction, Sub-Slab Vapor Ventilation System Construction – Flushing, NY
Liberty Plaza Redevelopment Site, Remedial Investigation and Remedial Action – Randallstown, MD
Former Penick Corporation Facility RCRA Site, Remedial Investigation and Remedial Action – Montville, NJ
Former Pan Graphics Facility, Soil and Groundwater Remediation – Garfield, NJ
Former Pan Graphics Facility, Sediment Investigation and Cap Construction – Lodi, NJ
Former Flintkote Facility, Soil and Groundwater Investigation – East Rutherford, NJ
Interport Site, Impacted Soils Delineation and Remediation – Newark, NJ
Lowe's Home Center Store, Sub-Slab Vapor Ventilation System O&M – Eatontown, NJ
Lowe's Home Center Store, Sub-Slab Methane Gas Ventilation System O&M – Woodbridge, NJ
Lowe's Home Center Store, Sub-Slab Vapor Barrier Construction – Rosedale, NY
Stop & Shop, Groundwater and Indoor Air Monitoring – Emerson, NJ
Stop & Shop, Methane Gas Ventilation System O&M – Raritan, NJ
Stop & Shop, Sub-Slab Vapor Ventilation System O&M – New Paltz, NY
Former First Aviation Services Facility, Groundwater Monitoring and Remediation, Teterboro, NJ
Phase I Environmental Site Assessments and Due Diligence Investigations, Various Sites – NJ and NY

Christopher McMahon, CHMM

Associate

Brownfield Redevelopment, Environmental Site Assessments, Site Investigation/Remedial Actions, Vapor Intrusion Investigations



15 years in the industry ~ 9 years with Langan

Mr. McMahon is a consulting geologist whose primary focus within his tenure at Langan has been in providing environmental support to redevelopment sites within the metropolitan New York area. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs, and New York City Office of Environmental Remediation E-Designated and New York City Voluntary Cleanup Program sites. These projects have included the completion of Phase I environmental site assessments, Phase II and remedial investigations, UST closures, NYSDEC closures and remedial excavation oversight for off-site disposal and/or treatment. Mr. McMahon also has significant field experience including implementation and management of all phases of environmental projects involving soil, sediment, groundwater, surface water, and soil vapor contamination including Phase I inspections, Phase II site investigations, Remedial Investigations, and Remedial Actions.

Many of these projects have included his oversight of remedial actions to clean up or mitigate hazardous waste sites in rural, urban, and industrial settings. These remedial action designs have included in-situ soil remedial injections, contaminated soil removal/disposal management plans, and soil vapor intrusion mitigation systems including advanced vapor barriers and sub-slab depressurization systems.

Selected Projects

NYSDEC Brownfield Redevelopment 363 and 365 Bond Street, Brooklyn, NY
NYSDEC Brownfield Redevelopment, Fashion Outlets of Niagara Falls, NY
NYSDEC Spills Redevelopment, 540 West 26th Street, New York, NY
NYSDEC Spills Redevelopment, 101 Murray Street, New York, NY
NYSDEC Spills Redevelopment, 110 University Place, New York, NY
NYSDEC Spills Redevelopment, Grant Park, Yonkers, NY
NYSDEC Spills Redevelopment, The Shops At Nanuet, Nanuet, NY
NYCOER E-Designation Remediation, 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, 53 West 53rd Street, New York, NY
NYCOER E-Designation Remediation, 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, 508 West 24th Street, New York, NY
NYSDEC (Region 7) Site Remedial Investigation, Hillcrest, NY
Former Manufactured Gas Plant Site Remedial Investigation, Geneva, NY
NYSDEC (Region 2) Superfund Site Remedial Investigation, Jamaica, NY
NYSDEC (Region 5) Superfund Site Remedial Investigation, Whitehall, NY
Former Manufactured Gas Plant Site Investigation/Confidential Client, Mechanicville, NY
Remedial Investigation of Industrial Facility/Confidential Client, Batavia, NY
OGS Geotechnical Survey for Construction, Rome, NY

Education

B. A., Geology, State University of New York College at Potsdam
With Honors in Geology and Environmental Science

Professional Registration

Certified Hazardous Materials Manager (CHMM)

OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response

OSHA Certification for Hazardous Waste Site Supervisor

Red Cross CPR & First Aid Training

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Stewart H. Abrams, PE

Principal/Vice President

Corporate Director of Remediation Technology



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Mr. Abrams has over 35 years of experience in soil and groundwater remediation, water treatment, Brownfields redevelopment, and engineering design. He is an expert in remedial technology, with particular emphasis on bioremediation, chemical oxidation/reduction technologies, soil vapor extraction, and air sparging. He also has extensive experience in water process engineering, notably water and wastewater treatment and industrial waste treatment for organics and metals. He is also involved in the fields of emerging contaminants and sustainable remediation. Before joining Langan, Mr. Abrams held positions of National Practice Leader for Remediation at a national consulting and engineering company and as vice president of operations at an environmental R&D firm. He is the founder of Langan's treatability facility, a joint venture with the New Jersey Institute of Technology (NJIT), whereby Langan personnel perform a wide variety of treatability and research studies for soil, groundwater and sediments.

Selected Projects & Activities

Emerging Contaminants – Technical Director for a complex treatment upgrade project. Onsite pump and treat systems that do not currently address 1,4-dioxane, are being upgraded via the addition of an advanced oxidation process (AOP). Offsite, a public water supply, which had included air stripping for trichloroethylene removal, requires upgrade to address 1,4-dioxane and PFAS. AOP coupled with granular activated carbon is the selected approach. Treatability studies for various AOP processes; as well GAC were performed prior to final to final process selection. For the Interstate Technology Regulatory Council (ITRC), Mr. Abrams is one of a handful of experts on PFAS treatment providing seminars nationwide.

Peer Review Activities – Mr. Abrams serves routinely as an independent third party reviewer of remediation plans for Fortune 500 clients. This work is often performed in a collaborative panel format with other reviewers.

Technology Development Consulting. Mr. Abrams has an ongoing consulting relationship with a venture-capital technology start-up in the PFAS treatment field. He advises the firm on the engineering aspects of various developmental technologies and educates their senior research scientists on the issues related to the environmental field.

Expert Testimony. Mr. Abrams has served as a testifying expert witness in both State and Federal Court. He has also been deposed and has prepared expert reports for submission as evidence.

Experimental Work – At Langan's Treatability Facility at the NJIT, recently directed a bench scale research test of an emerging technology for PFOS treatment, i.e., electrocoagulation. Findings showed the electrochemical

Education

M.Sc., Environmental Sciences
Rutgers University, 1991

B.Sc., Civil Engineering
Rutgers University, 1981

B.A., Political Science
Rutgers University, 1981

Professional Registration

Professional Engineer (PE): NJ, NY, PA, NC

Affiliations

Battelle Conference on Bioremediation and Sustainable Remediation Technologies 2019 – Steering Committee Member

New Jersey Institute of Technology (NJIT) – Albert Dorman Honors College – Board of Visitors (2018-present)

PFAS Experts Symposium 2019

Remediation Journal – Editorial Board (2019 – present)

Sustainable Remediation Forum (SURF) (2009 – present)

ITRC Perfluorinated Contaminants Committee (2017 – present) – Subcommittee on Remediation & Treatment

ITRC Integrated Chlorinated Site Remedy Committee (2007 – 2009)

NJDEP Advisory Council on Environmental Justice (2002 - 2004, 2006 - 2013)

Governor-elect Corzine Environmental Policy Transition Committee (2005 – 2006)

NJDEP Remediation Stakeholders Committee (2007 - 2009)

adsorption may be a feasible as a more cost-effective alternative to conventional GAC.

Thermal Remediation – Directed the installation and operation of an in-situ Thermal Conductive Heating project to remediate PCE and naphthalene in both groundwater and soil. System successfully remediated soils to stringent NJDEP standards. Subsequently, directed the use of bioremediation "polishing" to remove

Injectable Activated Carbon – Providing technical direction for several projects utilizing this technology for the remediation of VOCs in sources areas.

MTBE/Propane Bioaugmentation – First use of propane infusion at a gasoline station to bioremediate MTBE. Combined use of low-level propane with oxygen infusion has been shown to promote the direct remediation of ethers, notably MTBE, with concentrations driven to non-detect in less than four months. Used bioaugmentation.

Zero Valent Iron – Directed the use of injected zero-valent iron for remediating chlorinated solvents at a Brownfield site. Pneumatic fracturing was used to inject 500,000 pounds of micro-scale iron into the shallow bedrock source zone. This process resulted in remediation of the 20,000-square-foot source zone and conditions favorable to the long-term natural attenuation of the plume.

Sulfate Reduction – Directing the use of sulfate addition (Epsom salts) in the remediation of benzene-contaminated soils and groundwater. Microcosm and column treatability studies completed. Directed use of gypsum for full scale sulfate reduction at Brownfield site.

Emulsified Zero Valent Iron (EZVI) – Directed combined use of emulsified vegetable oil and zero valent iron (NASA Patented technology) at a two separate sites: A Brownfield site in Brooklyn, NY and a dry cleaner in New Jersey. NJ site combined EZVI with pneumatic fracturing injection under the floor of the operating dry cleaner.

Ex-situ chemical oxidation mixing –Technical Director of large iron-activated persulfate soil mixing project. Contaminants in soil and groundwater include primarily chlorinated benzenes. Mixing accomplished via "Lang Tool". On-site laboratory utilized for oxidation optimization in real-time.

In-situ chromium remediation – Directed the in-situ remediation of hexavalent chromium through the use of calcium polysulfide (CaSx) addition injection. Injections performed both inside the building as well as outside. Pneumatic fracturing used for injection in shallow bedrock. Monitoring showed that concentrations in the source area groundwater declined to non-detect from 15,000 ug/l in less than a week.

Pump & Treat – Directed the design, installation and operation of a pump and treat system located in southeastern Pennsylvania. Unit processes include filtration, air stripping and granular activated carbon. Constructed in 2013, the system mitigates migration of a plume into a potable water supply.

New Jersey Turnpike, Cranbury, NJ – Managed design (pilot testing, conceptual, and plans and specifications) of a remediation system consisting of 77 air-sparging (AS) wells and 37 soil vapor extraction (SVE) wells for the

New Jersey Turnpike at the Molly Pitcher Service Area. Oversaw installation and system startup. Innovative one-day AS/SVE pilot test. Volatilization and destruction of 10,000 gallons of subsurface free product. First use of catalytic oxidation at a Turnpike facility for air-pollution control.

Woodlands Superfund Site, Woodland Twp., NJ – As a subcontractor to *de maximis, inc.,* directed the subsurface design, installation and testing of a major air sparging/SVE system (+200 vertical wells) for a Superfund site in southern New Jersey. Work involved pilot testing of air sparging, SVE pneumatic modeling, early use of CPT/MIPS, and an extensive well-installation using sonic drilling.

GE – Schenectady, NY – Served as technical director for the design of a comprehensive remediation program for a New York state site involving the bioremediation of three VOC plumes and the collection and treatment of leachate seeps. Supported GE Researchers in performing flow-through laboratory column tests using innovative sulfate reduction techniques to remediate a BTEX plume. Led the scale-up of this column study into a design.

BROS Superfund Site, Bridgeport, NJ – Directed extensive laboratory treatability studies and design scale-up of aerobic and anaerobic bioremediation, in-situ Fenton's reagent for chlorinated solvents, and BTEX and cometabolic testing of BCEE degradation. Bench testing was correlated to a site conceptual model, with particular tests tailored to conditions in specific segments and zones of the aquifer. This included detailed work plans for submission to USEPA Laboratories in Cincinnati and Oklahoma.

TCE & Chromium combined – Site with both Cr+6 and TCE contamination being contained by a pump-and-treat system. Pursued pump-and-treat shutdown strategy through laboratory testing and a comprehensive feasibility study. Zero-valent iron, bioremediation, calcium polysulfide, and ferrous sulfate were all lab-tested. Directed the field pilot testing of bioaugmentation and nano-scale zero-valent iron at the sites. Bioaugmentation selected for full scale, since it was highly effective for both Cr^{+6} and TCE.

TCE Cometabolic Bioaugmentation – Innovative first use of aerobic bioaugmentation for the shutdown of a 20-year-old pump-and-treat system in 1995. TCE and daughter products were the contaminants of concern. Shutdown occurred over six months through the repeated injection of bioaugmentation culture.

Zero Valent Iron for P&T Shutdown – Directed the use of injected zero-valent iron at a northern New Jersey site for the remediation of chlorinated solvents. Pneumatic fracturing used to inject micro-scale iron into the recovery zone. Temporary shutdown permission obtained from NJDEP. Injection was a significant success, resulting in permanent cessation of pump-and-treat activities at the site.

TCE Bioaugmentation – Directed the injection of emulsified vegetable oil, followed by bioaugmentation culture, in an aquifer contaminated with PCE. Aquifer preconditioned with baker's yeast and sugar, prior to injection of EVO. Bioaugmentation activities completed in April 2012. Second source area was remediated via in-situ thermal remediation in 2014.

Horizontal Injection Wells for Permanganate Injection – Directed the injection of over 400,000 pounds of potassium permanganate for chlorinated solvent destruction at a large Brownfields site in Maryland. Extensive use of

horizontal wells. Work performed under a fixed-price contract with blended finite insurance. This project awarded the prestigious Phoenix Award for EPA Region 3 by the National Brownfields Association.

Selected Publications, Reports, and Presentations

PFAS Experts Symposium: White Paper. Position paper prepared by a group of 40 experts convened under the auspices of Remediation Journal. September 2019.

Treatment Technology for Perfluorinated Compounds. Presented at ITRC PFAS Annual Meeting. Boston, MA. March 2019.

Treatment Technology for Perfluorinated Compounds. Presented at ITRC PFAS Training Program. Montclair State University, New Jersey. October 2018.

Use of In-Situ Remediation Technology at Brownfield Sites – Case Studies. Presented at Battelle Symposium on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA. (April 2018).

Air Sparging Technology Status Review: Advanced Design and Implementation Tools. Joint with Omer Uppal. Presented at Battelle Symposium on Bioremediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA. (May 2016).

Evaluation of Remedial Alternatives via Three Bench-Scale Treatability Studies for a Mixed Dense Non-Aqueous Phase Plume. Presented at Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Jacksonville, FL. (June 2013).

Geng, X., Boufadel, M.C., Lee, K., Abrams, S., Suidan, M. (2014). Biodegradation of subsurface oil in a tidally influenced sand beach: Impact of hydraulics and interaction with pore water chemistry. *AGU Water Resources Research, 51,* 3193 – 3218.

From Flask to Field – The Role of Treatability and Pilot Tests in Remediation. Presented to Association of Environmental & Engineering Geologists (AEG) New York/Philadelphia Section, Somerset, NJ. (December 2014).

Evaluation of Remedial Alternatives via Three Bench-Scale Treatability Studies for a Mixed Dense Non-Aqueous Phase Plume. Presented at Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Jacksonville, FL. (June 2013).

Sustainable Remediation and SURF. Presented at RE3 Conference, Atlantic City, NJ. (November 2012).

Application of Pneumatic Fracturing and Zero-valent Iron for a Maryland Brownfield Site. Presented at Battelle International Symposium on In-Situ and Sustainable Technologies, Monterey, CA. (May 2012).

Integrating Remediation and Redevelopment. Presented at Honeywell “All-Hands” RES Meeting, Morristown, NJ. (December 2011).

Assessing Innovative Remedial Technologies. Presented to Environmental Bankers Association, Charlotte, NC. (January 2009).
Time, Cost & Effectiveness: Assessing Innovative Remedial Technologies. Presented at ITRC/Langan Conference, East Brunswick, NJ. (June 2008).

Remediation Technology Pitfalls. Presented at Prudential Realty Investors Conference, New Orleans, LA. (December 2008).

Selecting Innovative Remedial Technologies. Presented at NJ Innovative Environmental Technology Conference, Newark, NJ. (October 2007).

Bioaugmentation for Site Remediation. Presented at AWMA Central New York Conference, Syracuse, NY. (March 2007).

Selecting Innovative Remedial Technologies. Presented at NJ Innovative Environmental Technology Conference, Newark, NJ. (October 2007).

Use of Persulfate for MTBE Remediation. Presented by Abrams, S.H. & E. Mott-Smith at AEHS West Conference, San Diego, CA. (March 2006).

Innovative Approaches to Chlorinated Solvent Remediation. Presented to Conference of Envirogen clients. Oak Brook, IL. (May 2002).

Bioremediation. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (October 2001).

Biosparging and Bioventing for In-situ Cleanup. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (April 1995).

NPDES Permitting in the Pulp & Paper Industry. Presented at Delaware Valley Section Meeting, Yardley, PA. (November 1991).

Strategies to Minimize Liabilities Under the New Jersey Clean Water Enforcement Act. Presented to New Jersey Business & Industry Association, West Windsor, NJ. (October 1990).

Meeting EPA's Organic Chemicals Plastics and Synthetic Fibers Pretreatment Regulations. Presented at Mid-Atlantic Industrial Waste Conference, Harrisburg, PA. (June 1989).

Design of Packed Columns for Water Treatment. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (March 1987).

Workshop on Response to Volatile Organics in Public Water Supplies. Presented to water suppliers at Technology transfer session. Edison, NJ (March 1987).

Steven Ciambruschini, PG, LEP

Principal/Vice President
Environmental Site Assessments/Investigations, Brownfield Remediation, UST Management



33 years in the industry ~ 28 years with Langan

Mr. Ciambruschini has over 30 years of experience in hydrogeologic and environmental investigations including management of environmental and geotechnical investigations relating to petroleum and chlorinated solvent spill sites, underground storage tank sites, manufactured gas plant sites, landfills, wastewater treatment facilities and industrial/commercial sites. His experience includes managing environmental compliance audits, remedial investigation, pre-acquisition due diligence and permitting assessment, feasibility studies and design, construction and operation of complex innovative remediation systems to treat, contain and recover contaminated soil and groundwater. These projects are managed under various NJDEP, PADEP, NYDEC, NYCDEP and CTDEP programs. Mr. Ciambruschini provides consultation to a diverse group of clients including private developers, utilities, retail and industrial facilities and is expert in assessing remediation options and funding options under various state and federal grant, loan and tax reimbursement programs including Brownfield programs.

Selected Projects

- Brodson Property, Montville NJ, (RCRA, NJDEP ACO Cleanup)
- Carroll Gardens, Brooklyn, NY (NY Brownfield, EPA Superfund, OER E-designated Site)
- Con Edison Appendix B Spill Sites - Various Locations, NY
- Former MGP Site, Brooklyn, NY (VCP Site)
- Extell Development, Hudson Yards, New York, NY (NYC E-designated, NYS Brownfield Site)
- Pan Graphics, Bergen County, NJ (ISRA, LSRP)
- New Jersey Turnpike General Environmental Services Contract, Various Sites, NJ
- Liberty Science Center, Jersey City, NJ (EO 215)
- Blue Back Square, West Hartford, CT (UST, Transfer Act, Brownfield)
- Hershey, Act II Investigation (PA VCP)
- Hershey, Naugatuck, CT (CT Transfer Act)
- Halby Chemical Sites, Various Sites, DE (CERCLA)
- Unisys, Middletown CT, (CT Transfer Act, Brownfield)
- Ryder Rental, Various Sites in CT (CT Transfer Act)
- St. Marks Avenue, Brooklyn, NY (Vapor Mitigation)
- Pan Graphics, Lodi, NJ (Eco Risk Assessment, LSRP)

Education

M.S., Geology
Montclair State University

M.A., Environmental Science
Montclair University

B.S., Environmental Science
Cook College, Rutgers University

Professional Registration

Professional Geologist (PG) in NY, DE, KY

Licensed Environmental Professional (LEP) in CT

Underground Storage Tank License in NJ

Affiliations

National Ground Water Association

Association of Ground Water Scientists and Engineers

American Association of Petroleum Geologists

Environmental Professionals of Connecticut

American Bar Association (ABA)

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ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

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ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Water	1,1,1,2-Tetrachloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,1-Trichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,2,2-Tetrachloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.2	0.5	ug/L
EPA 8260C	Water	1,1,2-Trichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1-Dichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,1-Dichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Bromochloromethane	0.2	0.5	ug/L
EPA 8260C	Water	1,2,3-Trichloropropane	0.2	0.5	ug/L
EPA 8260C	Water	1,2,4-Trichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2,4-Trimethylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dibromo-3-chloropropane	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dibromoethane	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichloroethane	0.2	0.5	ug/L
EPA 8260C	Water	1,2-Dichloropropane	0.2	0.5	ug/L
EPA 8260C	Water	1,3,5-Trimethylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,3-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	1,4-Dichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	Cyclohexane	0.2	0.5	ug/L
EPA 8260C	Water	2-Butanone	0.2	0.5	ug/L
EPA 8260C	Water	2-Hexanone	0.2	0.5	ug/L
EPA 8260C	Water	4-Methyl-2-pentanone	0.2	0.5	ug/L
EPA 8260C	Water	Acetone	1	2	ug/L
EPA 8260C	Water	Acrolein	0.2	0.5	ug/L
EPA 8260C	Water	Acrylonitrile	0.2	0.5	ug/L
EPA 8260C	Water	Benzene	0.2	0.5	ug/L
EPA 8260C	Water	Bromodichloromethane	0.2	0.5	ug/L
EPA 8260C	Water	Bromoform	0.2	0.5	ug/L

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Water	Bromomethane	0.2	0.5	ug/L
EPA 8260C	Water	Carbon disulfide	0.2	0.5	ug/L
EPA 8260C	Water	Carbon tetrachloride	0.2	0.5	ug/L
EPA 8260C	Water	Chlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	Chloroethane	0.2	0.5	ug/L
EPA 8260C	Water	Chloroform	0.2	0.5	ug/L
EPA 8260C	Water	Chloromethane	0.2	0.5	ug/L
EPA 8260C	Water	cis-1,2-Dichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	cis-1,3-Dichloropropylene	0.2	0.5	ug/L
EPA 8260C	Water	Dibromochloromethane	0.2	0.5	ug/L
EPA 8260C	Water	Dibromomethane	0.2	0.5	ug/L
EPA 8260C	Water	Dichlorodifluoromethane	0.2	0.5	ug/L
EPA 8260C	Water	Naphthalene	1	2	ug/L
EPA 8260C	Water	Ethyl Benzene	0.2	0.5	ug/L
EPA 8260C	Water	Methylcyclohexane	0.2	0.5	ug/L
EPA 8260C	Water	Hexachlorobutadiene	0.2	0.5	ug/L
EPA 8260C	Water	Isopropylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	Methyl acetate	0.2	0.5	ug/L
EPA 8260C	Water	Methyl tert-butyl ether (MTBE)	0.2	0.5	ug/L
EPA 8260C	Water	Methylene chloride	1	2	ug/L
EPA 8260C	Water	n-Butylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	n-Propylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	o-Xylene	0.2	0.5	ug/L
EPA 8260C	Water	p- & m- Xylenes	0.5	1	ug/L
EPA 8260C	Water	1,2,3-Trichlorobenzene	0.2	0.5	ug/L
EPA 8260C	Water	p-Isopropyltoluene	0.2	0.5	ug/L
EPA 8260C	Water	sec-Butylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	Styrene	0.2	0.5	ug/L
EPA 8260C	Water	tert-Butyl alcohol (TBA)	0.5	1	ug/L

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Water	tert-Butylbenzene	0.2	0.5	ug/L
EPA 8260C	Water	Tetrachloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Toluene	0.2	0.5	ug/L
EPA 8260C	Water	trans-1,2-Dichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	trans-1,3-Dichloropropylene	0.2	0.5	ug/L
EPA 8260C	Water	Trichloroethylene	0.2	0.5	ug/L
EPA 8260C	Water	Trichlorofluoromethane	0.2	0.5	ug/L
EPA 8260C	Water	Vinyl Chloride	0.2	0.5	ug/L
EPA 8260C	Water	Xylenes, Total	0.6	1.5	ug/L

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
SVOC					
EPA 8270D	Water	Acenaphthene	0.05	0.05	ug/L
EPA 8270D	Water	Acenaphthylene	0.05	0.05	ug/L
EPA 8270D	Water	Acetophenone	2.5	5	ug/L
EPA 8270D	Water	Aniline	2.5	5	ug/L
EPA 8270D	Water	Anthracene	0.05	0.05	ug/L
EPA 8270D	Water	Atrazine	0.5	0.5	ug/L
EPA 8270D	Water	Benzaldehyde	2.5	5	ug/L
EPA 8270D	Water	Benzidine	10	20	ug/L
EPA 8270D	Water	Benzo(a)anthracene	0.05	0.05	ug/L
EPA 8270D	Water	Benzo(a)pyrene	0.05	0.05	ug/L
EPA 8270D	Water	Benzo(b)fluoranthene	0.05	0.05	ug/L
EPA 8270D	Water	Benzo(g,h,i)perylene	0.05	0.05	ug/L
EPA 8270D	Water	Benzoic acid	25	50	ug/L
EPA 8270D	Water	Benzo(k)fluoranthene	0.05	0.05	ug/L
EPA 8270D	Water	Benzyl alcohol	2.5	5	ug/L
EPA 8270D	Water	Benzyl butyl phthalate	2.5	5	ug/L
EPA 8270D	Water	1,1'-Biphenyl	2.5	5	ug/L
EPA 8270D	Water	4-Bromophenyl phenyl ether	2.5	5	ug/L
EPA 8270D	Water	Caprolactam	2.5	5	ug/L
EPA 8270D	Water	Carbazole	2.5	5	ug/L
EPA 8270D	Water	4-Chloro-3-methylphenol	2.5	5	ug/L
EPA 8270D	Water	4-Chloroaniline	2.5	5	ug/L
EPA 8270D	Water	Bis(2-chloroethoxy)methane	2.5	5	ug/L
EPA 8270D	Water	Bis(2-chloroethyl)ether	2.5	5	ug/L
EPA 8270D	Water	Bis(2-chloroisopropyl)ether	2.5	5	ug/L
EPA 8270D	Water	2-Chloronaphthalene	2.5	5	ug/L
EPA 8270D	Water	2-Chlorophenol	2.5	5	ug/L
EPA 8270D	Water	4-Chlorophenyl phenyl ether	2.5	5	ug/L
EPA 8270D	Water	Chrysene	0.05	0.05	ug/L

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
SVOC					
EPA 8270D	Water	Dibenzo(a,h)anthracene	0.05	0.05	ug/L
EPA 8270D	Water	Dibenzofuran	2.5	5	ug/L
EPA 8270D	Water	Di-n-butyl phthalate	2.5	5	ug/L
EPA 8270D	Water	1,4-Dichlorobenzene	2.5	5	ug/L
EPA 8270D	Water	1,2-Dichlorobenzene	2.5	5	ug/L
EPA 8270D	Water	1,3-Dichlorobenzene	2.5	5	ug/L
EPA 8270D	Water	3,3'-Dichlorobenzidine	2.5	5	ug/L
EPA 8270D	Water	2,4-Dichlorophenol	2.5	5	ug/L
EPA 8270D	Water	Diethyl phthalate	2.5	5	ug/L
EPA 8270D	Water	2,4-Dimethylphenol	2.5	5	ug/L
EPA 8270D	Water	Dimethyl phthalate	2.5	5	ug/L
EPA 8270D	Water	4,6-Dinitro-2-methylphenol	2.5	5	ug/L
EPA 8270D	Water	2,4-Dinitrophenol	2.5	5	ug/L
EPA 8270D	Water	2,4-Dinitrotoluene	2.5	5	ug/L
EPA 8270D	Water	2,6-Dinitrotoluene	2.5	5	ug/L
EPA 8270D	Water	Di-n-octyl phthalate	2.5	5	ug/L
EPA 8270 SIM	Water	1,4-Dioxane	0.2	0.35	ug/L
EPA 8270D	Water	1,2-Diphenylhydrazine (as Azobenzene)	2.5	5	ug/L
EPA 8270D	Water	Bis(2-ethylhexyl)phthalate	0.5	0.5	ug/L
EPA 8270D	Water	Fluoranthene	0.05	0.05	ug/L
EPA 8270D	Water	Fluorene	0.05	0.05	ug/L
EPA 8270D	Water	Hexachlorobenzene	0.02	0.02	ug/L
EPA 8270D	Water	Hexachlorobutadiene	0.5	0.5	ug/L
EPA 8270D	Water	Hexachlorocyclopentadiene	2.5	5	ug/L
EPA 8270D	Water	Hexachloroethane	0.5	0.5	ug/L
EPA 8270D	Water	Indeno(1,2,3-cd)pyrene	0.05	0.05	ug/L
EPA 8270D	Water	Isophorone	2.5	5	ug/L
EPA 8270D	Water	2-Methylnaphthalene	2.5	5	ug/L
EPA 8270D	Water	2-Methylphenol	2.5	5	ug/L

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
SVOC					
EPA 8270D	Water	3- & 4-Methylphenols	2.5	5	ug/L
EPA 8270D	Water	Naphthalene	0.05	0.05	ug/L
EPA 8270D	Water	3-Nitroaniline	2.5	5	ug/L
EPA 8270D	Water	4-Nitroaniline	2.5	5	ug/L
EPA 8270D	Water	2-Nitroaniline	2.5	5	ug/L
EPA 8270D	Water	Nitrobenzene	0.25	0.25	ug/L
EPA 8270D	Water	4-Nitrophenol	2.5	5	ug/L
EPA 8270D	Water	2-Nitrophenol	2.5	5	ug/L
EPA 8270D	Water	N-nitroso-di-n-propylamine	2.5	5	ug/L
EPA 8270D	Water	N-Nitrosodimethylamine	0.5	0.5	ug/L
EPA 8270D	Water	N-Nitrosodiphenylamine	2.5	5	ug/L
EPA 8270D	Water	Pentachlorophenol	0.25	0.25	ug/L
EPA 8270D	Water	Phenanthrene	0.05	0.05	ug/L
EPA 8270D	Water	Phenol	2.5	5	ug/L
EPA 8270D	Water	Pyrene	0.05	0.05	ug/L
EPA 8270D	Water	Pyridine	2.5	5	ug/L
EPA 8270D	Water	1,2,4,5-Tetrachlorobenzene	2.5	5	ug/L
EPA 8270D	Water	2,3,4,6-Tetrachlorophenol	2.5	5	ug/L
EPA 8270D	Water	1,2,4-Trichlorobenzene	2.5	5	ug/L
EPA 8270D	Water	2,4,6-Trichlorophenol	2.5	5	ug/L
EPA 8270D	Water	2,4,5-Trichlorophenol	2.5	5	ug/L

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
Pesticides					
EPA 8081B	Water	Aldrin	0.004	0.004	ug/L
EPA 8081B	Water	alpha-BHC	0.004	0.004	ug/L
EPA 8081B	Water	beta-BHC	0.004	0.004	ug/L
EPA 8081B	Water	delta-BHC	0.004	0.004	ug/L
EPA 8081B	Water	gamma-BHC (Lindane)	0.004	0.004	ug/L
EPA 8081B	Water	gamma-Chlordane	0.01	0.01	ug/L
EPA 8081B	Water	alpha-Chlordane	0.004	0.004	ug/L
EPA 8081B	Water	Chlordane, total	0.04	0.04	ug/L
EPA 8081B	Water	4,4'-DDD	0.004	0.004	ug/L
EPA 8081B	Water	4,4'-DDE	0.004	0.004	ug/L
EPA 8081B	Water	4,4'-DDT	0.004	0.004	ug/L
EPA 8081B	Water	Dieldrin	0.002	0.002	ug/L
EPA 8081B	Water	Endosulfan I	0.004	0.004	ug/L
EPA 8081B	Water	Endosulfan II	0.004	0.004	ug/L
EPA 8081B	Water	Endosulfan sulfate	0.004	0.004	ug/L
EPA 8081B	Water	Endrin	0.004	0.004	ug/L
EPA 8081B	Water	Endrin aldehyde	0.01	0.01	ug/L
EPA 8081B	Water	Endrin ketone	0.01	0.01	ug/L
EPA 8081B	Water	Heptachlor	0.004	0.004	ug/L
EPA 8081B	Water	Heptachlor epoxide	0.004	0.004	ug/L
EPA 8081B	Water	Methoxychlor	0.004	0.004	ug/L
EPA 8081B	Water	Toxaphene	0.1	0.1	ug/L

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
PCBs					
EPA 8082A	Water	Aroclor 1016	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1221	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1232	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1242	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1248	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1254	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1260	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1262	0.05	0.05	ug/L
EPA 8082A	Water	Aroclor 1268	0.05	0.05	ug/L
EPA 8082A	Water	Total PCBs	0.05	0.05	ug/L

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
Metals					
EPA 6010C	Water	Aluminum	0.01	0.01	mg/L
EPA 6010C	Water	Antimony	0.005	0.005	mg/L
EPA 6010C	Water	Arsenic	0.004	0.004	mg/L
EPA 6010C	Water	Barium	0.01	0.01	mg/L
EPA 6010C	Water	Beryllium	0.001	0.001	mg/L
EPA 6010C	Water	Cadmium	0.003	0.003	mg/L
EPA 6010C	Water	Calcium	0.05	0.05	mg/L
EPA 6010C	Water	Chromium	0.005	0.005	mg/L
EPA 6010C	Water	Cobalt	0.005	0.005	mg/L
EPA 6010C	Water	Copper	0.003	0.003	mg/L
EPA 6010C	Water	Iron	0.02	0.02	mg/L
EPA 6010C	Water	Lead	0.003	0.003	mg/L
EPA 6010C	Water	Magnesium	0.05	0.05	mg/L
EPA 6010C	Water	Manganese	0.005	0.005	mg/L
EPA 7473	Water	Mercury	0.002	0.002	mg/L
EPA 6010C	Water	Nickel	0.005	0.005	mg/L
EPA 6010C	Water	Potassium	0.05	0.05	mg/L
EPA 6010C	Water	Selenium	0.01	0.01	mg/L
EPA 6010C	Water	Silver	0.005	0.005	mg/L
EPA 6010C	Water	Sodium	0.1	0.1	mg/L
EPA 6010C	Water	Thallium	0.005	0.005	mg/L
EPA 6010C	Water	Vanadium	0.01	0.01	mg/L
EPA 6010C	Water	Zinc	0.01	0.01	mg/L

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
PFAS					
Modified EPA 537	Water	Perfluorobutanesulfonic acid	0.436	2	ng/L
Modified EPA 537	Water	Perfluorohexanesulfonic acid	0.494	2	ng/L
Modified EPA 537	Water	Perfluoroheptanesulfonic acid	0.418	2	ng/L
Modified EPA 537	Water	Perfluorooctanessulfonic acid	0.472	2	ng/L
Modified EPA 537	Water	Perfluorodecanesulfonic acid	0.491	2	ng/L
Modified EPA 537	Water	Perfluorobutanoic acid	1.01	2	ng/L
Modified EPA 537	Water	Perfluoropentanoic acid	0.511	2	ng/L
Modified EPA 537	Water	Perfluorohexanoic acid	0.442	2	ng/L
Modified EPA 537	Water	Perfluoroheptanoic acid	0.447	2	ng/L
Modified EPA 537	Water	Perfluorooctanoic acid	0.36	2	ng/L
Modified EPA 537	Water	Perfluorononanoic acid	0.361	2	ng/L
Modified EPA 537	Water	Perfluorodecanoic acid	0.493	2	ng/L
Modified EPA 537	Water	Perfluoroundecanoic acid	0.534	2	ng/L
Modified EPA 537	Water	Perfluorododecanoic acid	0.611	2	ng/L
Modified EPA 537	Water	Perfluorotridecanoic acid	0.66	2	ng/L
Modified EPA 537	Water	Perfluorotetradecanoic acid	0.701	2	ng/L
Modified EPA 537	Water	6:2 Fluorotelomer sulfonate*	1.16	5	ng/L
Modified EPA 537	Water	8:2 Fluorotelomer sulfonate	0.877	2	ng/L
Modified EPA 537	Water	Perfluroroctanesulfonamide	0.877	2	ng/L
Modified EPA 537	Water	N-methyl perfluorooctanesulfonamidoacetic acid	0.364	2	ng/L
Modified EPA 537	Water	N-ethyl perfluorooctanesulfonamidoacetic acid	0.436	2	ng/L

Notes

* = The contract labs has indicated that they are not able to achieve the reporting limits of 2 ng/L for 6:2 Fluorotelomer sulfonate. Site specific decisions will need to be made by the DEC project manager in consultation with the DEC remedial program chemist

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Soil	1,1,1,2-Tetrachloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,1-Trichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2,2-Tetrachloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	2.5	5	ug/kg
EPA 8260C	Soil	1,1,2-Trichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1-Dichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,1-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	Bromochloromethane	2.5	5	ug/kg
EPA 8260C	Soil	1,2,3-Trichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,2,4-Trichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2,4-Trimethylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dibromo-3-chloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dibromoethane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichloroethane	2.5	5	ug/kg
EPA 8260C	Soil	1,2-Dichloropropane	2.5	5	ug/kg
EPA 8260C	Soil	1,3,5-Trimethylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,3-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,4-Dichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,4-Dioxane	50	100	ug/kg
EPA 8260C	Soil	Cyclohexane	2.5	5	ug/kg
EPA 8260C	Soil	2-Butanone	2.5	5	ug/kg
EPA 8260C	Soil	2-Hexanone	2.5	5	ug/kg
EPA 8260C	Soil	4-Methyl-2-pentanone	2.5	5	ug/kg
EPA 8260C	Soil	Acetone	5	10	ug/kg
EPA 8260C	Soil	Acrolein	5	10	ug/kg
EPA 8260C	Soil	Acrylonitrile	2.5	5	ug/kg
EPA 8260C	Soil	Benzene	2.5	5	ug/kg
EPA 8260C	Soil	Bromodichloromethane	2.5	5	ug/kg

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Soil	Bromoform	2.5	5	ug/kg
EPA 8260C	Soil	Bromomethane	2.5	5	ug/kg
EPA 8260C	Soil	Carbon disulfide	2.5	5	ug/kg
EPA 8260C	Soil	Carbon tetrachloride	2.5	5	ug/kg
EPA 8260C	Soil	Chlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	Chloroethane	2.5	5	ug/kg
EPA 8260C	Soil	Chloroform	2.5	5	ug/kg
EPA 8260C	Soil	Chloromethane	2.5	5	ug/kg
EPA 8260C	Soil	cis-1,2-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	cis-1,3-Dichloropropylene	2.5	5	ug/kg
EPA 8260C	Soil	Dibromochloromethane	2.5	5	ug/kg
EPA 8260C	Soil	Dibromomethane	2.5	5	ug/kg
EPA 8260C	Soil	Dichlorodifluoromethane	2.5	5	ug/kg
EPA 8260C	Soil	Naphthalene	2.5	10	ug/kg
EPA 8260C	Soil	Ethyl Benzene	2.5	5	ug/kg
EPA 8260C	Soil	Methylcyclohexane	2.5	5	ug/kg
EPA 8260C	Soil	Hexachlorobutadiene	2.5	5	ug/kg
EPA 8260C	Soil	Isopropylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Methyl acetate	2.5	5	ug/kg
EPA 8260C	Soil	Methyl tert-butyl ether (MTBE)	2.5	5	ug/kg
EPA 8260C	Soil	Methylene chloride	5	10	ug/kg
EPA 8260C	Soil	n-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	n-Propylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	1,2,3-Trichlorobenzene	2.5	5	ug/kg
EPA 8260C	Soil	o-Xylene	2.5	5	ug/kg
EPA 8260C	Soil	p- & m- Xylenes	5	10	ug/kg
EPA 8260C	Soil	p-Isopropyltoluene	2.5	5	ug/kg
EPA 8260C	Soil	sec-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Styrene	2.5	5	ug/kg

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA 8260C	Soil	tert-Butyl alcohol (TBA)	2.5	5	ug/kg
EPA 8260C	Soil	tert-Butylbenzene	2.5	5	ug/kg
EPA 8260C	Soil	Tetrachloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	Toluene	2.5	5	ug/kg
EPA 8260C	Soil	trans-1,2-Dichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	trans-1,3-Dichloropropylene	2.5	5	ug/kg
EPA 8260C	Soil	Trichloroethylene	2.5	5	ug/kg
EPA 8260C	Soil	Trichlorofluoromethane	2.5	5	ug/kg
EPA 8260C	Soil	Vinyl Chloride	2.5	5	ug/kg
EPA 8260C	Soil	Xylenes, Total	7.5	15	ug/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
SVOC					
EPA 8270D	Soil	Acenaphthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Acenaphthylene	20.9	41.7	ug/kg
EPA 8270D	Soil	Acetophenone	20.9	41.7	ug/kg
EPA 8270D	Soil	Aniline	83.5	167	ug/kg
EPA 8270D	Soil	Anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Atrazine	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzaldehyde	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzidine	83.5	167	ug/kg
EPA 8270D	Soil	Benzo(a)anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(a)pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(b)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(g,h,i)perylene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzoic acid	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzo(k)fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzyl alcohol	20.9	41.7	ug/kg
EPA 8270D	Soil	Benzyl butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	1,1'-Biphenyl	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Bromophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Soil	Caprolactam	41.7	83.3	ug/kg
EPA 8270D	Soil	Carbazole	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chloro-3-methylphenol	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chloroaniline	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroethoxy)methane	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroethyl)ether	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-chloroisopropyl)ether	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Chloronaphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Chlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Chlorophenyl phenyl ether	20.9	41.7	ug/kg
EPA 8270D	Soil	Chrysene	20.9	41.7	ug/kg

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Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
SVOC					
EPA 8270D	Soil	Dibenzo(a,h)anthracene	20.9	41.7	ug/kg
EPA 8270D	Soil	Dibenzofuran	20.9	41.7	ug/kg
EPA 8270D	Soil	Di-n-butyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	1,2-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	1,3-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	1,4-Dichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	3,3'-Dichlorobenzidine	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4-Dichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Diethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4-Dimethylphenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Dimethyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	4,6-Dinitro-2-methylphenol	41.7	83.3	ug/kg
EPA 8270D	Soil	2,4-Dinitrophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	2,4-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Soil	2,6-Dinitrotoluene	20.9	41.7	ug/kg
EPA 8270D	Soil	Di-n-octyl phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	1,2-Diphenylhydrazine (as Azobenzene)	20.9	41.7	ug/kg
EPA 8270D	Soil	Bis(2-ethylhexyl)phthalate	20.9	41.7	ug/kg
EPA 8270D	Soil	Fluoranthene	20.9	41.7	ug/kg
EPA 8270D	Soil	Fluorene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorobutadiene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachlorocyclopentadiene	20.9	41.7	ug/kg
EPA 8270D	Soil	Hexachloroethane	20.9	41.7	ug/kg
EPA 8270D	Soil	Indeno(1,2,3-cd)pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Isophorone	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Methylnaphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Methylphenol	20.9	41.7	ug/kg
EPA 8270D	Soil	3- & 4-Methylphenols	20.9	41.7	ug/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
		SVOC			
EPA 8270D	Soil	Naphthalene	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	2-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	3-Nitroaniline	41.7	83.3	ug/kg
EPA 8270D	Soil	Nitrobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	2-Nitrophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	4-Nitrophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	N-nitroso-di-n-propylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	N-Nitrosodimethylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	N-Nitrosodiphenylamine	20.9	41.7	ug/kg
EPA 8270D	Soil	Pentachlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Phenanthrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Phenol	20.9	41.7	ug/kg
EPA 8270D	Soil	Pyrene	20.9	41.7	ug/kg
EPA 8270D	Soil	Pyridine	83.5	167	ug/kg
EPA 8270D	Soil	1,2,4,5-Tetrachlorobenzene	41.7	83.3	ug/kg
EPA 8270D	Soil	2,3,4,6-Tetrachlorophenol	41.7	83.3	ug/kg
EPA 8270D	Soil	1,2,4-Trichlorobenzene	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4,6-Trichlorophenol	20.9	41.7	ug/kg
EPA 8270D	Soil	2,4,5-Trichlorophenol	20.9	41.7	ug/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
Pesticides					
EPA 8081B	Soil	Aldrin	0.33	0.33	ug/kg
EPA 8081B	Soil	alpha-BHC	0.33	0.33	ug/kg
EPA 8081B	Soil	beta-BHC	0.33	0.33	ug/kg
EPA 8081B	Soil	delta-BHC	0.33	0.33	ug/kg
EPA 8081B	Soil	gamma-BHC (Lindane)	0.33	0.33	ug/kg
EPA 8081B	Soil	gamma-Chlordane	0.33	0.33	ug/kg
EPA 8081B	Soil	alpha-Chlordane	0.33	0.33	ug/kg
EPA 8081B	Soil	Chlordane, total	1.32	1.32	ug/kg
EPA 8081B	Soil	4,4'-DDD	0.33	0.33	ug/kg
EPA 8081B	Soil	4,4'-DDE	0.33	0.33	ug/kg
EPA 8081B	Soil	4,4'-DDT	0.33	0.33	ug/kg
EPA 8081B	Soil	Dieldrin	0.33	0.33	ug/kg
EPA 8081B	Soil	Endosulfan I	0.33	0.33	ug/kg
EPA 8081B	Soil	Endosulfan II	0.33	0.33	ug/kg
EPA 8081B	Soil	Endosulfan sulfate	0.33	0.33	ug/kg
EPA 8081B	Soil	Endrin	0.33	0.33	ug/kg
EPA 8081B	Soil	Endrin aldehyde	0.33	0.33	ug/kg
EPA 8081B	Soil	Endrin ketone	0.33	0.33	ug/kg
EPA 8081B	Soil	Heptachlor	0.33	0.33	ug/kg
EPA 8081B	Soil	Heptachlor epoxide	0.33	0.33	ug/kg
EPA 8081B	Soil	Methoxychlor	1.65	1.65	ug/kg
EPA 8081B	Soil	Toxaphene	16.7	16.7	ug/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
PCBs					
EPA 8082A	Soil	Aroclor 1016	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1221	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1232	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1242	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1248	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1254	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1260	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1262	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Aroclor 1268	0.0167	0.0167	mg/kg
EPA 8082A	Soil	Total PCBs	0.0167	0.0167	mg/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
Metals					
EPA 6010C	Soil	Aluminum	1	1	mg/kg
EPA 6010C	Soil	Antimony	0.5	0.5	mg/kg
EPA 6010C	Soil	Arsenic	1	1	mg/kg
EPA 6010C	Soil	Barium	1	1	mg/kg
EPA 6010C	Soil	Beryllium	0.1	0.1	mg/kg
EPA 6010C	Soil	Cadmium	0.3	0.3	mg/kg
EPA 6010C	Soil	Calcium	0.5	5	mg/kg
EPA 6010C	Soil	Chromium	0.5	0.5	mg/kg
EPA 6010C	Soil	Cobalt	0.5	0.5	mg/kg
EPA 6010C	Soil	Copper	0.5	0.5	mg/kg
EPA 6010C	Soil	Iron	2	2	mg/kg
EPA 6010C	Soil	Lead	0.3	0.3	mg/kg
EPA 6010C	Soil	Magnesium	5	5	mg/kg
EPA 6010C	Soil	Manganese	0.5	0.5	mg/kg
EPA 7473	Soil	Mercury	0.03	0.03	mg/kg
EPA 6010C	Soil	Nickel	0.5	0.5	mg/kg
EPA 6010C	Soil	Potassium	5	5	mg/kg
EPA 6010C	Soil	Selenium	1	1	mg/kg
EPA 6010C	Soil	Silver	0.5	0.5	mg/kg
EPA 6010C	Soil	Sodium	10	10	mg/kg
EPA 6010C	Soil	Thallium	1	1	mg/kg
EPA 6010C	Soil	Vanadium	1	1	mg/kg
EPA 6010C	Soil	Zinc	1	1	mg/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
PFAS					
Modified EPA 537	Soil	Perfluorobutanesulfonic acid	0.109	0.75	ug/kg
Modified EPA 537	Soil	Perfluorohexanesulfonic acid	0.106	0.75	ug/kg
Modified EPA 537	Soil	Perfluoroheptanesulfonic acid	0.198	0.75	ug/kg
Modified EPA 537	Soil	Perfluorooctanessulfonic acid	0.118	0.75	ug/kg
Modified EPA 537	Soil	Perfluorodecanesulfonic acid	0.177	0.75	ug/kg
Modified EPA 537	Soil	Perfluorobutanoic acid	0.278	0.75	ug/kg
Modified EPA 537	Soil	Perfluoropentanoic acid	0.211	0.75	ug/kg
Modified EPA 537	Soil	Perfluorohexanoic acid	0.111	0.75	ug/kg
Modified EPA 537	Soil	Perfluoroheptanoic acid	0.112	0.75	ug/kg
Modified EPA 537	Soil	Perfluorooctanoic acid	0.09	0.75	ug/kg
Modified EPA 537	Soil	Perfluorononanoic acid	0.09	0.75	ug/kg
Modified EPA 537	Soil	Perfluorodecanoic acid	0.123	0.75	ug/kg
Modified EPA 537	Soil	Perfluoroundecanoic acid	0.133	0.75	ug/kg
Modified EPA 537	Soil	Perfluorododecanoic acid	0.11	0.75	ug/kg
Modified EPA 537	Soil	Perfluorotridecanoic acid	0.132	0.75	ug/kg
Modified EPA 537	Soil	Perfluorotetradecanoic acid	0.192	0.75	ug/kg
Modified EPA 537	Soil	6:2 Fluorotelomer sulfonate	0.521	0.75	ug/kg
Modified EPA 537	Soil	8:2 Fluorotelomer sulfonate	0.344	0.75	ug/kg
Modified EPA 537	Soil	Perfluroroctanesulfonamide	0.455	0.75	ug/kg
Modified EPA 537	Soil	N-methyl perfluorooctanesulfonamidoacetic acid	0.091	0.75	ug/kg
Modified EPA 537	Soil	N-ethyl perfluorooctanesulfonamidoacetic acid	0.109	0.75	ug/kg

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
VOC					
EPA TO-15	Soil Vapor	1,1,1,2-Tetrachloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1,1-Trichloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1,2,2-Tetrachloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1,2-Trichloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1-Dichloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,1-Dichloroethylene	0.025	0.025	ppb
EPA TO-15	Soil Vapor	1,2,4-Trichlorobenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2,4-Trimethylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2-Dibromoethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2-Dichlorobenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2-Dichloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2-Dichloropropane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,2-Dichlorotetrafluoroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,3,5-Trimethylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,3-Butadiene	0.3	0.3	ppb
EPA TO-15	Soil Vapor	1,3-Dichlorobenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,3-Dichloropropane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,4-Dichlorobenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	1,4-Dioxane	0.2	0.2	ppb
EPA TO-15	Soil Vapor	2-Butanone	0.1	0.1	ppb
EPA TO-15	Soil Vapor	2-Hexanone	0.2	0.2	ppb
EPA TO-15	Soil Vapor	3-Chloropropene	0.5	0.5	ppb
EPA TO-15	Soil Vapor	4-Methyl-2-pentanone	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Acetone	0.2	0.2	ppb
EPA TO-15	Soil Vapor	Acrolein	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Acrylonitrile	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Benzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Benzyl chloride	0.1	0.1	ppb

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
		VOC			
EPA TO-15	Soil Vapor	Bromodichloromethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Bromoform	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Bromomethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Carbon disulfide	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Carbon tetrachloride	0.025	0.025	ppb
EPA TO-15	Soil Vapor	Chlorobenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Chloroethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Chloroform	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Chloromethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	cis-1,2-Dichloroethylene	0.025	0.025	ppb
EPA TO-15	Soil Vapor	cis-1,3-Dichloropropylene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Cyclohexane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Dibromochloromethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Dichlorodifluoromethane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Ethanol	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Ethyl acetate	0.2	0.2	ppb
EPA TO-15	Soil Vapor	Ethyl Benzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Hexachlorobutadiene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Isopropanol	0.2	0.2	ppb
EPA TO-15	Soil Vapor	Isopropylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Methyl Methacrylate	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Methyl tert-butyl ether (MTBE)	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Methylene chloride	0.2	0.2	ppb
EPA TO-15	Soil Vapor	Naphthalene	0.2	0.2	ppb
EPA TO-15	Soil Vapor	n-Butylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	n-Heptane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	n-Hexane	0.1	0.1	ppb
EPA TO-15	Soil Vapor	n-Propylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	o-Xylene	0.1	0.1	ppb

ATTACHMENT B

Laboratory Reporting Limits and Method Detection Limits

Method	Matrix	Analyte	MDL	RL	Units
		VOC			
EPA TO-15	Soil Vapor	p- & m- Xylenes	0.2	0.2	ppb
EPA TO-15	Soil Vapor	p-Ethyltoluene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	p-Isopropyltoluene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Propylene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	sec-Butylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Styrene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	tert-Butylbenzene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Tetrachloroethylene	0.025	0.025	ppb
EPA TO-15	Soil Vapor	Tetrahydrofuran	0.2	0.2	ppb
EPA TO-15	Soil Vapor	Toluene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	trans-1,2-Dichloroethylene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	trans-1,3-Dichloropropylene	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Trichloroethylene	0.025	0.025	ppb
EPA TO-15	Soil Vapor	Trichlorofluoromethane (Freon 11)	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Vinyl acetate	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Vinyl bromide	0.1	0.1	ppb
EPA TO-15	Soil Vapor	Vinyl Chloride	0.025	0.025	ppb

ATTACHMENT C

Analytical Methods / Quality Assurance Summary Table

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ATTACHMENT C
ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

Matrix Type	Field Parameters	Laboratory Parameters	Analytical Methods	Sample Preservation	Sample Container Volume and Type	Sample Hold Time	Number of Samples to be Collected	Field Duplicate Samples	Equipment Blank Samples	Trip Blank Samples	Ambient Air Samples	MS/MSD Samples
Soil	Total VOCs via PID	Part 375 + TCL VOCs / CP-51 VOCs	EPA 8260C	Cool to 4°C	Two 40-ml VOC vials with 5ml H_2O, one with MeOH or 3 Encore Samplers (separate container for % solids)	14 days, freeze at lab within 48 hours	76	1 per 20 samples (minimum 1)	1 per 20 samples, if needed (minimum 1, if needed)	1 per shipment of VOC samples	NA	1 per 20 samples (minimum 1)
		Part 375 + TCL SVOCs / CP-51 SVOCs	EPA 8270D	Cool to 4°C	4 oz. jar*	14 days extract, 40 days after extraction to analysis						
		1,4-Dioxane	EPA 8270D	Cool to 4°C	8 oz. jar	14 days extract, 40 days after extraction to analysis						
		Part 375 + TAL Metals	EPA 6010D, EPA 7470, EPA 7196A, EPA 9014/9010C	Cool to 4°C	2 oz. jar*	6 months, except Mercury 28 days						
		Hexavalent Chromium	EPA 7196A	Cool to 4°C	2 oz. jar*	28 days						
		Perfluoroalkyl Substances (PFAs)	EPA 537 (Modified)	Cool to 4°C	1/2 filled 250mL HDPE container	14 days extract, 40 days after extraction to analysis						
		Part 375 + TCL Herbicides	EPA 8151A	Cool to 4°C	4 oz. jar*	14 days extract, 40 days after extraction to analysis						
		Part 375 + TCL Pesticides	EPA 8081B	Cool to 4°C	4 oz. jar*	14 days extract, 40 days after extraction to analysis						
		Part 375 + TCL PCBs	EPA 8082A	Cool to 4°C	4 oz. jar*	14 days extract, 40 days after extraction to analysis						
Soil	Total VOCs via PID	Lead	EPA 6010D	Cool to 4°C	2 oz. jar	6 months	10	1 per 20 samples (minimum 1)	NA	NA	NA	1 per 20 samples (minimum 1)
Soil	Total VOCs via PID	Zinc	EPA 6010D	Cool to 4°C	2 oz. jar	6 months	5	1 per 20 samples (minimum 1)	NA	NA	NA	1 per 20 samples (minimum 1)
Groundwater	Headspace VOCs via PID, synoptic groundwater level measurement, Temperature, Turbidity, pH, ORP, Conductivity	Part 375 + TCL VOCs	EPA 8260C	Cool to 4°C; HCl to pH <2;no headspace	Three 40-mL VOC vials with Teflon®-lined cap	14 days	0	1 per 20 samples (minimum 1)	1 per 20 samples, if needed (minimum 1, if needed)	1 per shipment of VOC samples	NA	1 per 20 samples (minimum 1)
		Part 375 + TCL SVOCs / CP-51 SVOCs	EPA 8270D	Cool to 4°C	Two 1-Liter Amber Glass	7 days to extract, 40 days after extraction to analysis						
		1,4-Dioxane	EPA 8270D SIM	Cool to 4°C	1-L Amber Glass	7 days to extract, 40 days after extraction to analysis						
		Part 375 + TAL Metals	EPA 6010C, EPA 7470, EPA 7196A, EPA 9014/9010C	Cool to 4°C	Two 1-Liter Amber Glass	6 months, except Mercury 28 days						
		Hexavalent Chromium	EPA 7196A	Cool to 4°C	250 mL Plastic	24 hours						
		Perfluoroalkyl Substances (PFAs)	EPA 537 (Modified)	Cool to 4°C	Two 250mL HDPE containers	14 days extract, 40 days after extraction to analysis						
		Part 375 + TCL Herbicides	EPA 8151A	Cool to 4°C	Two 1-Liter Amber Glass	7 days to extraction, 40 days after extraction to analysis						
		Part 375 + TCL Pesticides	EPA 8081B	Cool to 4°C	Two 1-Liter Amber Glass	7 days extract, 40 days after extraction to analysis						
		Part 375 + TCL PCBs	EPA 8082A	Cool to 4°C	Two 1-Liter Amber Glass	7 days extract, 40 days after extraction to analysis						
Soil Vapor	Total VOCs via PID	Part 375 + TCL VOCs	EPA TO-15	NA	6L Summa Cannister	30 days	0	1 per 20 samples (minimum 1)	NA	NA	1 per day	NA

Notes:
*can be combined in one or more 8 oz. jars
mL = milliliter
VOC = Volatile organic compound
SVOC = Semi-volatile organic compound
PCB = Polychlorinated biphenyls
TAL = Total Analyte List
TCL = Target Criteria List
PID = Photoionization detector
Part 375 = New York State Department of Environmental Conservation (NYSDEC) Title 6 New York City Rules and Regulation (NYCRR) Part 375 List.
ORP = Oxidation reduction potential
EPA = U.S. Environmental Protection Agency
NA = Not applicable
ºC = degree Celsius

The PFAS compounds to be analyzed includes: perfluorobutanesulfonic acid, perfluorohexanesulfonic acid, perfluoroheptanesulfonic acid, perfluorooctanessulfonic acid, perfluorodecanesulfonic acid, perfluorobutanoic acid, perfluoropentanoic acid, perfluorohexanoic acid, perfluoroheptanoic acid, perfluorooctanoic acid, perfluorononanoic acid, perfluorodecanoic acid, perfluoroundecanoic acid, perfluorododecanoic acid, perfluorotridecanoic acid, perfluorotetradecanoic acid, 6:2 fluorotelomer sulfonate, 8:2 fluorotelomer sulfonate, perfluorooctanesulfonamide, n-methyl perfluorooctanesulfonamidoacetic acid, and n-ethyl perfluorooctanesulfonamidoacetic acid.

ATTACHMENT D

Sample Nomenclature

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SAMPLE NOMENCLATURE

The sample nomenclature outlined below provides consistency between sample events and projects but, most importantly, establish unique sample IDs that will avoid confusion months or years after the sample has been collected. Furthermore, unique sample IDs are required for any data submitted to the NYSDEC in EDD format or being uploaded to an EQuIS database.

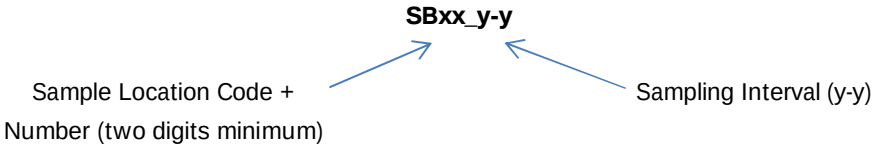
1.0 INVESTIGATION LOCATION CODES

SB	Soil Boring	SV	Soil Vapor Point
WC	Waste Characterization Boring	IA	Indoor Air
TP	Test Pit	AA	Ambient Air
EPSW	Endpoint Location (Sidewall)	SVE	Vapor Extraction Well
EPB	Endpoint Location (Bottom)	DS	Drum
MW	Monitoring Well	IDW	Investigation Derived Waste
TMW	Temporary Monitoring Well	SL	Sludge
SW	Surface Water	FP	Free Product

2.0 SAMPLE NOMENCLATURE

Each sample at a site must have a unique value.

- **Soil/Sediment Samples:**

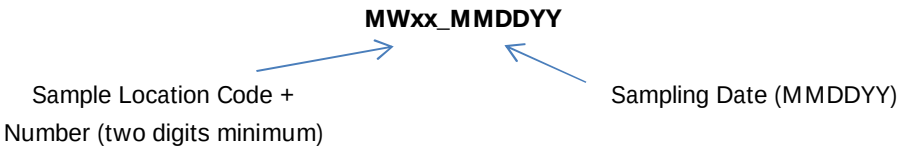


Sample Type	Sample Location Code	Sampling Depth or Interval (feet bgs or approx. elevation)	Sample Name
Phase II/Remedial Investigation			
Grab Soil Sample	SB01	2 to 4	SB01_2-4
	SB02	4	SB02_4
Waste Characterization			
Grab Soil Sample	WC01	2 to 4	WC01_2-4
	WC02	4	WC02_4
Composite Soil Sample from one or more locations	COMP01 or COMP02 + COMP03	0 to 10 (Fill)	COMP01_0-10

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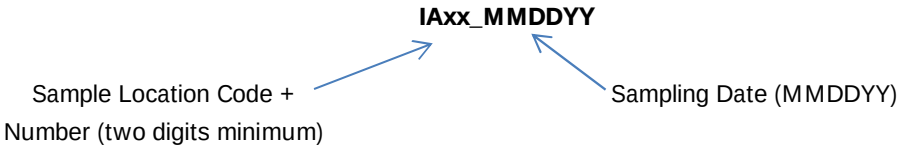
Sample Type	Sample Location Code	Sampling Depth or Interval (feet bgs or approx. elevation)	Sample Name
Endpoint Sampling			
Grab Soil Sample	EPSW01_N	5	EPSW01_N_5
	EPSW01_S	5	EPSW01_S_5
	EPSW01_E	5	EPSW01_E_5
	EPSW01_W	5	EPSW01_W_5
	EPB01	6	EPB01_6

- **Groundwater/Surface Water Samples:**



Sample Type	Sample Location Code	Sampling Date	Sample Name
Groundwater Sample	MW01	02/21/2013	MW01_022113

- **Air/Soil Vapor Samples:**



Sample Type	Sample Location Code	Date	Sample Name
Air Sample	IA01	02/21/2013	IA01_022113
Soil Vapor Sample	SV01	02/21/2013	SV01_022113
Vapor Extraction Well Sample	SVE01 (INLET/MIDPOINT/OUTLET)	02/21/2013	SVE01_IN_022113 SVE01_ MID_022113 SVE01_ OUT_022113

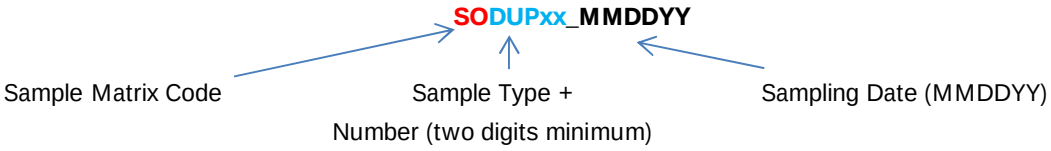
- **QA/QC Samples:**

Sample Matrix Codes

SO	Soil	AS	Air
SE	Sediment	SV	Soil Vapor
GW	Groundwater	SL	Sludge
SW	Surface Water	FP	Free Product

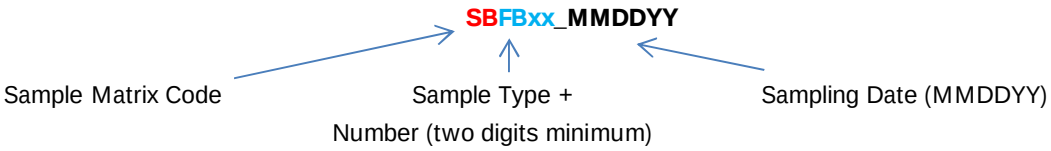
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- Duplicates Samples



Sample Type	Parent Sample Code	Date	Sample Name
Groundwater Duplicate Sample (DUP)	MW01_022113	02/21/2013	GWDUP01_022113
Soil boring Duplicate Sample (DUP)	SBP01_022113	02/21/2013	SODUP01_022113
Grab Waste Characterization	WC01	02/21/2013	WCDUP01_022113
Composite Waste Characterization	COMP01	02/21/2013	COMPDUP01_022113

- Field Blanks and Trip Blanks



Sample Type	Date	Sample Name
Groundwater Field Blank (FB)	02/21/2013	GWFB01_022113
Groundwater Trip Blank (TB)	02/21/2013	GWTB01_022113
Soil Field Blank	02/21/2013	SOFB01_022113
Soil Trip Blank	02/21/2013	SOTB01_022113

- Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Parent Sample Name_MS or MSD

Sample Type	Sample Location	Parent Sample Name	Sample Name
Matrix Spike Soil (MS)	SB01	SB01_2-4	SB01_2-4_MS
Matrix Spike Soil Duplicate (MSD)	SB01	SB01_2-4	SB01_2-4_MSD
Matrix Spike GW (MS)	MW01	MW01	MW01_MS
Matrix Spike GW Duplicate (MSD)	MW01	MW01	MW01_MSD

3.0 NOTES

1. The sample location code should not exceed 20 characters and the sample name should not exceed 40 characters.
2. Sample location code (**SB01, MW01, etc.)** is a sequential number (starting with 01) and should be a minimum of two digits.
3. Sample Interval (SB01_**0-5**) is separated from the sample location code with an underscore, and the top and bottom interval with a dash. Soil and sediment sample intervals should always be in

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feet. Soil and sediment sample intervals should contain no "/" or "()" or unit.

4. Sample date (MW01_**022113**) is separated from the sample location code with an underscore and should be provided in MMDDYY format [the date should contain no "/" or "-"].
5. If groundwater samples are collected from multiple intervals within one well, you may assign a letter designation (in lower case) to the well ID to differentiate between intervals (i.e., MW01a_022113, MW01b_022113, and MW01c_022113). The letter "a" would indicate the shallowest interval and "c" the deepest. The actual depth intervals should be documented in the project field book or field sheets and the letter designations should be used consistently between sampling events.
6. According to USEPA's Contract Laboratory Program (CLP) Guidance for Field Samplers (January 2011), field duplicate samples should remain "blind" to the laboratory (i.e., they should have separate CLP Sample numbers). Assign two separate (unique) CLP sample numbers (i.e., one number to the field sample and one to the duplicate). Submit blind to the laboratory. (http://www.epa.gov/superfund/programs/clp/download/sampler/CLPSamp-01-2011.pdf)

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ATTACHMENT E

Laboratory Standard Operating Procedures for PFAS Analysis

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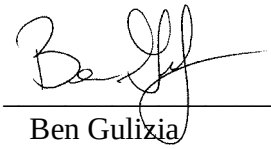
YORK ANALYTICAL LABORATORIES, Inc.
Title: PFAS_LCMSMS_MOD050619, Rev. 1.0
Date of Original Issue:05/10/2019
Revision 1.0 05/10/2019

Standard Operating Procedure

Analysis of Target Per- and Polyfluorinated Alkyl Substances (PFAS) in Non-Potable Water and Soil by EPA Method 537 Modified using LC/MS-MS

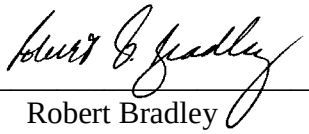
Approvals

Laboratory Director



Ben Gulizia

Corporate Technical Director



Robert Bradley

Corporate QA/QC Officer



Sarah Widomski

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Target PFAS in Non-Potable Water and Soil Matrices

1. SCOPE AND APPLICATION

This method is used to identify and quantitate specific PFAS compounds in extracts of non-potable water and soil samples using HPLC/MS-MS (high pressure liquid chromatography/ tandem mass spectrometry. Currently the compounds (26) that can be measured by this methodology at the date/revision of this SOP are listed in the table below.

1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)
N-EtFOSAA
N-MeFOSAA
Perfluoro-1-decanesulfonate (L-PFDS)
Perfluoro-1-heptanesulfonate (L-PFHpS)
Perfluoro-1-octanesulfonamide (FOSA)
Perfluoro-1-pentanesulfonate (L-PFPeS)
Perfluorobutanesulfonic acid (PFBS)
Perfluorodecanoic acid (PFDA)
Perfluorododecanoic acid (PFDoA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorohexanoic acid (PFHxA)
Perfluoro-n-butanoic acid (PFBA)
Perfluorononanesulfonate (L-PFNS)
Perfluorononanoic acid (PFNA)
Perfluoro-n-pentanoic acid (PFPeA)
Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorotetradecanoic acid (PFTA)
Perfluorotridecanoic acid (PFTrDA)
Perfluoroundecanoic acid (PFUnA) 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propanoic acid (GenX) 4,8-dioxa-3H-perfluorononanoic acid (ADONA)

The estimated reporting limit based upon the preparation/analysis parameters herein at the time of this revision are 2.0 ng/L (ppt) for aqueous samples 0.5-2 ug/kG for soil samples. The linear range for these PFAS can be extended by dilution.

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2. SUMMARY

2.1 This procedure involves fortifying samples and related QC with specific isotopes of target PFAS followed by extraction, concentration and analysis by LC/MS-MS. The preparation of non-potable water and soils is detailed in a separate SOP-PFASExtr_AQ_S_051019, Rev. 1.0 and updates.

2.2 For non-potable waters, a known volume of aqueous sample extracted using automated or manual Solid Phase Extraction (SPE). The compounds are eluted from the solid phase using ammoniated methanol. The extract is then slowly evaporated to a small volume using a nitrogen evaporation system. The resulting extract residue is reconstituted in 96%/4% Methanol/water to a final volume of 1.0 mL.

2.3 For soils, a known weight of sample (as received) is extracted with methanolic potassium hydroxide followed by vigourous vortex mixing, orbital agitation and ultrasonic extraction techniques. Prior to SPE cleanup/extraction the extract is fortified with PFAS free water and the methanol is removed by evaporation. The resulting aqueous extract brought to a 20 mL volume and is pH adjusted to pH 6-8. The aqueous extract is then extracted using automated or manual SPE extraction techniques followed by concentration of the SPE extract to a known final volume.

2.3 A portion of the extract is then fortified with internal standard and the PFAS LC separation is accomplished using a C18 LC column using a gradient program with 5mM ammonium acetate/water and methanol to effect separation followed by analysis using AJI-ESI (Electrospray) injection into a triple Quadrupole MS operated in negative ion mode.

2.4 Quantitation is done by internal standard technique and peak response is measured as the area of the peaks from the dynamic MRM (Multiple Reaction Monitoring) run.

2.5 Concentrations determined by LC/MS-MS are adjusted for isotope recoveries for final reporting into the Element LIMS.

3. DEFINITIONS

3.1 ANALYSIS BATCH – A set of samples that is analyzed on the same instrument during a 24-hour period, including no more than 20 Field Samples, that begins and ends with the analysis of the appropriate Continuing Calibration Check (CCC) standards. Additional CCCs may be required depending on the length of the analysis batch and/or the number of Field Samples.

3.2 CALIBRATION STANDARD (CAL) – A solution prepared from the primary dilution standard solution and/or stock standard solution, internal standard(s), and the surrogate(s). The CAL solutions are used to calibrate the instrument response with respect to analyte concentration.

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3.3 COLLISIONALLY ACTIVATED DISSOCIATION (CAD) – The process of converting the precursor ion's translational energy into internal energy by collisions with neutral gas molecules to bring about dissociation into product ions.

3.4 CONTINUING CALIBRATION VERIFICATION (CCV) – A calibration standard containing the method analytes, internal standard(s) and surrogate(s). The CCv is analyzed periodically to verify the accuracy of the existing calibration for those analytes. The CCV is run after every tem runs.

3.5 DETECTION LIMIT (DL) – The minimum concentration of an analyte that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero. This is a statistical determination of precision (Sect. 9.2.7), and accurate quantitation is not expected at this level.

3.6 EXTRACTION BATCH – A set of up to 20 Field Samples (not including QC samples) extracted together by the same person(s) during a work day using the same lot of SPE devices, solvents, surrogate, internal standard and fortifying solutions. Required QC samples include Method Blank, Blank Spike, Matrix Spike/Matrix Spike Duplicate.

3.7 FIELD DUPLICATES (FD1 and FD2) – Two separate samples collected at the same time and place under identical circumstances, and treated exactly the same throughout field and laboratory procedures. Analyses of FD1 and FD2 give a measure of the precision associated with sample collection, preservation, and storage, as well as lab procedures.

3.8 FIELD BLANK – An aliquot of reagent water that is placed in a sample container in the laboratory and treated as a sample in all respects, including shipment to the sampling site, exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the Field Blank is to determine if method analytes or other interferences are present in the field environment.

3.9 INTERNAL STANDARD (IS) – A compound added to an extract or standard solution in a known amount(s) and used to measure the relative response of other method analytes and surrogates that are components of the same solution. The internal standard must be a chemical that is structurally similar to the method analytes, has no potential to be present in samples, and is not a method target analyte.

3.10 BLANK SPIKE (BS) – A volume of reagent water or other blank matrix to which known quantities of the method analytes and any preservation compounds are added in the laboratory. The Blank Spike is prepared and analyzed exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate measurements.

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3.11 MATRIX SPIKE (MS) – A preserved field sample to which known quantities of the method analytes are added in the laboratory.
The MS is processed and analyzed exactly like a sample, and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate sample extraction and the measured values in the MS corrected for background concentrations.

3.12 MATRIX SPIKE DUPLICATE (MSD) – A duplicate of the Field Sample used to prepare the MSD. The MSD is fortified, extracted, and analyzed identically to the MS. The MSD is used instead of the Field Duplicate to assess method precision when the occurrence of method analytes is low.

3.13 METHOD BLANK – An aliquot of reagent water or other blank matrix that is treated exactly as a sample including exposure to all glassware, equipment, solvents and reagents, sample preservatives, internal standard, and surrogates that are used in the analysis batch. The method blank is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparati.

3.14 REPORTING LIMIT – the level at which accuracy of 50-150% is achieved and is based upon the lowest calibration standard. This level is prepared through all steps of the processing/analysis and is verified quarterly.

3.15 PRECURSOR ION – For the purpose of this method, the precursor ion is the deprotonated molecule ($[M-H]^-$) of the method analyte. In MS/MS, the precursor ion is mass selected and fragmented by collisionally activated dissociation to produce distinctive product ions of smaller *m/z*. For certain species that are labile in nature (GenX) under the conditions of analysis the [M-CO2]- is used.

3.16 PRODUCT ION – For the purpose of this method, a product ion is one of the fragment ions produced in MS/MS by collisionally activated dissociation of the precursor ion.

3.17 SURROGATE (isotopic) ANALYTE (SUR) – A compound which is structurally identical to the target analyte or an analog of the target analyte which is isotopically labeled (deuterium, oxygen 18, or carbon13) and chemically resembles method analytes and is unlikely to be found in any environmental sample. This compound(s) is added to a sample aliquot in known amounts before processing and is measured with the same procedures used to measure other method analytes. The purpose of the isotopic surrogate is to monitor method performance with each sample, and to adjust concentration for recovery of the isotopic analog.

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4. INTERFERENCES

LC/MS-MS data from blanks, samples, and spikes must be evaluated for interferences. If any interferences are present, take corrective action if necessary. Do not use aluminum foil because PFAS can be potentially transferred from the aluminum foil to the glassware. Only aluminum foil rinsed with HPLC plus grade or LC/MS grade methanol can be used where necessary.

4.1 PFAS have been used in a wide variety of manufacturing processes, and laboratory supplies should be considered potentially contaminated until they have been tested and shown to be otherwise. The materials and supplies used during the method validation process have been tested and shown to be clean. These items are listed in the Reagents section.

4.2 Method interferences may be caused by contaminants in solvents, reagents (including DI water), sample bottles and caps, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. All items such as these must be routinely demonstrated to be free from interferences (less than 1/2 the Reporting Limit), under the conditions of the analysis by analyzing Method Blanks. Subtracting blank values from sample results is not permitted.

4.3 PTFE products can be a source of PFAS (PFOA) contamination. The use of PTFE in the procedure should be avoided. Polypropylene (PP) or polyethylene (PE, HDPE) products must be used in place of PTFE products to minimize PFOA contamination.

4.3.1 Standards and samples are injected from polypropylene autosampler vials with polypropylene snap caps, once. Multiple injections may be performed on Primers when conditioning the instrument for analysis.

4.3.2 Random evaporative losses have been observed with the polypropylene caps causing high Internal Std. recovery after the vial was punctured and sample re-injected. For this reason, it is best to inject standards and samples once in the analytical sequence, or recrimp after injection. The auto sampler system employs a refrigerated (4^{o}C) sample compartment which minimizes losses.

4.3.2 Teflon-lined screw caps have detected PFAS at low concentrations. Repeated injection from the same teflon-lined screw cap have detected PFNA at increasing concentration as each repeated injection was performed, therefore, it is required to use only polypropylene snap caps as specified in this SOP.

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4.4 HPLC Plus grade or LC/MS grade methanol and water must be used for all steps where methanol or water are used in this method.

4.5 Matrix interferences may be caused by contaminants that are co-extracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature of the water or soil. SPE provides the necessary clean-up to reduce the occurrence of matrix effects.

4.6 Solid phase extraction cartridges may be a source of interferences. The analysis of laboratory method blanks can provide important information regarding the presence or absence of such interferences. The Phenomenex Strat-XL-AW or the Oasis WAX SPE tubes have shown no interfering peaks/ions at the retention times of interest. Each new lot of SPE cartridge sorbent must be tested to ensure that contamination does not preclude analyte identification and quantitation.

4.7 Contamination by carryover can occur whenever a high-concentration and low concentration samples are sequentially analyzed. To reduce carryover, the sample syringe in automatically rinsed with solvent between injections. These operations are programmed into the LC multi-sampler system.

4.8 Volumetric glassware and syringes are difficult to clean after being used for solutions containing high levels of PFAS. These items should be labeled for use only with similarly concentrated solutions or verified clean prior to re-use. To the extent possible, disposable labware (mechanical pipetors) are used.

4.9 Both branched and linear PFAS isomers can potentially be found in the environment. Linear and branched isomers are known to exist for PFOS, PFOA, PFHxS, PFBS, EtFOSAA, and MeFOSAA based upon the scientific literature. If multiple isomers are present for one of these PFAS they will be peaks adjacent to the linear isomer (to the left under our operating conditions). The later of these peaks matches the retention time of its labeled linear analog. In general, earlier peaks are the branched isomers and are not the result of peak splitting. In the analysis of real world samples, the most often encountered branched isomers are seen for PFOS and PFHxS.

Currently, all these species are available as linear isomers. Reference standards of the technical mixtures for these specific PFAS are used to ensure that all appropriate peaks are included during peak integration. <u>These branched isomers elute before the linear isomer and are integrated and reported as total for those species.</u>

4.10 In order to reduce PFOS bias, it is required that *m/z* 499>80 transition be used as the quantitation transition.

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5. SAMPLE HANDLING

5.1 Aqueous and soil samples are collected by our clients in 250 mL HDPE bottles with HDPE caps.

5.2 FIELD BLANKS (FBLK)- A FBLK must be handled along with each sample set. The sample set is composed of samples collected from the same sample site and at the same time. At the laboratory, fill the field blank sample bottle with reagent water, seal, and ship to the sampling site along with the sample bottles. For each FBLK shipped, an empty sample bottle must also be shipped. At the sampling site, the sampler must open the shipped FBLK and pour the reagent water into the empty shipped sample bottle, seal and label this bottle as the FBLK. The FBLK is shipped back to the laboratory along with the samples and analyzed to ensure that PFAS were not introduced into the samples during sample collection/handling.

5.3 SAMPLE SHIPMENT AND STORAGE – Samples must be chilled during shipment and must not exceed 10 °C during the first 48 hours after collection. Sample temperature must be confirmed to be at or below 10 °C when the samples are received at the laboratory. Samples stored in the lab must be held at or below 6 °C until extraction, but should not be frozen.

NOTE: Samples that are significantly above 10° C, at the time of collection, may need to be iced or refrigerated for a period of time, in order to chill them prior to shipping. This will allow them to be shipped with sufficient ice to meet the above requirements.

5.4 SAMPLE AND EXTRACT HOLDING TIMES –PFAS have adequate stability for 14 days when collected, preserved, shipped and stored as described. Therefore, water and soil samples should be extracted within 14 days of collection. Extracts must be stored at <10^{o}C or room temperature and analyzed within 28 days after extraction.

6. APPARATUS AND MATERIALS

6.1 250 mL High Density Polyethylene (HDPE) bottles with HDPE linerless caps- Greenwood Env. Part no. 07-GW2501: 250ml SMART Natural HDPE Leakproof Wide Mouth Bottle w/43-415 Linerless Cap, Assembled Only (250/cs) or 07-GW2503: 250ml HDPE Leakproof Wide Mouth Bottle w/43-415 Linerless Cap , Certified (250/cs), or equivalent-alternate source: VWR Scientific: Part no. 414004-113 HDPE wide moutgh bottle with HDPE liner less cap. These have been tested and demonstrated to be PFAS-free in initial studies.

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6.2 Transport Tube: Virgin Polypropylene, White, Plastic, 10 mL Capacity, 16 mm OD, 93 mm Overall Lg, Self-Standing, 250 PK, Item 710Z420, Gamut.com (Grainger), with PP cap

6.3 Graduated cylinders, 50, 100, 250, 500 and 1000mL, Polypropylene, VWR Scientific or equivalent

6.4 Analytical Balance, 0.0001g., checked for accuracy each day of use with Class S weights.

6.5 Extract concentrator: Organomation Model N-EVAP 112, 24 position concentrator with water batch control and nitrogen supply controls.

6.6 Syringes, polypropylene, luer lock, 50-100 mL for filtration of turbid groundwater samples. Merck XX110500 Fisher Scientific or equivalent

6.6 3.1 Micron in-line filters, Biotage part no. 49-2814-01

6.7 1.0 mL polypropylene snap cap vials, Agilent part no. 5182-0567

6.8 Snap caps, polypropylene, 11 mm, 11/9k, Agilent Part no. 5182-0542

6.9 2mL self standing PP microcentrifuge snap cap tubes, SKS Scientific part no. 0747-17

6.10 15 mL PP or HDPE Centrifuge tubes, Corning Part no. 430791

6.11 3 mL Disposable Transfer pipets, PE, VWR part no. 16001-176

6.12 Solid Phase Extraction Tubes:

For aqueous samples the following have been proven to meet SOP requirements: Phenomenex Strata XL-AW 100 um 200 mg 6mL tubes, part no. 8B-S051-FCH or Phenomenex Strata XL-AW 100 um 500 mg 6 mL tubes, part no. 8BS0510HCH, or Waters OASIS WAX 6cc/500 mg 60um tubes, part no. 186004647

For soils the following tubes can be used: Phenomenex Strata XL-AW 100 um 500 mg 6 mL tubes, part no. 8BS0510HCH; Biotage Evolute 500 mg/6mL 30 um tubes part no. 614-0050-CXG or Waters OASIS WAX 6cc/500 mg 60um tubes, part no. 186004647

6.13 Syringes, Hamilton or equivalent 5.0 uL, 10 uL 25 uL, 100 uL, 250 uL, 500 uL, *teflon free.*

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6.14 Solid Phase Extraction System-automated-Horizon/Biotage SmartPrep II system, 12 position autosampler system for 6 mL capacity tubes. System retrofit to remove all PTFE components and replaced with PEEK tubing. Automated bottle rinsing feature required.

6.15 SPE Automated Extraction System, Promochrom Technologies, Inc. 8 position simultaneous processing, PTFE free system.

6.16 Nitrogen Evaporation System- Organomation Model N-EVAP 112-24 position evaporator with water bath and individual nitrogen delivery control. Water bath capable of ambient temperature to 85 C, operated at 60 C.

6.17 LC/MS-MS system- Agilent 1260 HPLC system interfaced to an Agilent 6470A Triple Quadrupole system. The instrument control and qualitative/quantitative analysis software using Mass Hunter versions B.8.0 and B.9.0.

6.17.1 HPLC System-Agilent 1260 Infinity II

6.17.1.1 The Agilent 1660 Infinity II HPLC system is configured with temperature controlled column oven compartment. 4 column configuration, temperature controlled (refrigerated) autosampler compartments, injection valve, proportioning valves, variable flow controls and variable injection capabilities.

6.17.1.2 The delay column (PFAS and other interference removal) is an Agilent Eclipse Plus C18, 4.6mm x 50 mm, 3.5 um-Part no. 959943-902

6.17.1.3 The analytical column is an Agilent ZORBAX Eclipse Plus C18, 3.0 x 50 mm, 1.8 um- part no. 959757-302

6.17.2 Agilent LC/MS-MS- Agilent 6470AAR

6.14.2.1 Agilent model 6470AAR triple Quadrupole system with Agilent Jet Stream ESI source. UHP nitrogen is used as cell gas and High purity nitrogen is delivered for the sheath gas from a Peak Scientific nitrogen generator system.

6.18 Vortex Mixer- Benchmark Industries or equivalent

6.19 pH paper, short range 6-8- VWR Scientific or equivalent

6.20 Ultrasonic Baths- GT Sonic LS-10D, 240 w and Limplus VGT-1990QT, 240 w

6.21 Orbital Shaker- Jiangau Tenlin Instr. Co., Ltd., Model no. TLSK-III 20-230 RPM, 0-999 min.

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6.22 Centrifuge, 50 mL, Premiere Model XC-2450 Series Centrifuge 6 x 50 mL, 3500 RPM max.

6.23 Mini Centrifuge, 2 mL Four E's Scientific, 5400 RPM

6.24 Mechanical Pipettors- 10-100 uL; 100-1000 uL; 1000-5000 uL-4 E'S Scinetific or equivalent, calibrated quarterly.

7. REAGENTS AND STANDARDS

ALL REAGENTS and STANDARDS MUST BE LOGGED INTO THE ELEMENT LIMS SYSTEM. This includes lot numbers, expiration, open and prepared dates, recipe, Certification/traceability documents from supplier(s) if provided and preparer.

7.1 Methanol, hypergrade for LC/MS. (Merck) from Sigma Aldrich Part no. 1060354000. Alternatively Methanol, HPLC plus grade, Sigma Aldrich Part. No. 646377-4L

7.2 Water, hypergrade for LC/MS. (Merck) from Sigma Aldrich Part no. 1153334000; alternatively Water, HPLC Plus grade, Sigma Aldrich part no. 34877-4L.

7.3 Isopropanol-for rinsing valve seats, etc.- Sigma Aldrich Part no. 650447-1L

7.4 Ammonium Acetate, LC-MSMS grade. Sigma Aldrich Part no. 73594-100-G-F

7.4.1 HPLC gradient A- 5 mM Ammonium Acetate/ Water
Weigh 0.3854 g (± 0.0005) Ammonium Acetate and add to 1 liter hypergrade Water. Sonicate for 5 mins. To remove air bubbles. Stability- 2 weeks.

7.4.2 HPLC gradient B – 5 mM Ammonium Acetate/95/5 MeOH/H_2O
Weigh 0.3854 g (± 0.0005) Ammonium Acetate and add to 1 liter of 95/5 hypergrade methanol/water (950 mL MeOH/50 mL Water). Sonicate for 5 mins. To remove air bubbles. Stability – 2 weeks

7.5 Ammonium Hydroxide- 28-30%- ACS grade Sigma Aldrich Part no. 221228-500ML-A

7.6 Potassium Hydroxide-BioXtra grade, Sigma Aldrich part no. P5958-250G

7.7 Acetic Acid, Glacial, >99.7%- ACS grade-Sigma Aldrich part no. 695092-500ML

7.8 Agilent Tuning Solution-ESI-L-Agilent Part no. G1969-85000

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7.9 Stock Standards

Stock Standards are purchased in mid to high concentration form from Wellington Laboratories, Inc. Guelph, ONT, CA. Currently, Wellington is the only supplier of these materials. Second source standards to serve as an initial calibration verification are not available for all compounds. Some of the target compounds from Absolute Standards, Hamden, CT in a 2000 ng/mL mix of linear and branched isomer isomers which limit their use for quantitative analysis due to the uncertainty in the amount of branched species. Until a viable second source is identified, the 5.0 ng/mL level material used for calibration will serve as the ICV for Element purposes.

7.9.1 Internal Standard used for the method described is MPFOA (Perfluoro-[1,2,3,4-$^{13}C_4$]octanoic acid). This is purchased at 50,000 ng/mL and mixed for use. This is purchased from Wellington Labs in 1.2 mL volumes with the following part nos.: MPFOA.

7.9.2 Surrogate (ISOTOPIC) Materials are purchased for this method from Wellington Labs at 50,000 ng/mL levels on an individual basis. The part nos. for 18 isotopes are listed as follows: MPFBA, M5PFPeA, M3PFBS, M5PFHxA, M4PFHpA, M3PFHxS, M2-6:2 FTS, M8PFOA, M8PFOS, M9PFNA, M2-8:2 FTS, M6PFDA, d3-N-MeFOSAA, M8FOSA, M7PFUnDA, d5-N-EtFOSAA, MPFDoA, M2PFTeDA.When GenX is a target- M3HFPO-DA.

7.9.2.1 Alternatively, a mixture of all the above isotopes is available from Wellington Laboratories as part no. MPFAC-24PAR at 1000 ng/mL in Methanol. NOTE: This mixture does not contain GenX or ADONA.

7.9.3 Stock Standard mixture of linear isomers of the target analytes are purchased from Wellington Labs at 2000 ng/mL concentrations under part no. PFAC-24PAR. This is used for native analyte calibration and for the BS/MS/MSDs.

7.10 Intermediate/Working Standards Preparation

7.10.1 **Internal Standards -** Preparation at 1000 ng/mL

Internal Standards mixture is prepared into a 10 mL polypropylene transfer tube for use. 10.0 mL final volume is prepared. Before use the mixture is mixed well using a vortex mixer. This approach yields 10 ng/mL of ISTD final concentration in each extract/QC/Cal std.when 3 uL of ISTD mix at 1000 ng/mL is added to 300 uL extract or 5 uL is added to 500 uL.

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Preparation of Internal Standard Working Solution-
10.0 mL final volume

For all Calibrations, QC and Samples add 3 uL to 300 uL samples and 5 uL to 500 uL CALSTDS

ISTD Stock	Stock, ng/mL	Vol. to add (uL)	To this vol. MeOH, uL	Conc. ,ng/mL
MPFOA	50000	200	9800	1000

7.10.2 **Isotopic Surrogate** Solution Intermediate Preparation-1000 ng/mL

5.0 mL of the 18 Isotope Surrogate mixture is prepared into a 10 mL polypropylene transfer tube for use at a 1000 ng/mL concentration. The GenX isotope M3HFPO-DA is not included. The intermediate is prepared by adding 100uL of each of the 18 isotopes (at 50,000 ng/mL, nominally as the anion) into 3200 uL of MeOH for a final concentration of 1000 ng/mL. Mix using the vortex mixer and carefully transfer to 3 separate labeled self standing 2 mL snap cap vials. Some isotopes are present as salts so the amount of indiv. Added may be more than 100 uL to adjust for salt vs. anion. The amount of MeOH will be reduced proportionately.

7.10.3 –Isotopic Surrogate Preparation for addition to samples/QC

Preparation of Working Surrogate Mixture- 10.0 mL final volume
From 1,000 ng/mL intermediate from 7.10.2 add 1000uL of the intermediate at 1000 ng./mL to 9000 uL methanol to give a final concentration of working isotopic surrogate mix at 100 ng/mL. This mixture is used for addition to all samples/QC that are to be extracted.

7.10.4 **Target Analyte Intermediate/Working Mixture**

From the 2000 ng/mL stock solution (7.9.3), prepare a 100 ng/mL solution by adding 500 uL of the stock to 9500 uL Methanol. This results in a 100 ng/mL working standard. This 10 mL volume is then used for BS/MS/MSD solution (100 uL added for BS/MS/MSD).

7.10.5 **CALIBATION CURVE Preparation**

Using the 1000 ng/mL Isotopic Surrogate intermediate (7.10.2) and the 2000 ng/mL Stock native analytes (7.9.3) make 1.0 mL of an intermediate 100 ng/mL solution of isotopes and native analytes by taking 50uL of the 2000 ng/mL natives and 100 uL of the 1000 ng/mL Isotopic intermediate adding both to 850 uL methanol. This is the 100 ng/mL Calibration intermediate. Follow the preparation in the table as shown.

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Initial Calibration Preparation

Initial Calibration-
use solution form 7.10.5
@ 100 ng/mL
Standards Source-Wellington Labs
500 uL Final Volumes prepared into PP vials

Cal Level ID	Std. Conc., ng/mL	Isotopes+Natives Mix @ 100 ng/mL, uL	96/4 MeOH/H2O, uL	ISTD Working MIX, uL
1	0.25	1.25	498.8	5.0
2	0.5	2.5	497.5	5.0
3	1.0	5.0	495	5.0
4	2.5	12.5	487.5	5.0
5	5.0	25.0	475	5.0
6	10.0	50.0	450	5.0
7	20.0	100.0	400	5.0

7.10.6 Second Source - Initial Calibration Verification

Use 5.0 ng/mL cal level until verification of a second source is done. Currently only the 24 compound DOD mix at 2000 ng/mL is available from Absolute Standards, Hamden, CT , part no. 99206. This contains some branched isomers therefore it may not serve its intended purpose. This is optional at this time. This is prepared as an ICV as follows:

Initial Calibration Verification Preparation

Source-Absolute Standards EPA 537 Mix @ 2000 ng/mL

Preparation of Intermediate 100 ng/mL
Take 50 uL of Stock up to 1000 uL in MeOH = 100 ng/mL Intermediate

ICV Level @ 5.0 ng/mL
Take 25 uL of 100 ng/mL ICV ng/mL plus 475 uL 96/4 MeOH/H2O + 5uL ISTDs-no Surrogates

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8. PROCEDURE

8.1 Preventative and Routine Maintenance

HPLC/MS/MS Preventative Maintenance	
As Needed: Change pump seals. Change in-line filters in autosampler (HPLC). Check/replace in-line frit if excessive pressure or poor performance. Replace column if no change following in-line frit change. Clean needle. Replace or clean Capillary Replace fused silica tube in ESI interface. Clean lenses. Clean skimmer. Ballast rough pump 30 minutes. Check Nozzle flow pattern	**Daily (When in use)** Check solvent reservoirs for sufficient level of solvent. Verify that pump is primed, operating pulse free. (ripple < 1%) Check needle wash reservoir for sufficient solvent. Verify capillary heater temperature functioning. Verify vaporizer heater temperature. Verify rough pump oil levels. Verify turbo-pump functioning. Verify nitrogen pressure for auxiliary and sheath gasses. Replace HPLC Gradient solutions-2 weeks Perform Checktune once per week.
Semi-Annually Replace oil mist and odor elements. Replace activated alumina filter if applicable	**Annually** Vacuum system components including fans and fan covers. Clean/replace fan filters, if applicable.

8.2 Running Samples/QC - Acquisition Method

The acquisition methods are detailed in Attachments 1 (HPLC) and Attachments 2 and 3 (MS/MS) of this SOP. The method is a HPLC with dynamic MRM method with precursor and product ions with specific acquisition parameters to maximize sensitivity and specificity. This list may be modified to add other PFAS target analytes as necessary. It is noted that under the conditions used for analysis, GenX (attachment 3), due to its fragile nature is analyzed separately monitoring the [MCOO]- precursor and related product ion.

8.3.1 The triple Quadrupole (QQQ) system must be optimized for each target analyte (including surrogates and internal standards) using the Mass Hunter Optimizer program. This program determines the most abundant precursor and product ions for each compound and their abundances. These data are then used to build an MRM (multiple reaction monitor) method for acquisition. This is done initially or after any major maintenance procedures are performed to the triple quadrupole system. A high level standard is used for this in the $[M-H]^-$ mode.

8.3.2 The QQQ is checked for tuning on a weekly basis before analysis using the Tune context by selecting the CHECKTUNE radio button. This is done only in negative ion mode since that what we are operating under. If the Checktune fails, or

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significant change (50%) in the abundances compared to the most recent checktune data, run the Autotune program-note: this takes approx. 45 mins. in negative mode. NOTE: This will require a re-calibration of the instrument.

8.3.3 Before any QC or samples can be run, the HPLC must be allowed to purge/condition for at least thirty minutes. This purge must be done using the initial mobile phase conditions used in the method must be allowed to run for 30 minutes to allow the binary pump pressure to stabilize (ripple must be < 1%) and pressure should be 135-160 barr with a 90/10 gradient (initial HPLC conditions).

8.3.4 An instrument sequence (Worklist) is then made. It should begin with two double blanks if the system has been sitting more that 48 hours, or at a minimum 1 double blank and a conditioner (5 ng/mL).

8.3.5 Those will be followed by the opening CCV at 5 ng/mL. Then, the worklist can start running. After every 10 injections and at the end of the sequence a CCV is run.

8.3.6 The run can end with a script to put the instrument into standby mode.

8.4 Daily Sample Preparation/Analysis Sequence

- Prepare extracts for analysis by placing a 300 ul aliquot of sample extract into a labeled PP auto-sampler vial. Add internal standard (3 uL). Apply snap cap. Vortex to mix.
- Run instrument CCV checks at the start and every ten injections (5 ng/mL) and at the end as described in 8.3.5 above.
- Enter the Worklist (injection sequence) using the naming convention mm-dd-yyyy into the instrument software and load samples onto the auto-sampler in the following order,

    - 2 Double Blanks (If system idle > 48 hrs. (1 if not)
    - Conditioner @ 5 ng/mL
    - CCV (5.0 ng/mL)
    - Method Blank
    - BS
    - Samples /MS/MSDs; CCV every 10 injections
    - CCV (ending or continuing) at 5.0 ng/mL
    - 10 injections
    - Ending CCV -5.0 ng/mL

8.5 Data Review

The Agilent Mass Hunter Quantitation program is used to review all data. All identifications are based upon acceptable ion ratios for the abundance of both

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precursor and product ions along with retention time information. It is noted that for PFOS specifically the ratios may not always be ideal due to the branched isomer contribution. If native PFOS is found and branched are also found under the conditions of MRM acquisition identity is confirmed.

8.5.1 Since certain PFAS species are manufactured by different processes the presence of branched as well as linear isomers may be found. In order to properly quantitate these species, the analyst must manually integrate the following species to report totals for: PFOS and PFHxS., These should be annotated as total in the element report verbiage or using a qualifier PFAS-T

8.5.2 Any detection greater than the upper limit of the calibration curve requires dilution into the upper half of the curve, where possible.

9. CALIBRATION

9.1 Initial Calibration

The initial calibration covers the range 0.25 ng/mL to 20 ng/mL depending upon the linearity of the PFAS species. After acquisition, the data are quantitated in Mass Hunter and the default calibration model is generated using Average response factor. For average response factor RSDs greater than 20% an alternate model such as Quadratic regression should be used. Depending upon the response and accuracy at each level as shown in the Mass Hunter program, use Quadratic regression not forced through the origin with or without weighting to achieve the best fit which is based upon the best accuracy on a compound by compound basis. In any case, the correlation coefficient R^2) must be greater than 0.990.

9.1.1 The calibration levels as shown in Section 7.6.3 use 7 levels. All points are included in the calibration for all PFAS targets and isotopes.

9.1.2 Certain species in the calibration mixture are present as salts (as opposed to anions). This concentration must be used in the Mass Hunter software to reflect the actual anion concentration present. Also, all responses for the calibration curve are based solely upon the known concentration of the linear isomers where applicable. Refer to the Wellington Labs standard information sheets for each lot of material.

9.2 ICV/QCS

A second-source Initial Calibration Verification, if available should be run immediately following initial calibration. The concentration of this standard should be in the middle of the calibration range (e.g. 5.0 ng/mL). Unless project-specific data quality objectives are required, the values from the second-source check should be within 30% of the expected concentration.

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Corrective Action: Quantitative sample analyses should not proceed for a failing ICV. Recalibrate and re-run the ICV if necessary. When using the same source for the "ICV" then ± 20% limits apply.

9.3 Continuing Calibration Verification

The CCV must be ± 30% of the true value.

Corrective Action: If any of the required calibration check criteria fail, the system must be evaluated and any appropriate instrument repair or maintenance must be performed. Sample data are unacceptable and must be rerun. Reinjection the standard may be done. If the calibration check standard still fails, the system must be recalibrated.

10. Quality Control

10.1 Initial Demonstration of Capability (IDOC)

The initial demonstration requirement herein must be acceptable before analysis of samples may begin.

10.2 Batches are defined at the sample preparation step. Batches should be kept together through the whole analytical process as far as possible, but it is not mandatory to analyze prepared extracts on the same instrument or in the same sequence.

10.2.1 The quality control batch is a set of up to 20 samples of the same matrix processed using the same procedure and reagents within the same time period. The quality control batch must contain a matrix spike/matrix spike duplicate (MS/MSD), a laboratory control sample (LCS) and a method blank. Laboratory generated QC samples (Blank, LCS, MS/MSD) do not count toward the maximum 20 samples in a batch. Field QC samples are included in the batch count. In some cases, at client request, the MS/MSD may be replaced with a matrix spike and sample duplicate. If insufficient sample is available for an MS/MSD, an LCSD may be substituted if batch precision is required by the program or client. In the event that multiple MS/MSDs are run with a batch due to client requirements, the additional MS/MSDs do not count toward the maximum 20 samples in a batch.

10.3 METHOD BLANK- One method blank (MB, laboratory reagent blank) must be extracted with every process batch of similar matrix, not to exceed twenty (20) samples. For aqueous samples, the method blank is an aliquot of laboratory reagent water. For solid samples, the method blank is a portion of

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Ottawa sand. The method blank is processed in the same manner and at the same time as the associated samples. Corrective actions must be documented on a Non-Conformance memo, and then implemented when target analytes are detected in the method blank above the reporting limit or when IDA recoveries are outside of the control limits. Re-extraction of the blank, other batch QC, and the affected samples are required when the method blank is deemed unacceptable.

10.3.1 If the MB produces a peak within the retention time window of any of the analytes, determine the source of the contamination and eliminate the interference before processing samples.

10.3.2 The method blank must not contain any analyte at or above 1/2 the reporting limit.

10.3.3 If there is no target analyte greater than the RL in the samples associated with an unacceptable method blank, the data may be reported with qualifiers. Such action should be taken in consultation with the client.

10.3.4 Re-extraction and reanalysis of samples associated with an unacceptable method blank is required when reportable concentrations are determined in the samples.

10.3.5 Results are acceptable if the blank contamination is less than ½ of the reporting limit/LOQ for each analyte, or less than 1/10 of the regulatory limit, or less than 1/10 of the sample result for the same analyte, whichever is greater. If the method blank does not meet the acceptance criteria, the source of contamination must be investigated and measures taken to correct, minimize or eliminate the problem. Reprepare and reanalyze all field and QC samples associated with the contaminated method blank.

10.4 LABORATORY CONTROL SAMPLE (BLANK SPIKE) must be extracted with every process batch of similar matrix, not to exceed twenty (20) samples. The LCS is an aliquot of laboratory matrix (e.g. water for aqueous samples and Ottawa sand for solids) spiked with analytes of known identity and concentration. The LCS must be processed in the same manner and at the same time as the associated samples. Corrective actions must be documented on a Non-Conformance memo, then implemented when recoveries of any spiked analyte is outside of the control limits. Re-extraction of the blank, other batch QC, and all associated samples are required if the LCS is deemed unacceptable. The control limits for the LCS are stored in Element.

10.5 A matrix spike/matrix spike duplicate (MS/MSD or MS/SD) pair must be

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extracted with every process batch of similar matrix, not to exceed twenty (20) samples. An MS/MSD pair is aliquots of a selected field sample spiked with analytes of known identity and concentration. The MS/MSD pair must be processed in the same manner and at the same time as the associated samples. Spiked analytes with recoveries or precision outside of the control limits must be within the control limits in the LCS. Corrective actions must be documented on a nonconformance memo, then implemented when recoveries of any spiked analyte are outside of the control limits provided by ELEMENT or by the client. Again if a specific method or work plan has required limits, this is preempted. Any outliers must be qualified accordingly.

10.6 A LCSD or BSD may be added when insufficient sample volume is provided to process an MS/MSD pair, or is requested by the client. The BSD is evaluated in the same manner as the BS/LCS.

10.7 Initial calibration verification (ICV) –A second source standard, if available, is analyzed with the initial calibration curve. The concentration should be at the mid range of the curve and must recover within 70-130 % of expected value.

Corrective actions for the ICV, if true second source, include:

- Rerun the ICV.
- Remake or acquire a new ICV.
- Evaluate the instrument conditions.
- Evaluate the initial calibration standards.
- Rerun the initial calibration.

10.8 Internal Standard- The Internal Standard (IS) is added to each field and QC sample prior to analysis. The IS response (peak area) must not deviate by more than ½ to 2x the average response (peak area) of the initial calibration.

10.8.1 Sample IS response (peak area) must be within 50-150% of the response (peak area) in the most recent CCV.

10.9 Specific other QC requirements for this method are detailed in Table 1.0 as follows.

Table 1.0 QC Criteria-York PFAS Method

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Requirement	Specification and Frequency	Acceptance Criteria
Sample Holding Time	14 days with appropriate preservation and storage as described in Sections 8.1-8.5.	Sample results are valid only if samples are extracted within sample hold time.
Extract Holding Time	28 days when stored room temp. in polypropylene snap cap vials	Sample results are valid only if extracts are analyzed within extract hold time.
Laboratory Reagent Blank (LRB)	One MBLK with each extraction batch of up to 20 Field Samples.	Demonstrate that the method analyte concentration < 1/2 the RL, and confirm that possible interferences do not prevent quantification. If the background concentration exceeds 1/2 the RL, results for the extraction batch are invalid.
Method Blank	One LFB is required for each extraction batch of up to 20 Field Samples. Rotate between low, mid, high levels	Results of LFB analyses at medium and High fortification for the analyte and SUR. Results of a low-level LFB must be 50-150% of the true value.
Internal Standard (IS)	Compare IS area to the average IS area in the initial calibration and the most recent CCC.	Peak area counts for all injections must be within –50%-200% of the average peak area calculated during the initial cal. and 50–150% from the most recent CCC. If the IS does not meet this criterion, rerun ot dilute
Surrogate(SUR) Standard	The SUR standard added to all calibration standards and samples, including QC samples. Calculate SUR recoveries.	Isotope SURR recovery should be within lab control limts be 25-150% of the true value. If a SUR fails this criterion, report all results for sample as suspect/SUR recovery with appropriate qualifier.
Sample Matrix Spike	Analyze one MS per extraction batch (of up to 20 Field Samples) fortified target analytes. Calculate MS recoveries (Element)	Recoveries at should be within Lab control Limits. Qualify any outliers using appropriate flags.
MSD	Extract at least one MSD with each extraction batch of 20 field samples or less. Calculate RPD.	RPD should be ≤30%. If not met, qualify data accordingly.
Initial Calibration	Use ISTD technique Use minimum of 7 points at all times	When each standard is calculated against the curve, the accuracy should be 70-130%, except for the lowest standard which should be 50-150% of the true value.
Continuing Calibration Verification(CCV)	Initially and after every 10 runs and at the end of the run	Surrogates and analyte recovery 70-130% of expected value

10.10 Initial Demonstration of Capability (IDC)

Initial Demonstration of Capability involves the following processes listed ion Table 2.0 as follows.

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Table 2.0 - Initial Demonstration of Capability (IDC)

Requirement	Specification	Acceptance Criteria
Initial Demonstration of Low System Background	Analyze MBLK prior to any Other IDC steps	Demonstrate that all method analytes are < 1/2 MRL and possible interferences form extraction media do not prevent identification and quantification of method analytes.
Initial Demonstration of Precision (IDP) *-537.1*	Analyze 4-7 replicate LFBs at mid-cal level	%RSD must be < 20%
Initial Demonstration of Accuracy (IDA)	Using the IDP runs above, Calc. average % Recovery	Mean Recovery ± 30% of true value
Minimum Reporting Limit (MRL) Confirmation *See Section 9.2.5-537.1*	Fortify, extract and analyze seven replicates at the proposed RL level. Calculate recovery and precision for these data	The Recoveries should be 50-150% and the precision should be <30%RPD.

11.0 DATA REVIEW, CALCULATIONS AND REPORTING

Samples concentrations are determined using either Average response factor (RRF) or or quadratic regression unforced through the origin. Weighted (1/x or $1/x^2$) may assist with low level accuracy and is recommended where necessary. All calibration curves have 7 points and no points can be removed. Any target analyte exceeding the calibration range will require dilution.

11.1 Data interpretation

All sample data calculations are performed by the Agilent Mass Hunter software in ng/mL and then final data are calculated taking into account final extract volumes and the initial sample volumes extracted which are entered into the Element bench sheet.

11.2 Linear and Branched Isomers are addressed in Section 8.5 and are reported for the noted species as Total which is a sum of the linear and branched isomers for affected species.

11.3 **Data Handling Procedures**

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In order to process data from Mass Hunter, perform isotope dilution corrections and upload to Element, the following steps are followed:

11.3.1 Produce reports for LIMS (.xlsx and pdf) for all samples/QC of interest in Mass Hunter

11.3.2 Move these files to the PFAS Data for Element folder on the Backup(G) network drive in a folder reflecting the work orders in the files (i.e 19D0005_19D0111 Data)

11.3.3 Using the Content Splitter program open the program and navigate to the pdf report of interest and split the pdfs. This sends them named with the file name (e.g. QQQ0453.d.pdf) to the y:\raw_data drive automatically.

11.3.4 Open the PFAS.mdb convertor program with Access 2010 runtime. Open the Admin tab and be sure the analyst is chosen.

11.3.5 Click on the Select Excel file for import (note must be .xlsx). Navigate to the file and enter it. Examine to be sure it is the correct information then click RUN REPORTS and the reports will be sent to the directory the data came from. The files will be named QBPFASxxxxxxxx_T.pdf for the target isotope report and the isotope corrected data for Element will be in a file named QBPFASxxxxxxxx.xlsx

11.3.6 In order for the Isotope Calc report to be part of the Data pkg., it must be posted to the related Bench sheet in Element. Also, be sure the bench sheet is posted using the proper format in Element.

12. HEALTH AND SAFETY

12.1 General safety considerations and requirements are detailed in the York Laboratory Safety and Health Standard Operating Procedure No. Safety011600.

Specific safety rules applying to the conduct of this analysis requiring the following:

- When handling standards and samples, latex gloves are required.
- Also, when handling neat materials, a fume hood and safety glasses are required.
- When handling samples, gloves and glasses are required.
- Highly odorous samples must be handled in a fume hood.
- Refer to SDSs for specific safety/health information.

12.2 The analysts must exercise normal care and be supervised and trained to work in an analytical chemistry laboratory. The analysts will be handling fragile glassware, needles, syringes, volatile and flammable chemicals, toxic chemicals and corrosive chemicals.

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- No smoking or open flames are allowed.
- No food or food products may be brought into the laboratory.

Solvents should not be left uncovered on the laboratory benches.
All solvent transfers should be done in the hoods.

Hood doors must be kept in the position which yields approx. 100 fpm face velocity.
Solvent evaporation must be done in the hood with exhaust elevated and in the rear.

Waste containers that had solvents must be vented to a hood until all solvents have evaporated.

Safety glasses are provided and must be worn at all times in the laboratory.
Gloves are provided and must be worn when working with chemicals.
Laboratory coats are provided and should be worn to protect the analysts' clothes.
Syringes and needles must be kept in their original cases when not in use.
Care must be exercised in using and handling syringes to avoid injury.
Report any sticking with a needle immediately to your supervisor.

12.3 Specific Safety Concerns

12.3.1 Preliminary toxicity studies indicate that PFAS could have significant toxic effects. In the interest of keeping exposure levels as low as reasonably achievable, PFAS must be handled in the laboratory as hazardous and toxic chemicals.

12.3.2 Exercise caution when using syringes with attached filter disc assemblies. Application of excessive force has, upon occasion, caused a filter disc to burst during the process.

12.3.3 Laboratory procedures such as repetitive use of pipets, repetitive transferring of extracts and manipulation of filled separatory funnels and other glassware represent a significant potential for repetitive motion or other ergonomic injuries. Laboratory associates performing these procedures are in the best position to realize when they are at risk for these types of injuries.

12.3.4 Eye protection, laboratory coat, and nitrile gloves must be worn while handling samples, standards, solvents, and reagents. Disposable gloves that have been contaminated will be removed and discarded; other gloves will be cleaned immediately.

12.3.5 Perfluorocarboxylic acids are acids and are not compatible with strong bases.

12.3.6 Primary Materials Used- The following is a list of the materials

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used in this method, which have a serious or significant hazard rating. NOTE: This list does not include all materials used in the method. The table contains a summary of the primary hazards listed in the SDS for each of the materials listed in the table. A complete list of materials used in the method can be found in the reagents and materials section. Employees must review the information in the SDS for each material before using it for the first time or when there are major changes to the SDS.

Methanol (2-3-0)	Flammable Poison Irritant	200 ppm (TWA)	A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Symptoms of overexposure may include headache, drowsiness and dizziness. Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure. Irritant to the eyes.

13. WASTE MANAGEMENT/POLLUTION PREVENTION

Neat Materials

Waste management procedures require the prudent use of neat materials. The ordering of neat standards and materials must be done to minimize unused material which would result in storage or handling of excess material. Quantities ordered should be sufficient to provide for necessary standards with consideration to shelf life. When ordering a unique material for a standard, be sure to order the smallest practical quantity.

Solvents

The solvents used at York for this procedure include isopropanol and Methanol. These solvents are used for sample extraction or LC cleanup, All amounts are either consumed during concentration or placed in one liter amber jars in the hood areas for evaporation. Any remaining solvent/water is transferred to a drum designated for solvent waste.

Samples

Unused or remaining soil and water samples are returned to the sample control room (CT) for continued storage for proper disposal by the sample control group.

14. REFERENCES

1. US EPA, “Method 537 - Determination of Selected Perfluorinated alkyl acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometery (LC/MS/MS)”, Version 1.1, September 2009, J.A. Shoemaker, P.E. Grimmett, B.K. Boutin, EPA Document #: EPA/600/R-08/092 and Rev. 1.1 updates, Nov. 2018
2. Method ISO 25101:2009, “Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry”, April 30, 2009.
3. EPA Technical Advisory-Laboratory Analysis of Drinking Water Samples for

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Perfluorooctanoic Acid (PFOA) using EPA Method 537 Rev. 1.1 EPA 815-B-16-021 September 2016 nad Nov. 2018 update.

15. REVISION HISTORY

05/10/2019	First issue.

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Attachment 1 -HPLC Method Parameters

Acquisition Method Report

	Channel	Name 1	Name 2	Selected	Used	Percent
1	A	Water 5mM ammonium acetate		Ch. 1	Yes	10.0 %
2	B	95% MeOH 5mM ammonium acetate		Ch. 1	Yes	90.0 %

Timetable

	Time	A	B	Flow
1	0.50 min	90.0 %	10.0 %	--- mL/min
2	2.00 min	70.0 %	30.0 %	--- mL/min
3	14.00 min	5.0 %	95.0 %	--- mL/min
4	14.50 min	0.0 %	100.0 %	--- mL/min

Name: Column Comp. **Module:** G7116A

Left Temperature Control	
Temperature Control Mode	Temperature Set
Temperature	50.0 °C
Enable Analysis Left Temperature	
Enable Analysis Left Temperature On	Yes
Enable Analysis Left Temperature Value	0.8 °C
Left Temp. Equilibration Time	1.0 min
Right Temperature Control	
Right temperature Control Mode	Temperature Set
Right temperature	50.0 °C
Enable Analysis Right Temperature	
Enable Analysis Right Temperature On	Yes
Enable Analysis Right Temperature Value	0.8 °C
Right Temp. Equilibration Time	1.0 min
Enforce column for run	
Enforce column for run enabled	No
Stop Time	
Stoptime Mode	As pump/injector
Post Time	
Posttime Mode	Off
Timetable	
Valve Position	Position 1 (Port 1 -> 1')
Position Switch After Run	Do not switch

Attachment 2 - Triple Quadrupole Acquisition Method-24 Target PFAS

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Method Name PFAS 24_IDA ACQ.m

MS QQQ Mass Spectrometer

Ion Source-AJS-ESI

Compound	Prec Ion	Pr	Frag (V)	CE (V)	Cell	Ret Time	Polarity
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	527	50	170	28	4	14.58	Negative
1H,1H,2H,2H-perfluoro-1-decanesulfonate (8 2FTS)	527	80	170	40	4	14.58	Negative
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	327	30	162	20	4	10.23	Negative
1H,1H,2H,2H-perfluoro-1-hexanesulfonate (4 2FTS)	327	80	162	36	4	10.23	Negative
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	427	40	162	24	4	12.92	Negative
1H,1H,2H,2H-perfluoro-1-octanesulfonate (6 2FTS)	427	79	162	48	4	12.92	Negative
d3-N-MeFOSAA	572.99	41	130	20	4	14.94	Negative
d5-N-EtFOSAA	589.02	53	130	20	4	15.27	Negative
d5-N-EtFOSAA	589.02	41	130	20	4	15.27	Negative
M2-4-2FTS	329	30	156	20	4	10.1	Negative
M2-4-2FTS	329	81	156	28	4	10.1	Negative
M2-6-2FTS	429	40	162	24	4	12.9	Negative
M2-6-2FTS	429	81	162	40	4	12.9	Negative
M2-8-2FTS	529	50	165	28	4	14.6	Negative
M2-8-2FTS	529	81	165	40	4	14.6	Negative
M2PFTeDA	715	67	62	12	4	16.7	Negative
M3PFBS	302	98	114	32	4	8.7	Negative
M3PFBS	302	79	114	40	4	8.7	Negative
M3PFHxS	402	98	165	40	4	11.9	Negative
M3PFHxS	402	80	165	48	4	11.9	Negative
M4PFHpA	367	32	124	8	4	11.8	Negative
M5PFHxA	318	27	70	4	4	10.3	Negative
M6PFDA	519	47	59	8	4	14.6	Negative
M7PFUdA	570	52	64	8	4	15.3	Negative
MPFDA	514.98	46	90	8	4	14.62	Negative
MPFDA	514.98	21	90	16	4	14.62	Negative
MPFHxA	314.99	26	70	4	4	10.3	Negative
MPFHxA	314.99	12	70	20	4	10.3	Negative
MPFOA - ISTD	417	37	70	6	4	12.9	Negative
MPFOS	502.96	80	150	96	4	13.89	Negative
N-EtFOSAA	584	52	130	20	4	15.28	Negative
N-EtFOSAA	584	41	130	20	4	15.28	Negative
N-MeFOSAA	570	51	150	20	4	14.95	Negative
N-MeFOSAA	570	41	150	20	4	14.95	Negative
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	507	80	162	52	4	15.2	Negative
Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	506	78	162	48	4	15.2	Negative
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	507	98	174	48	4	13.9	Negative
Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	507	80	174	54	4	13.9	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	598.9	98	156	50	4	15.181	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	598.9	98	100	60	4	15.181	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	598.9	79	156	50	4	15.181	Negative
Perfluoro-1-decanesulfonate (L-PFDS)	598.9	79	100	80	4	15.181	Negative
Perfluoro-1-heptanesulfonate (L-PFHpS)	448.9	98	162	48	4	13.027	Negative
Perfluoro-1-heptanesulfonate (L-PFHpS)	448.9	80	162	48	4	13.027	Negative
Perfluoro-1-octanesulfonamide (FOSA)	497.9	78	156	40	4	15.2	Negative
Perfluoro-1-octanesulfonamide (FOSA)	497.9	47	156	100	4	15.2	Negative
Perfluoro-1-pentanesulfonate (L-PFPeS)	348.9	98	150	36	4	10.6	Negative
Perfluoro-1-pentanesulfonate (L-PFPeS)	348.9	79	150	40	4	10.6	Negative
Perfluorobutanesulfonic acid (PFBS)	298.9	98	150	32	4	8.7	Negative
Perfluorobutanesulfonic acid (PFBS)	298.9	79	150	36	4	8.7	Negative
Perfluorodecanoic acid (PFDA)	513	46	90	8	4	14.63	Negative
Perfluorodecanoic acid (PFDA)	513	26	90	16	4	14.63	Negative
Perfluorododecanoic acid (PFDoA)	613	56	90	12	4	15.79	Negative
Perfluorododecanoic acid (PFDoA)	613	16	90	28	4	15.79	Negative
Perfluoroheptanoic acid (PFHpA)	363	31	90	8	4	11.8	Negative
Perfluoroheptanoic acid (PFHpA)	363	16	90	16	4	11.8	Negative
Perfluorohexanesulfonic acid (PFHxS)	398.9	98	150	40	4	11.9	Negative
Perfluorohexanesulfonic acid (PFHxS)	398.9	79	150	44	4	11.9	Negative
Perfluorohexanoic acid (PFHxA)	313	26	70	4	4	10.3	Negative
Perfluorohexanoic acid (PFHxA)	313	11	70	20	4	10.3	Negative
Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	615	57	53	8	4	15.9	Negative
Perfluoro-n-[13C4]butanoic acid (MPFBA)	217	17	59	4	4	3.9	Negative
Perfluoro-n-[13C54]pentanoic acid (M5PFPeA)	268	22	62	4	4	8	Negative
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	421	37	59	4	4	12.9	Negative
Perfluoro-n-[13C8]octanoic acid (M8PFOA)	421	17	59	16	4	12.9	Negative
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	472	42	59	8	4	13.9	Negative
Perfluoro-n-[13C9]nonanoic acid (M9PFNA)	472	22	59	16	4	13.9	Negative
Perfluoro-n-butanoic acid (PFBA)	213	16	70	4	4	3.9	Negative
Perfluorononanesulfonate (L-PFNS)	548.9	98	159	48	4	14.6	Negative
Perfluorononanesulfonate (L-PFNS)	548.9	79	159	48	4	14.6	Negative
Perfluorononanoic acid (PFNA)	463	41	90	8	4	13.89	Negative
Perfluorononanoic acid (PFNA)	463	21	90	16	4	13.89	Negative
Perfluoro-n-pentanoic acid (PFPeA)	263	21	62	4	4	8	Negative
Perfluorooctanesulfonic acid (PFOS)	498.9	98	150	44	4	13.9	Negative
Perfluorooctanesulfonic acid (PFOS)	498.9	79	150	84	4	13.9	Negative
Perfluorooctanoic acid (PFOA)	413	36	90	8	4	12.9	Negative
Perfluorooctanoic acid (PFOA)	413	16	90	16	4	12.9	Negative
Perfluorotetradecanoic acid (PFTA)	713	66	110	12	4	16.71	Negative
Perfluorotetradecanoic acid (PFTA)	713	16	110	28	4	16.71	Negative
Perfluorotridecanoic acid (PFTrDA)	663	61	90	12	4	16.25	Negative
Perfluoroundecanoic acid (PFUnA)	563	51	90	8	4	15.25	Negative
Perfluoroundecanoic acid (PFUnA)	563	16	90	24	4	15.25	Negative

CONFIDENTIAL DOCUMENT

Attachment 3 - Triple Quadrupole Acquisition Method for GenX

Acquisition Method Info-GenX

Method Name	PFAS_GenX_IDA_ACQ.m
Method Path	D:\MassHunter\methods\PFAS_GenX_IDA_ACQ.m
Method Description	Target PFAS Isotope Dilution_Acquisition for GenX

Device List

Multisampler
Binary Pump
Column Comp.
QQQ

MS QQQ Mass Spectrometer

Ion Source	AJS ESI	**Tune File**	D:\MassHunter\Tune\QQQ\G6470A \atunes.TUNE.XML
Stop Mode	No Limit/As Pump	**Stop Time (min)**	1
Time Filter	On	**Time Filter Width (min)**	0.07
LC->Waste Pre Row	N/A	**LC->Waste Post Row**	N/A

Time Segments

Index	Start Time (min)	Scan Type	Ion Mode	Div Valve	Delta EMV	Store	Cycle Time (ms)	Triggered?	MRM Repeats
1	0	DynamicMRM	ESI+Agilent Jet Stream	To MS	200	Yes	500	No	3

Time Segment 1

Scan Segments

Cpd Name	ISTD?	Prec Ion	MS1 Res	Prod Ion	MS2 Res	Frag (V)	CE (V)	Cell Acc (V)	Ret Time (min)	Ret Window	Polarity
HPDO-DA (GenX)	No	285	Unit/Enh (6490)	169	Unit/Enh (6490)	162	1	1	10.5	2	Negative
M3HPDO-DA	No	287	Unit/Enh (6490)	169	Unit/Enh (6490)	159	1	1	10.5	2	Negative
MPFOA	Yes	417	Unit/Enh (6490)	372	Unit/Enh (6490)	70	6	4	12.9	1	Negative

Scan Parameters

Data Stg	Threshold
Centroid	0

Source Parameters

Parameter	Value (+)	Value (-)
Gas Temp (°C)	150	150
Gas Flow (l/min)	5	5
Nebulizer (psi)	15	15
SheathGasHeater	200	200
SheathGasFlow	12	12
Capillary (V)	3500	2500
VCharging	500	0

Chromatograms

Chrom Type	Label	Offset	Y-Range
TIC	TIC	0	10000000

Instrument Curves

Actual

Name: Multisampler — Module: G7167A

Sampling Speed

Draw Speed	100.0 µL/min
Eject Speed	400.0 µL/min
Wait Time After Drawing	1.2 s

Injection

Needle Wash Mode	Multi-wash
Injection Volume	5.00 µL

Multi-wash

Report generation date: 03-May-2019 08:38:58 AM

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APPENDIX F

Project Personnel Resumes

Stewart H. Abrams, PE

Principal/Vice President

Corporate Director of Remediation Technology



Mr. Abrams has over 35 years of experience in soil and groundwater remediation, water treatment, Brownfields redevelopment, and engineering design. He is an expert in remedial technology, with particular emphasis on bioremediation, chemical oxidation/reduction technologies, soil vapor extraction, and air sparging. He also has extensive experience in water process engineering, notably water and wastewater treatment and industrial waste treatment for organics and metals. He is also involved in the fields of emerging contaminants and sustainable remediation. Before joining Langan, Mr. Abrams held positions of National Practice Leader for Remediation at a national consulting and engineering company and as vice president of operations at an environmental R&D firm. He is the founder of Langan's treatability facility, a joint venture with the New Jersey Institute of Technology (NJIT), whereby Langan personnel perform a wide variety of treatability and research studies for soil, groundwater and sediments.

Selected Projects & Activities

Emerging Contaminants – Technical Director for a complex treatment upgrade project. Onsite pump and treat systems that do not currently address 1,4-dioxane, are being upgraded via the addition of an advanced oxidation process (AOP). Offsite, a public water supply, which had included air stripping for trichloroethylene removal, requires upgrade to address 1,4-dioxane and PFAS. AOP coupled with granular activated carbon is the selected approach. Treatability studies for various AOP processes; as well GAC were performed prior to final to final process selection. For the Interstate Technology Regulatory Council (ITRC), Mr. Abrams is one of a handful of experts on PFAS treatment providing seminars nationwide.

Peer Review Activities – Mr. Abrams serves routinely as an independent third party reviewer of remediation plans for Fortune 500 clients. This work is often performed in a collaborative panel format with other reviewers.

Technology Development Consulting. Mr. Abrams has an ongoing consulting relationship with a venture-capital technology start-up in the PFAS treatment field. He advises the firm on the engineering aspects of various developmental technologies and educates their senior research scientists on the issues related to the environmental field.

Expert Testimony. Mr. Abrams has served as a testifying expert witness in both State and Federal Court. He has also been deposed and has prepared expert reports for submission as evidence.

Experimental Work – At Langan's Treatability Facility at the NJIT, recently directed a bench scale research test of an emerging technology for PFOS treatment, i.e., electrocoagulation. Findings showed the electrochemical

Education

M.Sc., Environmental Sciences
Rutgers University, 1991

B.Sc., Civil Engineering
Rutgers University, 1981

B.A., Political Science
Rutgers University, 1981

Professional Registration

Professional Engineer (PE): NJ, NY, PA, NC

Affiliations

Battelle Conference on Bioremediation and Sustainable Remediation Technologies 2019 – Steering Committee Member

New Jersey Institute of Technology (NJIT) – Albert Dorman Honors College – Board of Visitors (2018-present)

PFAS Experts Symposium 2019

Remediation Journal – Editorial Board (2019 – present)

Sustainable Remediation Forum (SURF) (2009 – present)

ITRC Perfluorinated Contaminants Committee (2017 – present) – Subcommittee on Remediation & Treatment

ITRC Integrated Chlorinated Site Remedy Committee (2007 – 2009)

NJDEP Advisory Council on Environmental Justice (2002 - 2004, 2006 - 2013)

Governor-elect Corzine Environmental Policy Transition Committee (2005 – 2006)

NJDEP Remediation Stakeholders Committee (2007 - 2009)

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adsorption may be a feasible as a more cost-effective alternative to conventional GAC.

Thermal Remediation – Directed the installation and operation of an in-situ Thermal Conductive Heating project to remediate PCE and naphthalene in both groundwater and soil. System successfully remediated soils to stringent NJDEP standards. Subsequently, directed the use of bioremediation "polishing" to remove

Injectable Activated Carbon – Providing technical direction for several projects utilizing this technology for the remediation of VOCs in sources areas.

MTBE/Propane Bioaugmentation – First use of propane infusion at a gasoline station to bioremediate MTBE. Combined use of low-level propane with oxygen infusion has been shown to promote the direct remediation of ethers, notably MTBE, with concentrations driven to non-detect in less than four months. Used bioaugmentation.

Zero Valent Iron – Directed the use of injected zero-valent iron for remediating chlorinated solvents at a Brownfield site. Pneumatic fracturing was used to inject 500,000 pounds of micro-scale iron into the shallow bedrock source zone. This process resulted in remediation of the 20,000-square-foot source zone and conditions favorable to the long-term natural attenuation of the plume.

Sulfate Reduction – Directing the use of sulfate addition (Epsom salts) in the remediation of benzene-contaminated soils and groundwater. Microcosm and column treatability studies completed. Directed use of gypsum for full scale sulfate reduction at Brownfield site.

Emulsified Zero Valent Iron (EZVI) – Directed combined use of emulsified vegetable oil and zero valent iron (NASA Patented technology) at a two separate sites: A Brownfield site in Brooklyn, NY and a dry cleaner in New Jersey. NJ site combined EZVI with pneumatic fracturing injection under the floor of the operating dry cleaner.

Ex-situ chemical oxidation mixing –Technical Director of large iron-activated persulfate soil mixing project. Contaminants in soil and groundwater include primarily chlorinated benzenes. Mixing accomplished via "Lang Tool". On-site laboratory utilized for oxidation optimization in real-time.

In-situ chromium remediation – Directed the in-situ remediation of hexavalent chromium through the use of calcium polysulfide (CaSx) addition injection. Injections performed both inside the building as well as outside. Pneumatic fracturing used for injection in shallow bedrock. Monitoring showed that concentrations in the source area groundwater declined to non-detect from 15,000 ug/l in less than a week.

Pump & Treat – Directed the design, installation and operation of a pump and treat system located in southeastern Pennsylvania. Unit processes include filtration, air stripping and granular activated carbon. Constructed in 2013, the system mitigates migration of a plume into a potable water supply.

New Jersey Turnpike, Cranbury, NJ – Managed design (pilot testing, conceptual, and plans and specifications) of a remediation system consisting of 77 air-sparging (AS) wells and 37 soil vapor extraction (SVE) wells for the

New Jersey Turnpike at the Molly Pitcher Service Area. Oversaw installation and system startup. Innovative one-day AS/SVE pilot test. Volatilization and destruction of 10,000 gallons of subsurface free product. First use of catalytic oxidation at a Turnpike facility for air-pollution control.

Woodlands Superfund Site, Woodland Twp., NJ – As a subcontractor to *de maximis, inc.,* directed the subsurface design, installation and testing of a major air sparging/SVE system (+200 vertical wells) for a Superfund site in southern New Jersey. Work involved pilot testing of air sparging, SVE pneumatic modeling, early use of CPT/MIPS, and an extensive well-installation using sonic drilling.

GE – Schenectady, NY – Served as technical director for the design of a comprehensive remediation program for a New York state site involving the bioremediation of three VOC plumes and the collection and treatment of leachate seeps. Supported GE Researchers in performing flow-through laboratory column tests using innovative sulfate reduction techniques to remediate a BTEX plume. Led the scale-up of this column study into a design.

BROS Superfund Site, Bridgeport, NJ – Directed extensive laboratory treatability studies and design scale-up of aerobic and anaerobic bioremediation, in-situ Fenton's reagent for chlorinated solvents, and BTEX and cometabolic testing of BCEE degradation. Bench testing was correlated to a site conceptual model, with particular tests tailored to conditions in specific segments and zones of the aquifer. This included detailed work plans for submission to USEPA Laboratories in Cincinnati and Oklahoma.

TCE & Chromium combined – Site with both Cr+6 and TCE contamination being contained by a pump-and-treat system. Pursued pump-and-treat shutdown strategy through laboratory testing and a comprehensive feasibility study. Zero-valent iron, bioremediation, calcium polysulfide, and ferrous sulfate were all lab-tested. Directed the field pilot testing of bioaugmentation and nano-scale zero-valent iron at the sites. Bioaugmentation selected for full scale, since it was highly effective for both Cr^{+6} and TCE.

TCE Cometabolic Bioaugmentation – Innovative first use of aerobic bioaugmentation for the shutdown of a 20-year-old pump-and-treat system in 1995. TCE and daughter products were the contaminants of concern. Shutdown occurred over six months through the repeated injection of bioaugmentation culture.

Zero Valent Iron for P&T Shutdown – Directed the use of injected zero-valent iron at a northern New Jersey site for the remediation of chlorinated solvents. Pneumatic fracturing used to inject micro-scale iron into the recovery zone. Temporary shutdown permission obtained from NJDEP. Injection was a significant success, resulting in permanent cessation of pump-and-treat activities at the site.

TCE Bioaugmentation – Directed the injection of emulsified vegetable oil, followed by bioaugmentation culture, in an aquifer contaminated with PCE. Aquifer preconditioned with baker's yeast and sugar, prior to injection of EVO. Bioaugmentation activities completed in April 2012. Second source area was remediated via in-situ thermal remediation in 2014.

Horizontal Injection Wells for Permanganate Injection – Directed the injection of over 400,000 pounds of potassium permanganate for chlorinated solvent destruction at a large Brownfields site in Maryland. Extensive use of

horizontal wells. Work performed under a fixed-price contract with blended finite insurance. This project awarded the prestigious Phoenix Award for EPA Region 3 by the National Brownfields Association.

Selected Publications, Reports, and Presentations

PFAS Experts Symposium: White Paper. Position paper prepared by a group of 40 experts convened under the auspices of Remediation Journal. September 2019.

Treatment Technology for Perfluorinated Compounds. Presented at ITRC PFAS Annual Meeting. Boston, MA. March 2019.

Treatment Technology for Perfluorinated Compounds. Presented at ITRC PFAS Training Program. Montclair State University, New Jersey. October 2018.

Use of In-Situ Remediation Technology at Brownfield Sites – Case Studies. Presented at Battelle Symposium on Remediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA. (April 2018).

Air Sparging Technology Status Review: Advanced Design and Implementation Tools. Joint with Omer Uppal. Presented at Battelle Symposium on Bioremediation of Chlorinated and Recalcitrant Compounds, Palm Springs, CA. (May 2016).

Evaluation of Remedial Alternatives via Three Bench-Scale Treatability Studies for a Mixed Dense Non-Aqueous Phase Plume. Presented at Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Jacksonville, FL. (June 2013).

Geng, X., Boufadel, M.C., Lee, K., Abrams, S., Suidan, M. (2014). Biodegradation of subsurface oil in a tidally influenced sand beach: Impact of hydraulics and interaction with pore water chemistry. *AGU Water Resources Research, 51,* 3193 – 3218.

From Flask to Field – The Role of Treatability and Pilot Tests in Remediation. Presented to Association of Environmental & Engineering Geologists (AEG) New York/Philadelphia Section, Somerset, NJ. (December 2014).

Evaluation of Remedial Alternatives via Three Bench-Scale Treatability Studies for a Mixed Dense Non-Aqueous Phase Plume. Presented at Battelle International Symposium on Bioremediation and Sustainable Environmental Technologies, Jacksonville, FL. (June 2013).

Sustainable Remediation and SURF. Presented at RE3 Conference, Atlantic City, NJ. (November 2012).

Application of Pneumatic Fracturing and Zero-valent Iron for a Maryland Brownfield Site. Presented at Battelle International Symposium on In-Situ and Sustainable Technologies, Monterey, CA. (May 2012).

Integrating Remediation and Redevelopment. Presented at Honeywell "All-Hands" RES Meeting, Morristown, NJ. (December 2011).

Assessing Innovative Remedial Technologies. Presented to Environmental Bankers Association, Charlotte, NC. (January 2009).
Time, Cost & Effectiveness: Assessing Innovative Remedial Technologies. Presented at ITRC/Langan Conference, East Brunswick, NJ. (June 2008).

Remediation Technology Pitfalls. Presented at Prudential Realty Investors Conference, New Orleans, LA. (December 2008).

Selecting Innovative Remedial Technologies. Presented at NJ Innovative Environmental Technology Conference, Newark, NJ. (October 2007).

Bioaugmentation for Site Remediation. Presented at AWMA Central New York Conference, Syracuse, NY. (March 2007).

Selecting Innovative Remedial Technologies. Presented at NJ Innovative Environmental Technology Conference, Newark, NJ. (October 2007).

Use of Persulfate for MTBE Remediation. Presented by Abrams, S.H. & E. Mott-Smith at AEHS West Conference, San Diego, CA. (March 2006).

Innovative Approaches to Chlorinated Solvent Remediation. Presented to Conference of Envirogen clients. Oak Brook, IL. (May 2002).

Bioremediation. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (October 2001).

Biosparging and Bioventing for In-situ Cleanup. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (April 1995).

NPDES Permitting in the Pulp & Paper Industry. Presented at Delaware Valley Section Meeting, Yardley, PA. (November 1991).

Strategies to Minimize Liabilities Under the New Jersey Clean Water Enforcement Act. Presented to New Jersey Business & Industry Association, West Windsor, NJ. (October 1990).

Meeting EPA's Organic Chemicals Plastics and Synthetic Fibers Pretreatment Regulations. Presented at Mid-Atlantic Industrial Waste Conference, Harrisburg, PA. (June 1989).

Design of Packed Columns for Water Treatment. Guest Lecturer at Rutgers Graduate School, New Brunswick, NJ. (March 1987).

Workshop on Response to Volatile Organics in Public Water Supplies. Presented to water suppliers at Technology transfer session. Edison, NJ (March 1987).

Christopher McMahon, CHMM

Associate

Brownfield Redevelopment, Environmental Site Assessments, Site Investigation/Remedial Actions, Vapor Intrusion Investigations



15 years in the industry ~ 9 years with Langan

Mr. McMahon is a consulting geologist whose primary focus within his tenure at Langan has been in providing environmental support to redevelopment sites within the metropolitan New York area. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs, and New York City Office of Environmental Remediation E-Designated and New York City Voluntary Cleanup Program sites. These projects have included the completion of Phase I environmental site assessments, Phase II and remedial investigations, UST closures, NYSDEC closures and remedial excavation oversight for off-site disposal and/or treatment. Mr. McMahon also has significant field experience including implementation and management of all phases of environmental projects involving soil, sediment, groundwater, surface water, and soil vapor contamination including Phase I inspections, Phase II site investigations, Remedial Investigations, and Remedial Actions.

Many of these projects have included his oversight of remedial actions to clean up or mitigate hazardous waste sites in rural, urban, and industrial settings. These remedial action designs have included in-situ soil remedial injections, contaminated soil removal/disposal management plans, and soil vapor intrusion mitigation systems including advanced vapor barriers and sub-slab depressurization systems.

Selected Projects

NYSDEC Brownfield Redevelopment 363 and 365 Bond Street, Brooklyn, NY
NYSDEC Brownfield Redevelopment, Fashion Outlets of Niagara Falls, NY
NYSDEC Spills Redevelopment, 540 West 26th Street, New York, NY
NYSDEC Spills Redevelopment, 101 Murray Street, New York, NY
NYSDEC Spills Redevelopment, 110 University Place, New York, NY
NYSDEC Spills Redevelopment, Grant Park, Yonkers, NY
NYSDEC Spills Redevelopment, The Shops At Nanuet, Nanuet, NY
NYCOER E-Designation Remediation, 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, 53 West 53rd Street, New York, NY
NYCOER E-Designation Remediation, 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, 508 West 24th Street, New York, NY
NYSDEC (Region 7) Site Remedial Investigation, Hillcrest, NY
Former Manufactured Gas Plant Site Remedial Investigation, Geneva, NY
NYSDEC (Region 2) Superfund Site Remedial Investigation, Jamaica, NY
NYSDEC (Region 5) Superfund Site Remedial Investigation, Whitehall, NY
Former Manufactured Gas Plant Site Investigation/Confidential Client, Mechanicville, NY
Remedial Investigation of Industrial Facility/Confidential Client, Batavia, NY
OGS Geotechnical Survey for Construction, Rome, NY

Education

B. A., Geology, State University of New York College at Potsdam
With Honors in Geology and Environmental Science

Professional Registration

Certified Hazardous Materials Manager (CHMM)

OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response

OSHA Certification for Hazardous Waste Site Supervisor

Red Cross CPR & First Aid Training

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ANTHONY MOFFA, JR., ASP, CHMM, COSS, CSP

ASSOCIATE/CORPORATE HEALTH AND SAFETY MANAGER

Anthony is Langan's Corporate Health & Safety Manager and is responsible for managing health and safety compliance in all Langan office locations. He has nearly 20 years of experience in the health and safety field. He is responsible for ensuring compliance with all federal and state occupational health and safety laws and development and implementation of corporate health and safety policies. His responsibilities include reviewing and updating Langan's Corporate Health and Safety Program and assisting employees in the development of site specific Health & Safety Plans. He maintains and manages health and safety records for employees in all Langan office locations including medical evaluations, respirator fit testing, and Hazardous Waste Operations and Emergency Response training. He is also responsible for documentation and investigation of work-related injuries and incidents and sharing this information with employees to assist in the prevention of future incidents. He is also the chairman of the Corporate Health & Safety Committee and Health & Safety Leadership Team that meet periodically throughout the year. He is responsible for coordinating and providing health and safe training to Langan employees. He was formerly the Environmental, Health and Safety Coordinator at a chemical manufacturer. His experience included employee hazard communications, development of material safety data sheets for developed products, respirator fit testing and conducting required Occupational Health & Safety Association and Department of Transportation training.



EDUCATION

B.S., Physics
West Chester University

PROFESSIONAL REGISTRATION

Associate Safety Professional (ASP)

Certified Hazardous Material Manager (CHMM)

Certified Occupational Safety Specialist (COSS)

Certified Safety Professional (CSP)

AFFILIATIONS

Pennsylvania Chamber of Business & Industry

Chemical Council of New Jersey

New Jersey Business & Industry Association

Geoprofessional Business Association

American Society of Safety Professionals

Amanda Forsburg, CHMM

Project Scientist

Environmental Oversight, Remedial Investigation, Remedial Action



9 years in the industry ~ 9 years with Langan

Ms. Forsburg has over nine years of experience that includes working on environmental projects, particularly investigation and remediation of environmental contamination. She has assisted in remedial investigations and has been involved in the collection of field data and assisted in the preparation of reports and other environmental regulatory documents for projects in New Jersey and New York.

Ms. Forsburg's field experience includes investigation and remediation of contaminated sites including the collection of soil, groundwater, and air samples for environmental analysis, supervision of injections and remedial excavations, and the completion of air monitoring to ensure OSHA compliance on HAZWOPER sites. Office experience includes management of field investigation and remediation as well as completion of proposals, Phase I Environmental Site Assessments, remedial investigation reports, and remedial closure reports in support of these activities. Ms. Forsburg has worked on projects under regulatory oversight of the New Jersey Department of Environmental Protection (NJDEP), New York State Department of Environmental Conservation (NYSDEC), and New York City Office of Environmental Remediation (NYCOER).

Selected Projects

NYSDEC Brownfield Redevelopment, Remedial Investigation and Remediation Action – 363 and 365 Bond Street, Brooklyn, NY
NYSDEC Brownfield Redevelopment, Remedial Investigation – Fashion Outlets of Niagara Falls, NY
NYSDEC Spills Redevelopment, Remedial Action – 540 West 26th Street, New York, NY
NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 101 Murray Street, New York, NY
NYSDEC Spills Redevelopment, Remedial Investigation and Remedial Action – 110 University Place, New York, NY
NYSDEC Spills Redevelopment, Remedial Action, Lowe's Home Centers, Kings Plaza Site Redevelopment – Brooklyn, NY
NYSDEC Spills Remediation, Con Edison Soil Remediation - Bronx, NY
NYSDEC Spills Remediation, Con Edison NAPL Monitoring and Removal, Various Sites – Manhattan, NY
NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 400 Park Avenue South, New York, NY
NYCOER E-Designation Remediation and Volunteer Cleanup Program Redevelopment, Remedial Investigation and Remedial Action – 540 West 53rd Street, New York, NY
Remedial Action – 508 West 24th Street, New York, NY

Education

B.A., Environmental Studies
Bucknell University

B.A., Environmental Geology
Bucknell University

Professional Registration

Certified Hazardous Materials Manager (CHMM)

OSHA 29 CFR 1910.120 Certification (HAZWOPER)

Professional Affiliations

New Jersey Society of Women Environmental Professionals (NJSWEP)

Association of Environmental and Engineering Geologists – *New York-Philadelphia Chapter Secretary*

Professional Women in Construction - *New York Chapter Program Committee*

Alliance of Hazardous Materials Professionals New Jersey Chapter (AHMPNJ)

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NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 505 W 19th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 53 West 53rd Street (MoMA Expansion), New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 525 West 52nd Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 412 Greenwich Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 508 West 24th Street, New York, NY
NYCOER E-Designation Remediation, Remedial Investigation and Remedial Action – 68 Charlton Street, New York, NY
NYCDEP Remediation, Remedial Investigation and Remedial Action – 225 East 39th Street, New York, NY
Sky View Parc Mixed-Use Construction, Sub-Slab Vapor Ventilation System Construction – Flushing, NY
Liberty Plaza Redevelopment Site, Remedial Investigation and Remedial Action – Randallstown, MD
Former Penick Corporation Facility RCRA Site, Remedial Investigation and Remedial Action – Montville, NJ
Former Pan Graphics Facility, Soil and Groundwater Remediation – Garfield, NJ
Former Pan Graphics Facility, Sediment Investigation and Cap Construction – Lodi, NJ
Former Flintkote Facility, Soil and Groundwater Investigation – East Rutherford, NJ
Interport Site, Impacted Soils Delineation and Remediation – Newark, NJ
Lowe's Home Center Store, Sub-Slab Vapor Ventilation System O&M – Eatontown, NJ
Lowe's Home Center Store, Sub-Slab Methane Gas Ventilation System O&M – Woodbridge, NJ
Lowe's Home Center Store, Sub-Slab Vapor Barrier Construction – Rosedale, NY
Stop & Shop, Groundwater and Indoor Air Monitoring – Emerson, NJ
Stop & Shop, Methane Gas Ventilation System O&M – Raritan, NJ
Stop & Shop, Sub-Slab Vapor Ventilation System O&M – New Paltz, NY
Former First Aviation Services Facility, Groundwater Monitoring and Remediation, Teterboro, NJ
Phase I Environmental Site Assessments and Due Diligence Investigations, Various Sites – NJ and NY

Steven Ciambruschini, PG, LEP

Principal/Vice President
Environmental Site Assessments/Investigations, Brownfield Remediation, UST Management



33 years in the industry ~ 28 years with Langan

Mr. Ciambruschini has over 30 years of experience in hydrogeologic and environmental investigations including management of environmental and geotechnical investigations relating to petroleum and chlorinated solvent spill sites, underground storage tank sites, manufactured gas plant sites, landfills, wastewater treatment facilities and industrial/commercial sites. His experience includes managing environmental compliance audits, remedial investigation, pre-acquisition due diligence and permitting assessment, feasibility studies and design, construction and operation of complex innovative remediation systems to treat, contain and recover contaminated soil and groundwater. These projects are managed under various NJDEP, PADEP, NYDEC, NYCDEP and CTDEP programs. Mr. Ciambruschini provides consultation to a diverse group of clients including private developers, utilities, retail and industrial facilities and is expert in assessing remediation options and funding options under various state and federal grant, loan and tax reimbursement programs including Brownfield programs.

Selected Projects

- Brodson Property, Montville NJ, (RCRA, NJDEP ACO Cleanup)
- Carroll Gardens, Brooklyn, NY (NY Brownfield, EPA Superfund, OER E-designated Site)
- Con Edison Appendix B Spill Sites - Various Locations, NY
- Former MGP Site, Brooklyn, NY (VCP Site)
- Extell Development, Hudson Yards, New York, NY (NYC E-designated, NYS Brownfield Site)
- Pan Graphics, Bergen County, NJ (ISRA, LSRP)
- New Jersey Turnpike General Environmental Services Contract, Various Sites, NJ
- Liberty Science Center, Jersey City, NJ (EO 215)
- Blue Back Square, West Hartford, CT (UST, Transfer Act, Brownfield)
- Hershey, Act II Investigation (PA VCP)
- Hershey, Naugatuck, CT (CT Transfer Act)
- Halby Chemical Sites, Various Sites, DE (CERCLA)
- Unisys, Middletown CT, (CT Transfer Act, Brownfield)
- Ryder Rental, Various Sites in CT (CT Transfer Act)
- St. Marks Avenue, Brooklyn, NY (Vapor Mitigation)
- Pan Graphics, Lodi, NJ (Eco Risk Assessment, LSRP)

Education

M.S., Geology
Montclair State University

M.A., Environmental Science
Montclair University

B.S., Environmental Science
Cook College, Rutgers University

Professional Registration

Professional Geologist (PG) in NY, DE, KY

Licensed Environmental Professional (LEP) in CT

Underground Storage Tank License in NJ

Affiliations

National Ground Water Association

Association of Ground Water Scientists and Engineers

American Association of Petroleum Geologists

Environmental Professionals of Connecticut

American Bar Association (ABA)

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Ashley Sandve

Staff Engineer
Environmental Engineering



4 years in the industry ~ 3 years with Langan

Ms. Sandve's experience includes field work and office work on environmental investigation and remediation projects. Her field work experience includes soil, soil vapor, indoor air and groundwater sampling; drilling oversight; air monitoring; soil management; and remediation oversight, including excavation and off-site soil disposal. Her office work experience includes environmental site background research, state environmental database research, EQuIS database management, data evaluation, remedial design, and report work, including, but not limited to, Phase I ESAs, Preliminary Assessment/Site Investigations, Spill Closure Reports, Remedial Investigation Reports, Remedial Action Work Plans, and Remedial Action Reports. Ms. Sandve is proficient in excel and database management and has ample experience researching sites through the online NJDEP and NYSDEC portals.

Selected Projects

- 540 West 26th Street, NYSDEC Spills Redevelopment, Remedial Action, New York, NY
- 412 Greenwich Street, NYCOER E-Designation Remediation, New York, NY
- 125 Greenbush Road, Soil and Groundwater Investigation, Orangeburg, NY
- 12 West 48th Street, Phase II Environmental Investigation, New York, NY
- 68 Charlton Street, NYCOER E-Designation Remediation, New York, NY
- Phase I Environmental Site Assessments and Due Diligence Investigations, Various Sites, NJ and NY
- Former Penick Corporation Facility RCRA Site, Data Management, Remedial Investigation, and Remedial Action, Montville, NJ
- Former Hess Terminal, Remediation Oversight, Edgewater, NJ
- Stop & Shop, Soil Vapor Intrusion Investigation, Emerson, NJ
- ThorLabs, Groundwater and Soil Vapor Intrusion Investigation, Andover, NJ
- Bright Horizons, Preliminary Assessment and Site Investigation, Roseland, NJ
- Former Flintkote Facility, East Rutherford, NJ
- Paragon, Site Investigation, Cherry Hill, NJ

Education

B.E., Environmental Engineering
Stevens Institute of Technology

Professional Registration

OSHA 29 CFR 1910.120
Certification (HAZWOPER)

LANGAN

DANA MONZ

DATA ANALYST

CAD/GIS

1 year in the industry

Proposed Title: Field Technician

Ms. Monz is a data analyst with experience in database design, management and visualization using EarthSoft's EQuIS™ database in support of environmental site characterizations for sites regulated under federal and state compliance programs. Her expertise includes integration of analytical databases and coordination with GIS users.

In her current role Dana, assists project teams with planning and implementation of project databases and data visualization. This includes coordinating with field staff and laboratories to define, workflows, SOPs and ensure the receipt of the proper deliverables for field and lab data; reviewing and managing project data and information using EQuIS™, Microsoft® Access, and Excel; generating data reports including tables, graphs, charts, and GIS compatible files; and generating and reviewing electronic data deliverables following project or agency specific formats.

SELECTED PROJECTS

Gowanus Canal Northside, Brooklyn, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

2 Ingraham Street, Brooklyn, NY – Data Analyst. Collected soil samples to investigate Areas of Concern (AOCs) established in the Supplemental Remedial Investigation Work Plan (SRIWP). Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a supplemental remedial investigation of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables, including sample summary tables and tag tables. Submitted data to NYSDEC.

Willets Point, Brooklyn, NY – Data Analyst. Coordinated with project team and determined appropriate sample nomenclature for the site, which contained multiple areas of concern. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Responsible for coordination with GIS team to get data from EQuIS into the site specific GIS web viewer. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.



Education

B.A., Environmental Studies
Colgate University

Professional Registration

OSHA 40-Hour HAZWOPER

OSHA 10-Hour Construction

Work History

Langan
Data Analyst
7/16/2018 – Present

41 Kensico Drive, Mount Kisco, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Review NYSDEC Screening and Assessment of Contaminated Sediment (SACS) Freshwater Sediment Guidance Values and NYSDEC Part 703.5, Division of Water Technical and Operational Guidance Series (TOGs) (1.1.1) Class C criteria and load both sets to EQuIS database to use as comparison criteria for the analysis of data.

550 W 20th Street, New York, NY – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a Phase II Environmental Site Investigation. Review New York City Department of Environmental Protection (NYCDEP) Limitations for Effluent to Sanitary or Combined Sewers and load comparison criteria to EQuIS for analysis of DEP Effluent Discharge Sample. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS.

EQuIS Management and NYSDEC deliverables – Data Analyst. Loaded and maintained soil, groundwater, and soil vapor data in an EQuIS database for a remedial investigation and waste characterization of a New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) site. Provided final report deliverables including; sample summary; tags; and exceedance summary exports from EQuIS. Completed this work for the following projects:

- **82 King Street, New York, NY**
- **416 Kent Avenue, Brooklyn, NY**
- **420 Kent Avenue, Brooklyn, NY**
- **702 Nostrand Avenue, Brooklyn, NY**
- **ABC Block 25, 4-40 44th Avenue, Long Island City, NY**
- **ABC Block 26, 5-25 46th Avenue, Long Island City, NY**
- **ABC Block 27, 5-46 46th Avenue, Long Island City, NY**
- **335 Bond Street, Brooklyn, NY**
- **29 53rd Street, Brooklyn, NY**
- **Kings Plaza Shopping Center, Brooklyn, NY**
- **DuPont Stauffer Landfill, Newburgh, NY**
- **175-225 Third Street, New York, NY**
- **Silvercup West - NYPA, Queens, NY**
- **Greenpoint Marina, Brooklyn, NY**
- **491 Wortman Avenue, Brooklyn, NY**
- **Gerard and 146th Street, The Bronx, NY**
- **12 Franklin Street, Brooklyn, NY**
- **27-01 Jackson Avenue, Long Island City, NY**
- **627 Smith Street, Brooklyn, NY**
- **561 Greenwich Avenue, New York, NY**
- **23-10 Queens Plaza South, Long Island City, NY**
- **473 President Street, Brooklyn, NY**
- **4650 Broadway, New York, NY**
- **2420 Amsterdam Avenue, New York, NY**
- **10-37 Beach Street, New York, NY**
- **538-544 Hudson Street, New York, NY**
- **26-32 Jackson Avenue, Long Island City, NY**
- **1095 Southern Boulevard, The Bronx, NY**
- **432 Rodney Street, Brooklyn, NY**
- **300 West 122nd, New York, NY**

JOSEPH CONBOY

STAFF CHEMIST

ENVIRONMNETAL

Mr. Conboy has seven years of environmental chemistry, quality assurance, and environmental database management experience, with a current emphasis on validation of laboratory data for submittal to NJDEP via the New Jersey Data of Known Quality Protocols and to NYSDEC. Previous work experience includes performing validation of data for projects in USEPA Regions 2 and 3 while employing appropriate validation guidelines for each region, managing large data sets, updating appropriate regulatory limits, performing statistical evaluations, and preparing electronic data deliverables and report deliverables using the Earthsoft EQuIS database program, and acted as an intermediary between project managers, field staff, and laboratories. Mr. Conboy also has experience in field sampling techniques and maintains current OSHA HAZWOPER certification.



EDUCATION

B.Sc., Chemistry with a minor in Mathematics
Rowan University

CERTIFICATIONS & TRAINING

OSHA 40-Hour HAZWOPER 29 CFR 1910.120(e)(4) Certification

NJ Analytical Guidance and Data Usability Training

USEPA Data Validation Training

Earthsoft EQuIS Environmental Database Training

SELECTED PROJECTS

- 1400 Ferris, Bronx, NY – Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs and SVOCs including 1,4-dioxane, and tangentially used based on professional judgment to perform validation of PFAS data.
- Broome Street Parking Lot, NY - Completed validation of waste characterization data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOCs, SVOCs, herbicides, PCBs, pesticides, metals including mercury, ignitability temperature, pH, reactive cyanide, reactive sulfide, cyanide, and hexavalent chromium. Toxicity characteristic leachate procedure extraction data for VOCs, SVOCs, herbicides, pesticides, metals, and mercury were also validated.
- 215 North 10th Street, Brooklyn, NY - Completed validation of soil and groundwater data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data.
- 35 Commercial Street, Brooklyn, NY - Completed validation of soil data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.
- Suffolk Street, Lower East Side, NY- Completed validation of soil, groundwater, and soil vapor data and prepared the Data Usability Summary Report for submittal to NYSDEC. USEPA Region II

guidelines, with aide from National Functional Guidelines, were employed to perform validation of VOC, VOCs by USEPA TO-15, SVOC, SVOC SIM, herbicide, PCB, pesticide, metals, mercury, cyanide, hexavalent chromium, trivalent chromium data, and tangentially used based on professional judgment to perform validation of PFAS data.

- Managed a database for a confidential client containing 10+ years of environmental chemical data from multiple laboratories, requiring select data validation in accordance with New Jersey Data of Known Quality Protocols and identifying areas of delineation from historic field information. Once identified, NJDEP designated groundwater, surface water, soil, sediment, soil vapor, and custom screening criteria were researched and applied to each area, requiring individualized flagging for reporting.*
- Prepared the New Jersey Data of Known Quality Protocol Data Usability Evaluation and managed the database for a confidential client for a data set greater than 20 years old. A DUE or any validation effort was not prepared in the 20 years prior to current. This included data from variations of methods for volatile organic compounds, semivolatile organic compounds, total and dissolved metals, pesticides, herbicides, natural attenuation parameters, and per- and polyfluoroalkyl substances in multiple media.*
- Performed 200+ Stage 2a validations for a combined 87-acre USEPA designated Corrective Action site under the Resource Conservation and Recovery Act, including a quick-turn USEPA required PCB by soxhlet extraction investigation across multiple plants. Once a former train car painting facility, USEPA required a quick-turn PCB by soxhlet extraction soil investigation.
- Preparation of a quality assurance program for a confidential client in West Virginia. A quick turn QAPP was prepared in a service location new to the consultant, resulting in research into state requirements for data usability and auditing newly employed laboratories. The QAPP was understood to be prepared for groundwater only, but the client did not reveal the need for sediment and soil. Two QAPPs were submitted for review to governing agencies.*
- Used statistical software to determine a localized background upper confidence limit of chromium for a confidential client's sand and gravel site. Validation was used to confirm laboratory procedures, and data was used in ProUCL calculations to compare to researched background chromium levels for Pennsylvania soils. *
- Prepared daily perimeter dust and air monitoring summaries and validation of low level mirex data for a confidential client's superfund site. Low level mirex data was generated by university laboratories and subject to validation following national functional guidelines to aide in river clean-up, including sediment, surface water, and treatment system water matrices.*

**Project completed prior to employment at LANGAN.*

APPENDIX G

Citizen Participation Plan

LANGAN

NEW YORK
STATE OF
OPPORTUNITY.

Department of
Environmental
Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
28-90 Review Avenue Development

October 2019

Revised January 2021

C241236
28-90 Review Avenue
Long Island City
Queens County, New York

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* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **28-90 Review Avenue Owner, LLC ("Applicant")**
Site Name: **28-90 Review Avenue Development ("Site")**
Site Address: **28-90 Review Avenue**
Site County: **Queens County**
Site Number: **C241236**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at:
http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Queens Library at Court Square was originally identified as the document repository but has since permanently closed. This CPP has been updated to reflect Queens Library at Long Island City as the document repository. Documentation is provided within Appendix A. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

The site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- residents, owners, and occupants of the site and properties adjacent to the site;
- the public water supplier which services the area in which the site is located;
- any person who has requested to be placed on the site contact list;
- the administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html.

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the

investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/ implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page.

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process (Previously Completed):	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

The following major issues of public concern were identified: air quality, health of workers and community, nuisance odors, noise and construction-related traffic. These issues are of the most concern to adjacent businesses and residents. These issues will be addressed in the Community Air Monitoring Program (CAMP) and site-specific Health and Safety Program (HASP) for the project to be approved by the NYSDEC prior to the respective phases of work.

The NYSDEC "Scoping Sheet for Major Issues of Public Concern" was used to complete this section (see Appendix E).

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site is located at 28-90 Review Avenue in the Long Island City neighborhood in Queens, New York and is identified as Block 294 and Lot 106 on the Queens Borough Tax Map. The ±4.43-acre site is bounded by an asphalt-paved parking lot followed by Borden Avenue to the north, 29th Street followed by an asphalt-paved parking lot associated with a 4-story storage facility to the east, at-grade railroad tracks associated with the Metropolitan Transportation Authority Long Island Rail Road (MTA LIRR) lines to the south, and the Dutch Kills Creek (a tributary of the Newton Creek) to the west. The site is located in an urban area that is generally covered with roads, walkways, asphalt-paved parking lots and industrial/manufacturing buildings.

The site is currently developed with two single-story warehouse structures for automotive repair, several office trailers, and storage containers. Four buildings have been recently demolished including two two-story structures; a single-story warehouse structure with double-height ceilings for woodworking; a vacant single-story office building; and, a former fueling station canopy. The remainder of the site is comprised of asphalt-paved and asphalt milling-covered parking areas utilized for storage of passenger cars and tractor trailers.

According to the on-line New York Zoning and Land Use Map, the site is in an M3-1 manufacturing district. According to the New York City Economic Development Corporation Long Island City Industrial Business Zone Ratified Boundaries map dated September 2013,

the Site is within the Long Island City Industrial Business Zone. The adjoining parcels and surrounding area are used for industrial, parking, and transportation utility facilities.

History of Site Use, Investigation, and Cleanup

Historical operations at the proposed brownfield site include the Texaco petroleum bulk storage facility which operated between approximately 1915 and 1971. Based on available historical documentation, the Texaco petroleum bulk storage facility potentially contained six 275,000-gallon aboveground storage tanks containing crude oil, fuel oil, kerosene, naphthalene and gasoline, two 20,000-gallon ASTs containing an unknown substance, one 275-gallon waste oil AST, one 275-gallon lubrication oil AST, and one 150-gallon waste oil AST. Additionally, the Texaco site potentially contained four 15,000-gallon underground storage tanks (USTs) containing diesel fuel. Subsequent operations include a trucking depot and automobile repair and storage facility.

The site is currently registered in the NYSDEC Petroleum Bulk Storage (PBS) database as Facility No. 2-238643 for two 4,000-gallon diesel USTs closed-in-place in 1999, one 4,000-gallon diesel UST closed-removed in 1999, one 275-gallon AST of unspecified content closed-removed in 1999, one 5,000-gallon No. 2 fuel oil UST and two 275-gallon lube oil ASTs closed-removed in 2017, and for two 275-gallon waste oil ASTs and two 275-gallon No. 2 fuel oil ASTs closed-removed in 2018. The site is also listed in the NYSDEC PBS database as Facility No. 2-612851 for one 250-gallon waste oil AST that is currently in-service. Multiple releases were reported for the site between 1994 and 2019, all of which have been administratively closed by NYSDEC.

The primary contaminants of concern are free-phase petroleum (light non-aqueous phase liquid [LNAPL] and dense non-aqueous phase liquid [DNAPL]) in soil and groundwater. Soil and groundwater impacts associated with the presence of historic fill are not considered primary contaminants of concern. Additionally, petroleum-related volatile organic compounds (VOCs) and chlorinated VOCs were detected in soil vapor.

Prior to entry into the NYSDEC BCP, the site was the subject of environmental investigations, which are documented in the following reports:

- *Subsurface Investigation,* prepared by Tyree Brothers Environmental Services, Inc. (Tyree), dated May 1990
- *Monitoring Well Installation and Tank Tightness Testing Summary Letter*, prepared by Tyree, dated 1 October 1990
- *Various Correspondence Between Tyree and NYSDEC*, dated May 1990 through November 1991
- *Tank Closure Affidavit*, prepared by the Franklin Company, dated 11 May 1999

- *Remote Sensing Survey Ground Penetrating Radar Investigation*, prepared by Impact Environmental (Impact), dated 28 July 1999
- *Tank Closure Affidavit*, prepared by Alvin Petroleum Systems, Inc., dated 5 August 1999
- *Phase I ESA,* prepared by Tyree, dated September 2001
- *Subsurface Investigation*, prepared by Impact, dated 2 October 2008
- *Investigation Summary Report*, prepared by Impact dated 24 June 2009
- *Quarterly Monitoring Report*, prepared by Impact, dated 12 March 2010
- *Quarterly Monitoring Report*, prepared by Impact, dated 11 June 2010
- *Quarterly Monitoring Report*, prepared by Impact, dated 10 September 2010
- *Groundwater Monitoring Well Decommissioning Letter*, prepared by Impact, dated 9 August 2011
- *Summary of Remediation Completed*, prepared by Impact, dated 16 January 2012
- *Phase I ESA*, prepared by Impact, dated 25 June 2014
- *Draft Phase I ESA*, prepared by Partner, dated 23 September 2015
- *Phase I ESA*, prepared by Partner, dated June 8, 2016
- *Draft Phase I ESA*, prepared by ATC Group Services, LLC, dated 8 June 2017
- *Remedial Investigation Report*, prepared by Langan, dated 24 April 2019

A summary of relevant information from each report is presented below:

<u>Spill No. 9010146 – Tyree Brothers Environmental Services, Inc. (1990-1991)</u>

- Soil borings and groundwater monitoring wells were installed on the eastern and southern portions of the site to evaluate subsurface impacts associated with three 4,000-gallon diesel underground storage tanks (UST) and one aboveground storage tank (AST).
- Soil analytical results detected elevated concentrations of petroleum hydrocarbons adjacent to the USTs.
- Light non-aqueous phase liquid (LNAPL) was observed in several groundwater monitoring wells.

- The three USTs were tightness tested on 2 June 1990 and passed; however, it was reported that a leaking diesel pump had been repaired/replaced prior to the tank tightness testing.
- Approximately 8-gallons of free-phase product was removed from the wells via bailing as of 27 August 1990.
- Spill No. 9010146 was administratively closed on 8 November 1991 based on ongoing LNAPL recovery, review of monitoring well gauging results that showed a declining trend in LNAPL thickness, and results of quarterly groundwater monitoring.
- An affidavit dated 11 May 1999 documented the closure-in-place of three 4,000-gallon diesel USTs by filling to capacity with an unspecified inert material.

Spill No. 0807459 – Impact Environmental (1999-2012)

- A geophysical investigation completed in 1999 located subsurface metallic anomalies consistent with potential USTs.
- An affidavit dated 5 August 1999 documented the closure-in-place of two 550-gallon USTs via filling to capacity with concrete. It is unclear if these USTs are related to those identified by the geophysical survey.
- Additional subsurface investigation, quarterly groundwater monitoring, and LNAPL recovery was completed at the site by Impact between 2008 and 2012.
    - The 2008 Subsurface Investigation included the installation of six soil borings and six one-inch diameter groundwater monitoring wells. Observations of LNAPL in all groundwater monitoring wells installed and the detection of gasoline-related VOCs in groundwater samples was reported to NYSDEC, and Spill No. 0807459 was assigned on 2 October 2008.
    - Additional environmental investigation was completed at the site in 2009 to determine the extent of petroleum impacts and groundwater flow direction which included installation of six soil borings and six groundwater monitoring wells. Findings included strong petroleum odors and dark staining in soil, elevated concentration of gasoline-related VOCs in all groundwater monitoring wells, and a petroleum fingerprint analysis revealed that groundwater impacts were consistent with a combination of heavy fuel oil and gasoline. Based on the findings of the supplemental investigation, Monitored Natural Attenuation (MNA) was proposed.
    - Quarterly groundwater monitoring was performed between 2010 and 2011 and included the removal of NAPL.
    - Based on the quarterly monitoring reports submitted, NYSDEC administratively closed Spill No. 0807459 on 27 September 2010 and a letter dated 9 August 2011 documented the decommissioning of all on-site monitoring wells.

Phase I Environmental Site Assessments - Multiple (2001-2007)

Multiple Phase I ESAs have been prepared for the property between 2001 and 2017. The Phase I ESA dated 8 June 2017 was prepared by ATC on behalf of TA Realty LLC. No Recognized Environmental Conditions (RECs) or Controlled Recognized Environmental Conditions (CRECs) were identified in the 2017 ATC Phase I ESA. The following Historical Recognized Environmental Conditions (HRECs) were identified:

- Historical site use as a petroleum bulk storage facility containing six 275,000-gallon ASTs was observed between 1920 and 1970. Site use at the time of the Phase I ESA including a trucking, automotive repair, and storage facility was first identified on historical resources in 1970.
- NYSDEC Spill cases 0807459, 9600032, 9311731, 9010146, and 0803348 were assigned to the property and have been administratively closed between 1990 and 2010.
- Historical diesel and fuel oil storage and related investigations and remedial actions completed at the site.

Remedial Investigation Report – Langan (2019)

Based on the findings of previous environmental reports, the following potential Areas of Concern (AOCs) were identified and investigated during the 2018 Remedial Investigation completed by:

- AOC-1: Former Gasoline Filling Area
- AOC-2: Former Gasoline ASTs Area
- AOC-3: Former Gasoline Truck Filling Area
- AOC-4: Former Heavy Petroleum Distillate AST Area
- AOC-5: Former Pump House Area
- AOC-6: Former Garage Area
- AOC-7: Historical Operations as a Trucking Terminal

To evaluate these AOCs, the 2018 Remedial Investigation included installation of 25 soil borings and collection of 43 soil samples, installation of 14 groundwater monitoring wells and collection of 14 groundwater sampling, and installation of twelve soil vapor points and collection of twelve soil vapor samples throughout the site footprint. Findings of the Remedial Investigation revealed:

- Non Aqueous Phase Liquid (NAPL) was detected in 8 soil borings completed as part of the RI. Of these soil borings, light NAPL was observed within 2-feet of the observed groundwater interface in 4 soil borings and dense NAPL was observed between 10- and 13-feet bgs in 4 soil borings. Approximately 0.1 to 0.2 feet of light NAPL was detected in four groundwater monitoring wells and approximately 0.2 feet of dense NAPL was detected in one well.

- Evidence of petroleum impacts including odors, staining, or elevated concentrations of total VOCs as measured with a photoionization detector (PID) were observed in all 25 soil borings.
- Elevated concentrations of petroleum hydrocarbons and metals were detected in soil at concentrations exceeding the NYSDEC Soil Cleanup Objectives for the proposed use of the site.
- Elevated concentrations of petroleum hydrocarbons were detected in groundwater above the applicable NYSDEC groundwater standards at the site.
- Petroleum-related volatile organic compounds (VOCs) and chlorinated VOCs were detected in soil vapor.
- Based on the findings of the Remedial Investigation, Spill No. 1809113 was reported to the NYSDEC on 29 November 2018.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for industrial purposes.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant has completed a partial site investigation before it entered into the BCP. For the partial investigation, NYSDEC will determine if the data are useable.

In addition to the partial investigation, the Applicant will conduct an investigation of the site officially called a "supplemental remedial investigation" (SRI). This investigation will be performed with NYSDEC oversight. The Applicant developed and submitted a supplemental remedial investigation workplan in conjunction with the Application, which is subject to public comment.

The site investigation has several goals:

1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) identify the source(s) of the contamination;
3) assess the impact of the contamination on public health and the environment; and,
4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant submitted a draft "Supplemental Remedial Investigation Work Plan" to NYSDEC for review and approval. NYSDEC made the draft Supplemental Remedial Investigation Work Plan available to the public review during a 30-day public comment period which concluded on 9 August 2019.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a "significant threat," it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC)

Charles Post
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7016
charles.post@dec.ny.gov
(518) 402-9768

New York State Department of Health (NYSDOH)

Christine Vooris
Bureau of Environmental Exposure Investigation
Empire State Plaza, Corning Tower, Room 1787
Albany, NY 12237
christine.vooris@health.ny.gov
(518) 402-7860

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

Christopher McMahon, CHMM
Associate
300 Kimball Drive, 4th Floor
Parsippany, NJ 07054
cmcmahon@langan.com
(973) 560-4861

Locations of Reports and Information

Queens Library at Court Square was originally identified as the document repository but has since permanently closed. This CPP has been updated to reflect Queens Library at Long Island City as the document repository. Documentation is provided within this Appendix. The facilities identified below are being used to provide the public with convenient access to important project documents:

Queens Library at Long Island City
37-44 21st Street
Queens, NY 11101
(718) 752-3700

Hours: Mon: Closed
Tue: 1 PM to 5 PM
Wed: 10 AM to 5 PM
Thu: 12 PM to 7 PM
Fri: 10 AM to 5 PM
Sat: 10 AM to 5 PM
Sun: Closed

Queens Community Board 2
Lisa Ann Deller, Chairperson
43-22 50th Street, Room 2B
Woodside, New York 11377
(718) 533-8777
https://www1.nyc.gov/site/queenscb2/index.page

Appendix B - Site Contact List

Chief Executive Officer
Mayor Bill de Blasio
City Hall
260 Broadway Avenue
New York, NY 10007

New York City Planning Commission Chairman
Marisa Lago
Department of City Planning
22 Reade Street
New York, NY 10007-1216

Borough of Queens, Borough President
Melinda Katz
Queens Borough Hall
120-55 Queens Boulevard
Queens, NY 11424

Borough of Queens, Department of Planning and Development
Irving Poy, Director
Queens Borough Hall
120-55 Queens Boulevard
Queens, NY 11424

Borough of Queens, Community Board 2
Denise Keehan-Smith, Chairperson
43-22 50th Street, Room 2B
Queens, NY 11377

New York City Council, Local District 26
Jimmy Van Bramer, Councilman
47-01 Queens Boulevard, Suite 205
Queens, NY 11104

Residents, owners, and occupants of the site and properties adjacent to the site:

Owner:

2890 Review Equity LLC
2028 Harrison Street, Suite 202
Hollywood, FL 33020

2890 Review TIC Owner LLC
2028 Harrison Street, Suite 202
Hollywood, FL 33020

Adjacent properties:

Asphalt-paved parking lot
28-20 Borden Avenue
Queens, NY 11101
Owner: GWL Borden LLC
60 Hempstead Avenue, Suite 718
West Hempstead, NY 11552

Transportation/Utility
Greenpoint Avenue (No Address Given)
Block 294, Lot 1
Queens, NY 11101
Owner: Long Island Rail Road (LIRR)

Commercial Building (Storage)
29-00 Review Avenue
Queens, NY 11101
Owner: Access Big Key Partners, L.P.
212 Gates Road
Little Ferry, NJ 07643

Local news media from which the community typically obtains information:

Local newspaper:

Queens Chronicle
Shops at Atlas Park
71-19 80th Street, Suite 8-201
Glendale, NY 11385

Local television:

WPIX 11 New York
220 East 42nd Street
New York, NY 10017

The public water supplier which services the area in which the property is located:

The responsibility for supplying water in New York City is shared between the NYC Department of Environmental Protection (NYCDEP), the Municipal Water Finance Authority, and the New York City Water Board:

NYCDEP
Vincent Sapienza, Commissioner
59-17 Junction Boulevard
Flushing, NY 11373

New York City Municipal Water Finance Authority
255 Greenwich Street, 6th Floor
New York, NY 10007

New York City Department of Environmental Protection
Bureau of Environmental Planning and Analysis
59-17 Junction Boulevard, 11th Floor
Flushing, NY 11373

The administrator of any school or day care facility located on or near the site:

There are no schools or day care facilities located on the site. The following are schools or day care facilities located within a ½-mile radius of the site:

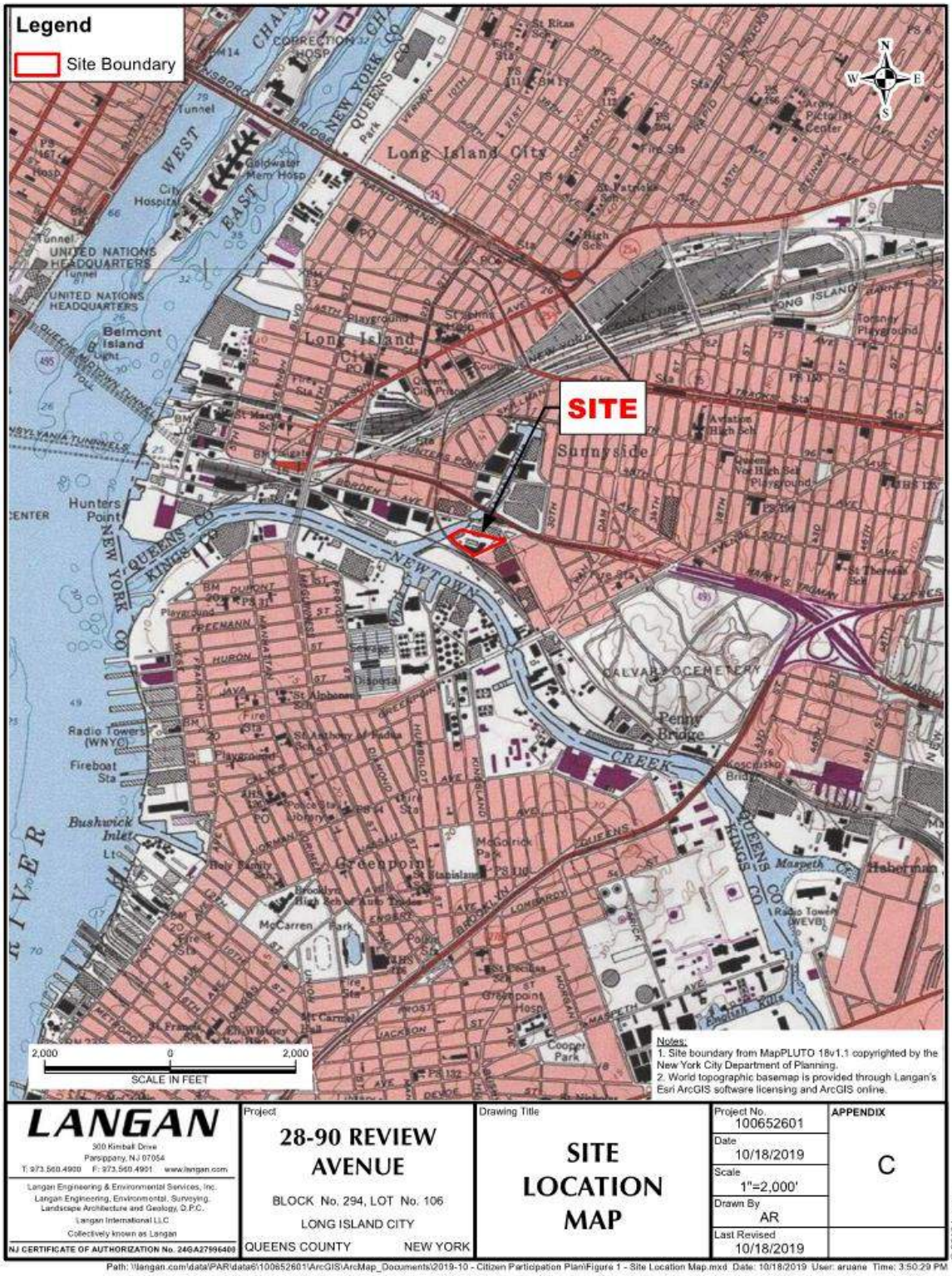
Robert F. Wagner, Jr. Secondary School for Arts and Technology
(approximately 2,000 feet northeast of the site)
Principal: Dr. Stephania Goel, Ed. D.
47-07 30th Place
Queens, NY 11101
(718) 472-5671

The location of the document repository for the project (e.g., local library):

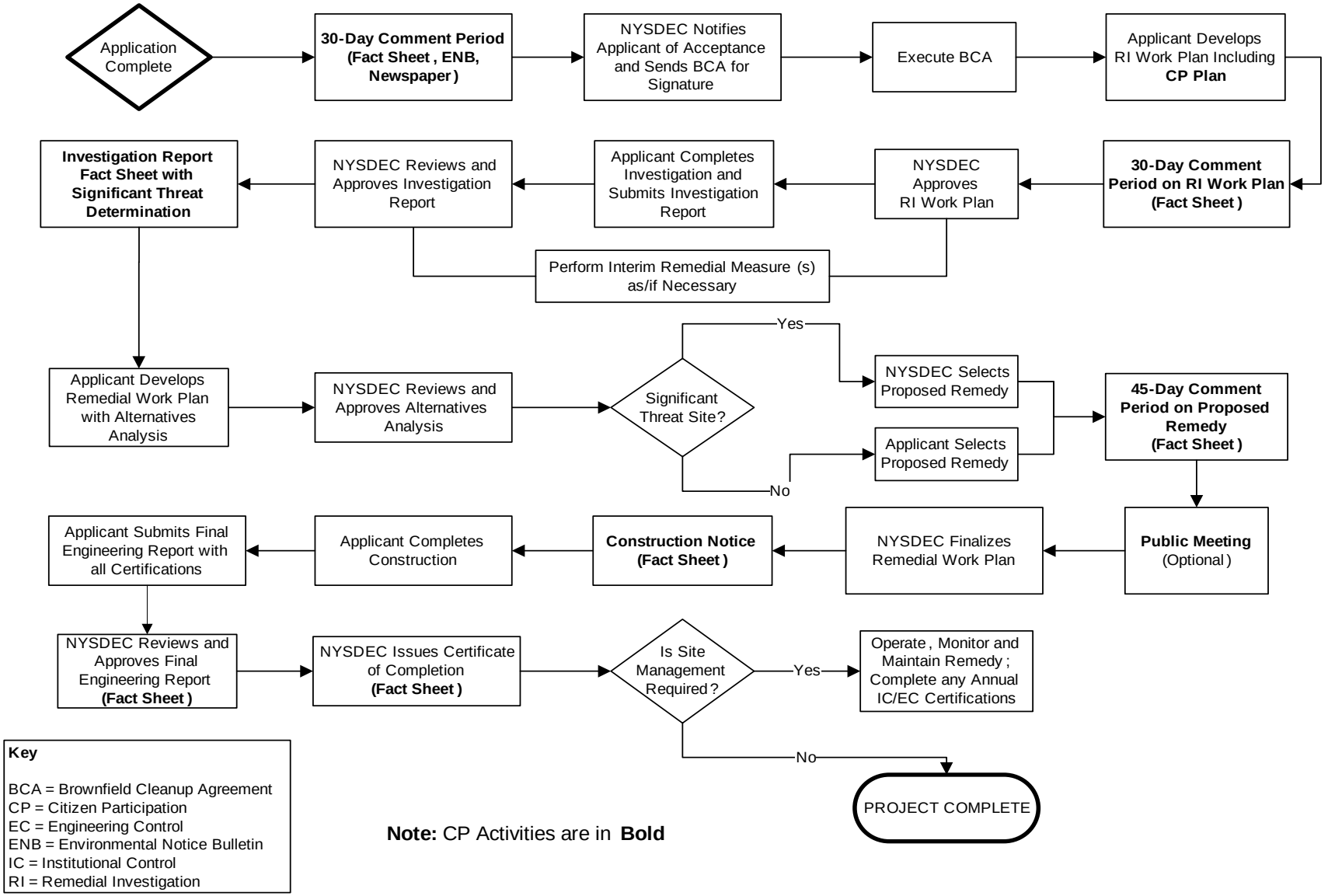
Queens Library at Long Island City
37-44 21st Street
Queens, NY 11101
(718) 937-2790

Community Board 2, Queens
43-22 50th Street, Room 2B
Woodside, New York 11377
(718) 533-8773

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

Appendix E - Scoping Sheet for Major Issues of Public Concern

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern

Site Name: 28-90 Review Avenue Development

Site Number: C241236

Site Address and County: 28-90 Review Ave, Long Island City, Queens County, New York

Remedial Party(ies): 28-90 Review Avenue Owner, LLC ("Applicant")

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
Investigation and remediation of soil and groundwater may impact air quality while work is performed. NYSDEC and NYSDOH are overseeing the project to ensure the air and odor issues are monitored and mitigated during implementation of the work plan.

How were these issues and/or information needs identified?
Previous investigations identified contaminated soil and groundwater at the site.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.
No additional information is required from the community at this time.

How were these information needs identified?
There are no information needs at this time.

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
Information will be communicated to the public as outlined in the Citizen Participation Plan. NYSDEC and NYSDOH contacts will be provided. A repository will exist for the public to review documentation.

How were these issues and/or information needs identified?
Issue identification is the same as Part 1 response. Information communication was established by NYSDEC and NYSDOH as part of the NYS Brownfield Cleanup Program.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:
☐ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☒ **Industrial**

b. Residential type around site:
☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:
☒ **High** ☐ **Medium** ☐ **Low**

d. Water supply of nearby residences:
☒ **Public** ☐ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☒ **Yes** ☐ **No**

h. Special considerations:
☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
Large Spanish speaking population.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☐ **Non-Adjacent Residents/Property Owners:** Click here to enter text.

☐ **Local Officials:** Click here to enter text.

☐ **Media:** Click here to enter text.

☐ **Business/Commercial Interests:** Click here to enter text.

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☐ **Citizens/Community Group(s):** Click here to enter text.

☐ **Environmental Justice Group(s):** Click here to enter text.

☐ **Environmental Group(s):** Click here to enter text.

☐ **Civic Group(s):** Click here to enter text.

☐ **Recreational Group(s):** Click here to enter text.

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Langan **Date:** 10/21/19

Reviewed/Approved By: Click here to enter text. **Date:** Click here to enter text.

APPENDIX H

Remediation Schedule

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Appendix H
Remedial Action Work Plan
Remedial Action Construction Schedule
28-90 Review Avenue
Long Island City, New York

Estimated Project Schedule

Item	Action	2022				2023											
		SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	Implementation of RAWP with Engineering Oversight			■	■	■	■	■	■	■							
2	Preparation of an Environmental Easement, FER, and SMP									■	■	■					
3	NYSDEC & NYSDOH Review of FER (and SMP)												■	■	■	■	
4	NYSDEC Issues COC																■

Notes:

a) This is an estimated schedule; all items are subject to change.
b) Completion of Item 1 refers to the completion of remediation and not the end of overall construction.
c) NYSDEC = New York State Department of Environmental Conservation
d) NYSDOH = New York State Department of Health
e) RAWP = Remedial Action Work Plan
f) FER = Final Engineering Report
g) SMP = Site Management Plan
h) COC = Certificate of Completion

APPENDIX I

Vapor Barrier Specifications

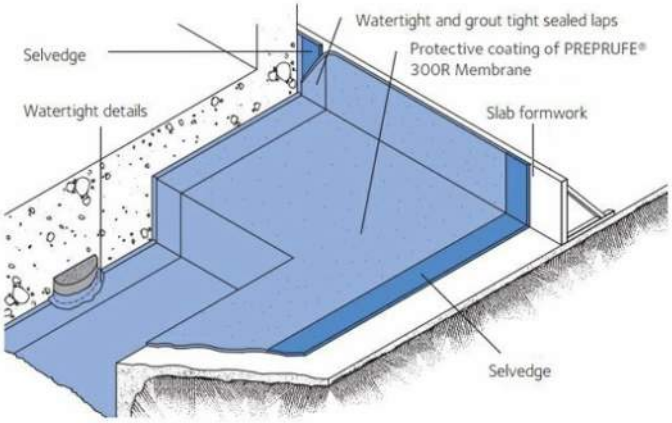
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PREPRUFE® 300R & 160R Membranes Data Sheet (US Version)

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Product Description

GCP Applied Technologies ("GCP") PREPRUFE® 300R & 160R membranes are proprietary composite sheets comprised of a thick HDPE film, pressure sensitive adhesive and weather resistant protective coating. Designed with Advanced Bond Technology™, PREPRUFE® 300R & 160R membranes form a proprietary, integral bond to poured concrete, designed to prevent lateral migration of water while providing a robust barrier to water, moisture and gas penetration.



Drawings are for illustration purposes only.
Please refer to gcpat.com for specific application details.

Product Advantages

- Forms a continuous adhesive bond to concrete poured against it specifically designed to prevent water migration
- Continuous bond to poured concrete means PREPRUFE® 300R & 160R membranes are unaffected by ground settlement
- Can be placed directly over properly prepared compacted soil
- Does not activate prematurely during construction
- Fully adhered watertight laps and detailing
- Provides a barrier to water, moisture and gas - physically isolates the structure from the surrounding ground
- BBA Certified for all basement grades (BS 8102:2009)
- Impermeable- Perm rating less than 0.1 Perms
- Solar reflective - reduced temperature gain during construction

- Simple and quick to install – requires no priming on surfaces properly prepared following GCP surface preparation requirements
- Can be applied to permanent formwork - maximizes use of confined sites
- Allows for foot traffic immediately after application
- Ready for immediate placing of reinforcing steel
- Inherently waterproof--does not require water activation
- Waterproofing is not reliant on confining pressures or hydration
- Installed membrane is not affected by exposure to water during construction
- Waterproofing performance unaffected by wet/dry cycling
- Chemical resistance – protects structure from salt and sulfate attack, effective in most types of soils and waters

System Components:

Membrane

- PREPRUFE® 300R membrane- heavy-duty 46 mil grade can be used in horizontal applications below slabs and on rafts (i.e. mud slabs) and can be applied to vertical (blind side) substrates.
- PREPRUFE® 300R membrane is designed to accept the placing of heavy reinforcement using conventional concrete spacers
- PREPRUFE® 160R membrane 32 mil grade for blindside, zero property line applications against soil retention systems.
- PREPRUFE® 160R membrane is for vertical use only.

Ancillary Components (the most current Data Sheets for all system components are available on gcpat.com)

- PREPRUFE® Tape LT – Low temperature tape for covering cut edges, roll ends, penetrations and detailing in cold weather
- PREPRUFE® Tape HC - High temperature tape for covering cut edges, roll ends, penetrations at elevated temperatures
- PREPRUFE® CJ Tape LT – Low temperature joint tape for construction joints and detailing in cold weather conditions
- PREPRUFE® CJ Tape HC – High temperature joint tape for construction joints and detailing at elevated temperatures
- BITUTHENE® Liquid Membrane - for sealing around penetrations, etc.
- ADCOR® - waterstop for joints in concrete walls and floors
- PREPRUFE® Tieback Covers - preformed cover for soil retention wall tieback heads
- PREPRUFE® 300LT and 160LT membranes are an equal alternate for application at low temperatures. See GCPAT.com

Limitations of Use

- Approved uses only include those uses specifically detailed in this Product Data Sheet and other current Product Data Sheets that can be found at gcpat.com
- PREPRUFE® 300R & 160R membranes are not intended for any other use. Contact GCP Technical Services where any other use is anticipated or intended.
- PREPRUFE® 300R membranes are designed for in-service temperatures below 120°F (49°C)
- PREPRUFE® 160R membrane is not for use in horizontal applications
- PREPRUFE® 300R & 160R membranes should not be used with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)
- Special Note: When this information is printed from the gcpat.com global website, a footer appearing on this document will restrict its applicability to the United States. Note that the information and references in this document are hereby expanded and apply to North, Central and South America.

Safety and Handling

Users must read and understand the product label and Safety Data Sheets (SDS's) for each system component before use. All users must acquaint themselves with this information prior to working with the material. Carefully read detailed precaution statements on the product labels and SDS's before use. The most current SDS's can be obtained from the GCP web site at gcpat.com or by contacting GCP toll free at 1-866-333-3SBM (3726).

Storage

- Observe 1 year shelf life and use on a first in first out basis
- Store in dry conditions at 40°F (4.5°C)-90°F (32°C)
- Store off ground under tarps or otherwise protected from rain and ground moisture
- See PREPRUFE® Technical Letter #30 Shelf Life/Storage and Handling of GCP Waterproofing

Installation

Technical Support, Details and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including without limitation Product Data Sheets and Contractor Manuals, Technical Bulletins, Detail Drawings and detailing recommendations. Please review all materials prior to installation of PREPRUFE® 300R & 160R membranes.

Support is also available by full-time technically trained GCP Applied Technologies field sales representatives and technical service personnel, backed by a central research and development technical services staff. For technical assistance with detailing and problem solving please call toll-free at (866) 333-3SBM (3726).

Temperature Requirements

- PREPRUFE® membranes can be applied at temperatures of 25°F (-4°C) or above. When installing PREPRUFE® products in cold or marginal weather conditions <55°F (<13°C) the use of PREPRUFE® Tape LT is required at all laps and detailing. All surfaces to receive PREPRUFE® Tape LT must be clean and dry.
- As an alternate, where temperatures are between between 25°F (-4°C) and 60°F(15.5°C) PREPRUFE® Low Temperature (LT) Membrane is can be used without taping of laps. Refer to PREPRUFE® LT Membrane data sheet and Technical Letter #16 PREPRUFE® Waterproofing membranes: Cold Weather installation for more information.

Substrate Preparation

All surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5" (12mm) out of alignment.

Membrane Application

PREPRUFE® 300R & 160R membranes are supplied in rolls 4 ft. (1.2m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of PREPRUFE®Membrane and PREPRUFE® Tape are manufactured with a disposable plastic release liner which must be removed before placing reinforcement and concrete. NOTE that the release liner must also be removed before application of any required tapes and at all surfaces where a bond between layers is to be formed.

Horizontal substrates –

PREPRUFE® 300R membrane can be applied horizontally to smooth prepared concrete or well rolled and compacted earth or crushed stone substrate. Place the PREPRUFE® 300R membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a buildup of layers. Leave plastic release liner in position until overlap procedure is completed. When completed remove release liner. When installing over carton forms, contact your local GCP representative.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps allowing the two overlapped layers to bond together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the white protective coating. Any initial tack will quickly disappear. Notes:

- PREPRUFE® 300R membrane can be returned up the inside face of slab formwork. To attain a fully bonded system and to allow a tie in with BITUTHENE® self-adhered membrane or PROCOR® fluid-applied membrane to all vertical structural surfaces after removal of formwork.
- Rebar Chairs: See PREPRUFE® Technical Letter #15 Rebar Chairs on PREPRUFE® Membranes.

Vertical substrates –

PREPRUFE® 300R & 160R membranes can be applied vertically to permanent formwork or adjoining structures. Concrete should then be cast directly against the adhesive side of the membrane. The membrane may be installed in any convenient length. The clear plastic release liner must be facing towards the concrete pour. Membrane must be shingle overlapped a minimum of 3" (75mm) All laps over cut edges must be taped using PREPRUFE® Tape.

Vertically placed sheets can be held in place using fasteners appropriate to the substrate. Fastening can also be made through the selvedge overlap area using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Fasteners should be placed in the selvedge approximately 0.5"(12.5mm) from the edge of the membrane. The adhesive selvedge of successive membrane sheets must completely cover any fasteners by a minimum if 1 in. (25mm). After rolling immediately remove the plastic release liner. When placing successive sheets insure the underside of each succeeding sheet is clean, dry and free from contamination before attempting to overlap. After placement roll the membrane firmly to ensure a watertight seal.

Note that PREPRUFE® 300R & 160R membranes are not recommended for use with conventional twin-sided formwork. (See PREPRUFE® Technical Letter #13 Forming Systems For Use with PREPRUFE® Membranes)

Roll ends and cut edges –

Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow the membrane to dry and apply PREPRUFE® Tape LT (or HC in hot climates) centered over the lap edges and roll firmly. Immediately remove plastic release liner from the tape.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and other contaminants and allow the membrane to dry. Repair small punctures and slices (0.5 in. (12 mm) or less by applying PREPRUFE® Tape centered over the damaged area. Repair punctures and holes larger than 0.5 in. (12mm) by applying a patch of PREPRUFE® membrane. Extend the patch 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with PREPRUFE® Tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh PREPRUFE® Tape. Any areas of damaged adhesive should be covered with PREPRUFE® Tape. All PREPRUFE® Tape must be rolled firmly and the tinted release liner removed.

Slices or relief cuts can be butted or overlapped and repaired by applying PREPRUFE® Tape centered over the edge of the overlap or center of the butt joint. Where it is not possible to create a butt joint or overlap, repair with fresh membrane and PREPRUFE® Tape as detailed above.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of PREPRUFE® 300R & 160R Membrane and Tape.

Under most climatic conditions concrete should be poured within 56 days of membrane installation. Where ambient temperatures will exceed 38°C (100ºF) for more than a total of 7 days, concrete should be placed within 42 days of installation of the membrane. Concrete must be placed and compacted carefully to avoid damage to the Membrane. Never use a sharp object to consolidate the concrete.

Removal of Formwork

A minimum concrete compressive strength of 3000 psi (20 N/mm^2) is recommended prior to stripping formwork supporting PREPRUFE® membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete. (see PREPRUFE® Technical Letter #17 Removal of Formwork Placed against PREPRUFE® membranes)

After removal of the formwork and prior to backfilling, all exposed PREPRUFE® Membrane must be protected from damage with an approved protective course.

Supply

DIMENSIONS (NOMINAL)	PREPRUFE® 300R MEMBRANE	PREPRUFE® 160R MEMBRANE
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)
Minimum side and end laps	3 in. (75 mm)	3 in. (75 mm)

Physical Properties

PROPERTY	TYPICAL VALUE 300R	TYPICAL VALUE 160R	TEST METHOD
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385[1]
Low Temperature Flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to Hydrostatic Head	231 ft (71 m)	231 ft (71 m)	ASTM D5385[2]
Elongation	400%	400%	ASTM D412[3]
Tensile Strength, Film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack Cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836[6]
Puncture Resistance	200 lbs (890 N)	100 lbs (445 N)	ASTM E154
Peel Adhesion to Concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903[4]
Lap Peel Adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876[5]
Permeance to Water Vapor Transmission (HDPE side exposed)	<0.1 perms (5.74 ng/(Pa x s x m^2))	<0.1 perms (5.74 ng/(Pa x s x m^2))	ASTM E96, method B
Water Absorption	0.5%	0.5%	ASTM D570

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of PREPRUFE Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block (cured min. 7 days) is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the protective coating surface of the membrane and allowed to properly cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature
5. The test is conducted 15 minutes after the lap is formed and run at a rate of 2 in. (50 mm) per minute.
6. Test conducted at – 9.4°F (-23°C)

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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Last Updated: 2020-01-08
gcpat.com/solutions/products/preprufe-membrane-pre-applied-waterproofing-solutions/preprufe-300r-160r-0

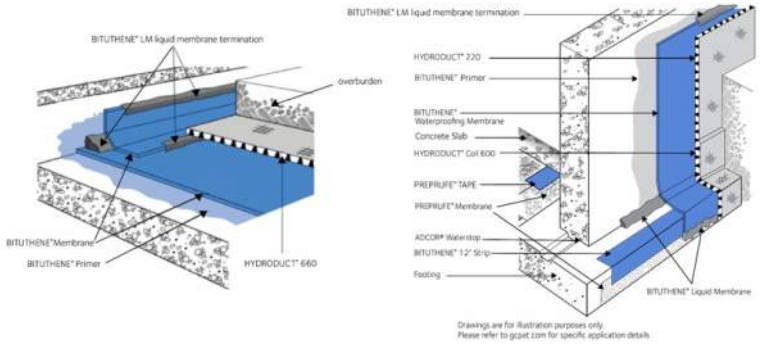
BITUTHENE® 4000 System (US version)

Membrane and Surface Conditioner System

Product Description

GCP Applied Technologies' ("GCP") BITUTHENE® 4000 system combines a robust, flexible, pre-formed membrane made of a high performance, cross laminated, HDPE carrier film with a tacky, self-adhesive rubberized asphalt compound and BITUTHENE® 4000 surface conditioner.

BITUTHENE® 4000 surface conditioner is water-based primer that is specifically formulated to promote adhesion by binding dust and concrete efflorescence to help provide a suitable surface for the BITUTHENE® 4000 waterproofing membrane. For convenience, BITUTHENE® 4000 surface conditioner is packaged inside each roll of BITUTHENE® 4000 membrane.



Product Advantages

- Provides a barrier to water, moisture and gas — physically isolating the structure from the surrounding substrate
- Excellent adhesion — Special adhesive compound engineered for use with BITUTHENE® 4000 surface conditioner
- Cross-laminated, high density polyethylene carrier film provides high tear strength, puncture and impact resistance
- Cold applied — Simple application to substrates, including low temperature applications
- Reduced inventory and handling costs due to the inclusion of primer in the packaging
- Wide application temperature range — Excellent bond at temperatures as low as 25°F (-4°C)
- Designed to accommodate a wide range of building configurations and details
- RIPCORD® integrated filament —Split release on demand feature allows for ease of installation in detailed areas

System Components

Membrane

BITUTHENE® 4000 membrane – Self-adhered, rubberized asphalt waterproofing membrane

Ancillary components (Data sheets for all system components are available at gcpat.com.)

- BITUTHENE® 4000 surface conditioner – Water-based latex primer adhesive with added alcohol to allow application at low temperatures
- BITUTHENE® B2 LVC adhesive primer - Low VOC, solvent-based primer to increase adhesion of the BITUTHENE® 4000 membrane to concrete surfaces
- BITUTHENE® LM liquid membrane – Two-component, elastomeric, liquid-applied detailing compound
- BITUTHENE® mastic – Rubberized, asphalt-based mastic
- BITUTHENE® Edgeguard tape – Double-sided self-adhesive tape
- HYDRODUCT® drainage composite – High impact and creep-resistant geo-composite and protection layer
- BITUTHENE® Deck Prep surface treatment – Surface leveler for application to uneven or rough concrete surfaces

Limitations of Use

- The BITUTHENE® 4000 membrane and BITUTHENE® 4000 surface conditioner are specifically designed for use as detailed in this product data sheet, and are not intended for any other use. Contact GCP Technical Support if any other use is anticipated or intended.
- The BITUTHENE® 4000 membrane is designed for waterproofing surfaces where in-service temperatures will not exceed 130°F (54°C).
- Do not use BITUTHENE® mastic to terminate the BITUTHENE® 4000 membrane to PREPRUFE® pre-applied waterproofing systems. Terminations to PREPRUFE® membranes should only be done with BITUTHENE® LM liquid membrane.

Special note: When this information is printed from the gcpat.com global website, a footer appearing on this document may contain wording restricting its applicability to the United States. Note that the information and references in this document also apply to North, Central and South America.

Safety and Handling Information

Read and understand the product label and safety data sheet (SDS) for each system component. All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements. SDSs can be obtained by contacting your local GCP representative or office, by calling GCP toll free at 1-866-333-3SBM (3726) and in some cases from our website at gcpat.com.

Storage

The BITUTHENE® 4000 membrane should be stored upright. Storage temperatures should not be below 25°F (-4°C) and should not exceed 90°F (32°C).

Installation

Technical Support, Details, and Technical Letters

The most up-to-date detail drawings and technical letters are available at gcpat.com. For complete application instructions, please refer to the current GCP Applied Technologies Contractor Handbook and Literature at www.gcpat.com. Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product, it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information, including and not limited to product data sheets and contractor manuals, technical bulletins, detail drawings and detailing recommendations. Please review all materials prior to installation of BITUTHENE® 4000 membranes. For technical assistance with detailing and problem solving, please call toll-free at (866) 333-3SBM (3726).

Temperature

- Apply BITUTHENE® 4000 membranes and BITUTHENE® surface conditioner only in dry weather and when air and surface temperatures are 25°F (-4°C) or above.
- BITUTHENE® B2 LVC adhesive primer and BITUTHENE® 4000 surface conditioner should only be applied in dry weather when the temperature is above 25°F (-4°C). See separate product information sheets and applicable application instructions.

Surface Preparation

Surfaces must be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Concrete must be properly cured (minimum seven-days for normal weight structural concrete and 14 days for lightweight structural concrete). For horizontal applications, double the above cure times of concrete if placed over non-vented decks. Certain conditions, such as unusually wet weather or late removal of forms, may require longer dry times.

Dry weather application of BITUTHENE® 4000 membranes and BITUTHENE® 4000 surface conditioner is preferred. On vertical applications, if time is critical and damp conditions are unavoidable, BITUTHENE® B2 LVC adhesive primer may be used in place of BITUTHENE® surface conditioner. The use of BITUTHENE® B2 LVC adhesive primer may allow priming and installation of BITUTHENE® 4000 membranes on damp surfaces or green concrete. When using BITUTHENE® B2 LVC adhesive primer, priming may begin as soon as the concrete will maintain structural integrity.

Only use form release agents that will not transfer to the concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the membrane.

Cure concrete with clear, resin-based curing compounds that do not contain oil, wax or pigment. See Technical Letter 5, Curing Compounds and Form Release Agents. Before application of BITUTHENE® surface conditioner and BITUTHENE® 4000 membranes, allow concrete to thoroughly dry following any rain (except with BITUTHENE® B2 LVC adhesive primer as noted above). Do not apply any products to frozen concrete.

Repair substrate defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. For rough or uneven deck surfaces, use BITUTHENE® Deck Prep surface treatment as a repair and leveling agent. See BITUTHENE® Deck Prep surface treatment product information sheet for details. On masonry surfaces such as rough concrete block and brick walls, apply a parge and trowel cut mortar joints flush to the face of the concrete blocks and bricks.

Surface Conditioning

BITUTHENE® 4000 surface conditioner is ready to use, and can be applied by spray or roller. For best results, use a pump-type air sprayer with a fan tip nozzle. Apply BITUTHENE® 4000 surface conditioner to clean, dry, frost- free surfaces at a coverage rate of 300 ft^2/gal (7.4 m^2/L). Coverage should be uniform. The surface conditioner should not be applied so heavily that it puddles or runs. Do not apply conditioner directly to BITUTHENE® 4000 membranes. Allow BITUTHENE® 4000 surface conditioner to dry until the substrate returns to its original (dry) color. At low temperatures or in high humidity conditions, dry time may be extended to greater than one hour.

BITUTHENE® 4000 surface conditioner is clear when dry and may remain slightly tacky. In general, conditioning should be limited to what can be covered within 24-hours. In situations where long dry times may prevail, substrates may be conditioned up to 24-hours in advance. Substrates must be reconditioned if dirt or dust accumulates on the conditioned surface. Tools should be cleaned with water before the surface conditioner dries.

Application on Horizontal Surfaces

Note: PREPRUFE® 300R and 300R Plus pre-applied membranes are strongly recommended and are the preferred products for below slab applications or for any application where the membrane is applied before concrete is poured. See PREPRUFE® membrane waterproofing product information sheets at gcpat.com.

All horizontal surfaces to receive BITUTHENE® 4000 membranes should be sloped to drain at least 1/8 in./ft. (11 mm/m). When a minimum slope of 1/8 in. /ft. (11 mm/m) cannot be achieved, two layers of BITUTHENE® 4000 membranes or 80-mils of BITUTHENE® Deck Prep surface treatment and one layer of BITUTHENE® 4000 membranes maybe an option. Contact your local GCP representative for more details.

Apply the membranes from the low point to the high point so that laps shed water. Overlap all seams at least 2.5 in. (65 mm). Stagger all end laps. Roll the entire membrane firmly, and completely as soon as possible. Use a linoleum roller or standard water-filled garden roller less than 30 in. (760 mm) wide, weighing a minimum of 75 lbs (34 kg) when filled. Cover the face of the roller with a "conforming" material such as 1/2 in. (13 mm) plastic foam sheeting or two wraps of indoor-outdoor carpet to allow the membrane to fully contact the primed substrate. Seal all T-joints and membrane terminations with BITUTHENE® LM liquid membrane by the end of the day of membrane application.

Application on Vertical Surfaces

Apply BITUTHENE® 4000 membranes in lengths up to 8 ft (2.5 m). Overlap all seams at least 2.5 in. (65 mm). On walls higher than eight feet, apply membranes in two or more "shingled" lifts, with the upper sheet overlapping the lower by at least 2.5 in. (65 mm). Roll all membranes with a hand roller.

Terminate the membranes at grade level. Press each membrane firmly to the wall with the butt end of a hardwood tool such as a hammer handle or secure into a reglet. Failure to use heavy pressure at terminations can result in a poor seal.

All top-of-wall terminations should be sealed with BITUTHENE® LM liquid membrane or BITUTHENE® mastic. A termination bar may be used to ensure a tight seal. If the wall has been only partially covered by the end of the working day, apply a maximum ¼" bead of BITUTHENE® mastic tooled thin or BITUTHENE® LM liquid membrane along the exposed edges of the membrane at its temporary terminations to prevent vertical drainage of precipitation, which could undermining the membrane adhesion. Terminate the membranes at the base of the wall if the bottom of the interior floor slab is at least 6 in. (150 mm) above the footing.

Otherwise, use appropriate inside corner detail where the wall and footing meet. A 1/8 in. (3 mm) x 1 in. (25 mm) aluminum termination bar aligned with the top of the membrane is recommended for terminations on CMU, in earth covered decks and in earth-bermed applications where soil cannot be fully compacted. See technical letter 26 about BITUTHENE® membrane terminations for additional information.

Membrane Repairs

Patch tears and inadequately lapped seams with additional membrane. Clean any damaged membrane with a damp cloth and dry. Slit fish-mouths and repair with a patch extending 6 in. (150 mm) in all directions from the slit, and seal edges of the patch with BITUTHENE® LM liquid membrane. Inspect all membranes thoroughly before covering, and repair any damaged areas.

Drainage

HYDRODUCT® drainage composites are recommended for both active drainage and protection of the membranes. See HYDRODUCT® drainage composite product data sheet at gcpat.com.

Insulation

Always apply BITUTHENE® 4000 membranes directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the membranes. Do not apply BITUTHENE® membranes over insulation or lightweight insulating concrete.

Flood Testing (Horizontal Surfaces Only)

Flood test all horizontal applications with a minimum 2 in. (51 mm) head of water for 24-hours. Mark any leaks and repair when the membrane is dry. Before flood testing, be sure the structure will withstand the dead load of the water. For highly sloped decks, segment the flood test to avoid excessively deep water near drains. Conduct the flood test 24-hours after completing the application of BITUTHENE® 4000 membranes. Immediately after flood testing is completed and all necessary repairs have been made, install HYDRODUCT® drainage composite to protect the BITUTHENE® membranes from damage by other trades.

As an alternate to flood testing, appropriate electronic leak detection may be used to check the integrity of the system.

Protection of Membrane

To prevent damage from other trades, construction materials or backfill, protect BITUTHENE® 4000 membranes immediately after application. To avoid potential blisters, place protection immediately where temperatures are above 77°F (25°C).

- On vertical applications, use HYDRODUCT® 220 drainage composite. Adhere HYDRODUCT® 220 Drainage Composite to membranes with PREPRUFE® Detail Tape. Alternative methods of protection are to use nominal 1.0 lb/ft^3 (16kg/m^3), min. 1 in. (25 mm) extruded polystyrene or min.1/4 in. (6 mm) asphaltic hardboard. Such alternatives do not provide positive drainage to the system. If 1/4 in. (6 mm) extruded polystyrene protection board is used, backfill must not contain sharp rock or aggregate over 2 in. (50 mm) in diameter or any debris that might puncture the protection board and/or the membranes. See Technical 27 Letter Protection Courses used with GCP Waterproofing Systems for additional information.
- On horizontal applications, use HYDRODUCT® 660 Drainage Composite. Alternate methods of protection are to use 1 in (25 mm) extruded polystyrene or ¼" asphaltic hardboard.

Placing Steel

On horizontal applications when placing steel over properly protected membranes, use concrete bar supports (dobies) or chairs with plastic tips or rolled feet to prevent damage from sharp edges. Use special care when using wire mesh, especially if the mesh is curled.

Backfill

Place backfill as soon as possible. (See Protection of Membrane above) Use care during backfill operation to avoid damage to the waterproofing system. Follow generally accepted practices for backfilling and compaction. Backfill should be added and compacted in 6 in. (150 mm) to 12 in. (300 mm) lifts.

Approvals

- City of Los Angeles Research Report RR 24386 Miami-Dade County Code Report NOA 18-1109.01
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628j
- BITUTHENE® 4000 membranes carry a Underwriters' Laboratory Class A Fire Rating (Building Materials Directory (File TFGU.R7910) when used in either of the following constructions:
  1. Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® waterproofing membrane, followed by one-layer of 1/8 in. (3 mm) protection board, encased in 2 in. (50 mm) minimum concrete monolithic pour.
  2. Limited to noncombustible decks at inclines not exceeding 1/4 in. (6 mm) to the horizontal 1 ft (0.3 m). One layer of BITUTHENE® waterproofing membrane, followed by one layer of DOW styrofoam PD insulation board [2 in. (50 mm) thick]. This is covered with one layer of 2 ft x 2 ft x 2 in. (0.6 m x 0.6 m x 50 mm) of concrete paver topping.

Physical Properties for BITUTHENE® 4000 Membrane

PROPERTY	TYPICAL VALUE	TEST METHOD
Color	Dark gray-black	
Dimensions	3 ft x 66.7 ft roll (200 ft^2)	
Thickness	60 mils (1.5 mm) nominal	ASTM D3767—method A
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970
Tensile strength, Membrane, die C	325 psi (2240 kPa) minimum	ASTM D412[1]
Tensile strength, film	5,000 psi (34.5 MPa) minimum	ASTM D882[1]
Elongation, ultimate failure of rubberized asphalt	300% minimum	ASTM D412[1]
Crack cycling at -25°F (-32°C), 100 cycles	Unaffected	ASTM C836
Lap shear	20 lbs (89 N)	ASTM D1002[2]
Peel strength	11 lbs/in. (1926 N/m)	ASTM D903[4]
Puncture resistance, Membrane	50 lbs (222 N) minimum	ASTM E154
Resistance to hydrostatic head	230 ft (70m) of water	ASTM D5385
Permeance	<0.1 perms	ASTM E96, section 12—water method
Water absorption	<0.1%	ASTM D570

Footnotes:

1. The test is run at a rate of 2 in. (50 mm) per minute.
2. The test is conducted at a speed of 4 in. (102 mm) per minute.
3. Individual Roll Length may vary +/- 1%
4. Test conducted with BITUTHENE® 4000 surface conditioner at minimum application temperature

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Last Updated: 2019-05-30
gcpat.com/solutions/products/bituthene-post-applied-waterproofing/bituthene-4000-membrane

APPENDIX J

NYSDEC Correspondence

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau B
625 Broadway, 12th Floor, Albany, NY 12233-7016
P: (518) 402-9768 I F: (518) 402-9773
www.dec.ny.gov

June 11, 2020

Steven A. Ciambruschini, P.G.
Langan Engineering, Environmental,
Surveying, Landscape Architecture
and Geology, D.P.C.
300 Kimball Drive
Parsippany, New Jersey 07054

Re: SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN - APPROVAL
28-90 Review Avenue
Queens, New York
NYSDEC BCP Site #C241236

Dear Mr. Ciambruschini,

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the Supplemental Remedial Investigation Work Plan dated April 21, 2020 for the site at 28-90 Review Avenue, Queens, New York. Based on these reviews, the Department's previous comments have been addressed and the work plan is approved. Please provide the Department with an updated schedule for the field work and reporting.

If you have any questions regarding this letter, please contact me by email at Charles.Post@dec.ny.gov or by phone at 518-402-9793.

Sincerely,

Charles Post
Project Manager
Division of Environmental Remediation

ec: S. Quandt, NYSDEC
D. Tucholski, NYSDOH
J. Hayes, Langan

From: Post, Charles H (DEC) <charles.post@dec.ny.gov>
Sent: Thursday, October 22, 2020 7:55 AM
To: Christopher McMahon
Cc: Quandt, Sarah M (DEC)
Subject: Vacuum Enhanced Extraction Pilot Test Work Plan C241236

Dear Christopher,

The Department has received and reviewed the Vacuum Enhanced Extraction Pilot Test Work Plan dated October 12,2020 for site C241236. The plan is approved with the required following modifications: 1) the work plan must be certified as required in DER-10 (See Table 1.5), and 2) a third extraction pilot location be added in Area of Concern AOC-4 in the approximate area of LSB-61.

Please review these requirements and let me know if they are acceptable to your team. Also, at that time, please provide a schedule of the required filed activities and subsequent reporting.

Best Regards,

Charlie

Charles Post
Project Manager, Professional Geologist
Division of Environmental Remediation

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