Contract HP-238

Field Sampling Plan

Prepared by:

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December, 2017

NYCDEP Contract: HP-238
Field Sampling Plan

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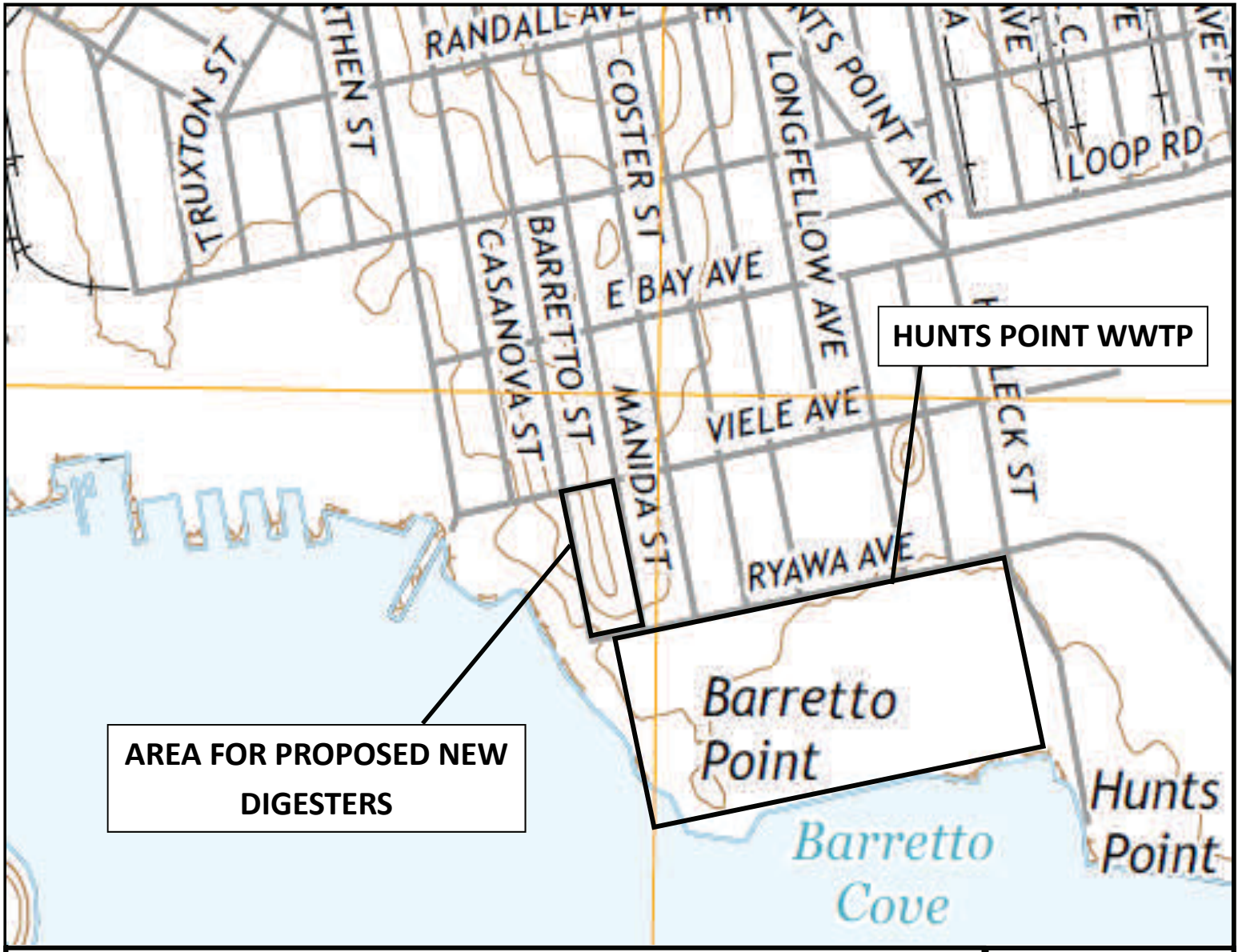
1.0 INTRODUCTION

Bidwell Environmental, LLC (Bidwell) is pleased to provide this Field Sampling Plan for the New York City Department of Environmental Protection (NYCDEP) HP-238 Hunts Point Wastewater Treatment Plant (WWTP) New Anaerobic Digester Facilities Project. The Hunts Point WWTP is located in the Hunt's Point section of Bronx County, NY (Figure 1). As detailed in the Site Plan provided within Attachment A, the new anaerobic sludge digestion facilities will be constructed in a vacant area located immediately north of the Hunts Point WWTP (Plant) between Viele Ave. and Ryawa Ave. to the north and south respectively, and Manida St. and Barretto St. to the east and west, respectively. The property (project site) is owned by the City of New York, and is part of the larger Barretto Point Site, which was previously subject to remedial action under the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation Environmental Restoration Program.

Historic use of the project site included a former paint and varnish manufacturing facility. According to the 2003 NYSDEC Environmental Restoration Record of Decision (ROD), operations at the former paint and varnish manufacturing facility resulted in the disposal of hazardous substances, including volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and metals. Specifically, surface soils, subsurface soils and groundwater at the project site were impacted. In accordance with the 2003 ROD, remedial action at the project site included the excavation and removal of contaminated soil (approximately 14,100 cubic yards), and extraction and treatment of groundwater as part of the dewatering process during excavation of the soils. The estimated extent and depth of soil requiring remediation within the project site is depicted in Figure 8 of the NYSDEC ROD, provided within Attachment A. The remainder of the project site (and Barretto Point site) was capped with two (2) feet (ft.) of clean soil.

2.0 SCOPE OF CONSTRUCTION

The new anaerobic sludge digestion facilities, to be constructed on the project site under Contract HP-238, will digest thickened primary and waste activated solids, and will be sized for a 10 million-gallon capacity, approximately. In addition, a digester equipment building will be constructed to house equipment dedicated to the digestion process. Plant roadways will be extended to serve the new digester facility and landscaping will be provided to be visually consistent with the adjacent park. A buried pipe gallery/tunnel is planned to connect various utilities between the existing Plant and project site.



HUNTS POINT WWTP

SITE LOCATION MAP

FIGURE

1

3.0 PROJECT OBJECTIVES

Contract HP-238 is currently in the Design Phase of the project. The sampling program as contemplated herein will be coordinated with Phase I of the geotechnical investigation. Environmental samples will be collected from the borings and monitoring wells advanced or installed by others. Data generated by the soil and groundwater sampling will be used to evaluate the presence or absence of soil and groundwater contamination at the project site.

4.0 EXISTING SUBSURFACE CONDITIONS

Based on review of the existing data, the project site in general, is underlain by fill material, native glacial till deposits and weathered bedrock. It is known that during remedial action, a large volume of the fill was removed from the project site and replaced with clean fill (defined in the ROD as material with no analytes in exceedance of the NYSDEC TAGM 4046 soil cleanup objectives). However, Figure 8 of the ROD (provided in Attachment A), reveals that some historic fill remains at the project site. According to the ROD, a demarcation layer is present between the remaining fill and soil cover in the area of the project site, as well as the park.

This fill material is described as a mixture of sand, silt, gravel, and cobbles with varying amounts of construction and demolition debris (including concrete, bricks, asphalt, wood, scrap metal, tires, plastic, cloth, paper, glass, cinders and/or ash). The fill (also known as historic fill) is encountered at thicknesses of one (1) to fifteen (15) ft. Beneath the fill, the project site is reportedly underlain by poorly sorted to moderately sorted, compacted glacial till, ranging in thickness from approximately six (6) to twenty (20) ft. The till consists of fine to medium sand, silt and fine to course gravel with trace amounts of clay. Varying amounts of cobbles, boulders and weathered rock fragment are also part of the till.

Weathered bedrock was reportedly encountered below the fill or till at depths ranging from approximately fourteen (14) to twenty four (24) ft. below ground surface.

The depth to groundwater in the area of the project site reportedly ranges from eight (8) to eighteen (18) ft. below ground surface. The reported direction of groundwater flow direction is predominantly to the southwest, towards the East River.

Relevant soil and groundwater data from prior investigations of the project site and summarized in the ROD are depicted in Attachment A, Figures 4 thru 7.

5.0 SOIL AND GROUNDWATER SAMPLING PROGRAM

The objective of the soil and groundwater sampling program as described herein is to characterize the chemical and physical characteristics of soils and groundwater within the proposed excavation footprint of the new anaerobic digester facilities. The soil and groundwater sampling program will be coordinated with the geotechnical engineer and their drilling contractor.

All soil and groundwater sampling activities, as described herein, will be performed by a Bidwell senior environmental scientist.

5.1 Preparation and Site Access

Preparation and site access will primarily be the responsibility of the geotechnical engineer and the drilling contractor. Bidwell has prepared a job hazard analysis (JHA) outlining health and safety protocol for the soil and groundwater sampling program that supplements the HP-238 Design Environmental Health and Safety Plan. A copy of the JHA is provided as Attachment B.

5.2 Soil Sampling and Analysis

Soil sampling will be performed in six borings (MR-2P, MR-5, MR-6, MR-8P, MR-9 and MR-10) advanced during Phase I of the geotechnical investigation, as depicted in the Proposed Boring Location Plan included in Attachment A. As outlined in Table 1, three of these borings will be located inside the footprint of the former paint and varnish manufacturing facility, where a large volume of historic fill was removed and replaced with clean fill, and three will be located outside this footprint, where historic fill remains, covered with a clean soil/crushed stone cap. It is worth noting that the clean cap material will not be included in the composite samples.

At each boring within the footprint, two composite and four VOC grab (grab) samples will be collected from the clean fill, one above the water table and one below. One composite and two grab samples will be collected from the glacial deposits.

At each boring advanced outside the footprint, one composite and two grab samples will be collected from the fill, and one composite and two grab samples will be collected from the glacial deposits. An additional three composites and three grab samples may also be collected if suspect hot spots are encountered outside the paint and varnish manufacturing facility footprint.

The borings will be advanced using a truck mounted mud rotary drill rig. The top 6 ft. of each boring will be hand dug. Soils will first be screened for volatile vapors using a photoionization detector (PID), with the VOC grab sample being collected first in

accordance with EPA SW-846 Methods 5035/5035A for the collection of samples containing low level VOC contamination. Soil recovered will be visually classified using the Unified Soil Classification System, and will be inspected for debris and evidence of chemical impact (e.g., staining, odors, etc.). Soil will be collected using stainless steel sampling equipment. The results of the visual inspection and soil screening will be detailed on boring logs provided with the Subsurface Investigation Report.

In accordance with the Barretto Point Site Management Plan (SMP), dated April 2014, all future excavation activities shall comply with Appendix A, Excavation Work Plan. More specifically, reuse of onsite material shall meet the backfill limits for metals, PCBs/Pesticides, Semi-volatile Organic Compounds (SVOCs) and VOCs set forth in A-7, Materials Reuse Onsite. To this end, chemical analysis of the soil samples inside the former paint and varnish manufacturing facility footprint will include the following:

- VOCs by Method 8260 (grab only)
- SVOCs by Method 8270
- TAL Metals by Methods 6010 and 7471
- Hexavalent Chromium by Method 7196
- PCBs/Pesticides by Methods 8082 and 8081
- Corrosivity Sample Set (pH, chlorides, sulfides, sulfate)
- Extractable Petroleum Hydrocarbons by EPH (NJ Method)
- Reactivity, ignitability (glacial deposits only)
- Full TCLP (Metals, VOCs, SVOCs, Pesticides, Herbicides) (glacial deposits only).

Chemical analysis of the soil samples outside the footprint will include the following:

- VOCs by Method 8260 (grab only)
- Semi-volatile Organic Compounds (SVOCs) by Method 8270
- TAL Metals by Methods 6010 and 7471
- Hexavalent Chromium by Method 7196
- PCBs/Pesticides by Methods 8082 and 8081
- Corrosivity Sample Set (pH, chlorides, sulfides, sulfate)
- Extractable Petroleum Hydrocarbons by EPH (NJ Method)
- Reactivity, ignitability

- Full TCLP (Metals, VOCs, SVOCs, Pesticides, Herbicides).

In addition to the lab analyses, resistivity for each 5 ft. depth interval will be measured in the field using a Fluke 1625 Advanced Soil Conductivity Meter, as shown in Attachment C, or equal. At three boring locations, proximate to the proposed pipe locations, redox potential will be measured on soil grab samples at the 10 ft. depth using a Hanna 9025 Oxygen Reduction Potential (ORP) meter, as shown in Attachment C, or equal.

5.3 Groundwater Sampling and Analysis

Groundwater samples will be collected from two monitoring wells installed by others. Prior to sampling, each monitoring well will be developed to remove fine grained sediment (fines) from the vicinity of the well screen. This allows groundwater to flow freely from the formation and also reduces the turbidity of the water during sampling. The proposed method of well development is the surge and bail technique. Surging will be accomplished by lowering a surge plunger inside the well. The resulting surge motion forces groundwater into the formation and loosens sediment which is then bailed from the well using a manually operated check-valve bailer. Well development shall be performed until groundwater is visibly clear, as possible. Details of the well development will be recorded on a well development log, which will be included in the Subsurface Investigation Report.

Groundwater and sediment removed from the monitoring well shall be containerized in an appropriately labeled 55-gal drum for disposal offsite, pending the results of drum sampling analysis.

Groundwater sampling will be performed no sooner than one week after well development and shall be conducted in accordance with the USEPA Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (SOP-GW-001, Rev. 3, 1/19/2010). Prior to sampling, the well will be checked for light non-aqueous phase liquids (e.g., separate phase petroleum). The water level will be measured prior, throughout and after sampling using a Solinst water level meter, or equivalent. Groundwater will be purged from the well using a Teflon bladder pump. During well purging, turbidity, dissolved oxygen (DO), specific conductance, temperature, pH and Oxidation/Reduction Potential (ORP) will be monitored at a minimum frequency of five minute intervals. Purging will be considered complete when all the above field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings are within the following limits:

- Turbidity – 10% for values greater than 5 NTU; if three consecutive turbidity values are less than 5 NTU, consider the values as stabilized
- DO – 10% for values greater than 0.5 mg/l; if three consecutive DO values are less than 0.5 mg/l, consider the values as stabilized
- Specific Conductance – 3%
- Temperature – 3%
- pH – ±0.1 unit
- Oxidation/Reduction Potential – ± 10 millivolts.

All purged groundwater will be containerized in an appropriately labeled 55-gallon drum for eventual disposal offsite, pending the results of drum sampling analysis.

When purging is considered complete, all samples will be collected directly into appropriately preserved containers provided by the laboratory. The container for VOC analysis will be collected first. All sample containers will be filled by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence. Details of purging and sampling activities will be recorded on groundwater sampling logs provided with the Subsurface Investigation Report.

Chemical analysis of each sample will include the following:

- Volatile Organic Compounds by Method 624
- PCBs by Method 608
- Priority Pollutant 13 Metals (Dissolved) by Methods 200.8 and 245.2
- Hexavalent Chromium by Method 3500-CR
- Phenol by Method 625
- Naphthalene by Method 625
- Methyl Tert-Butyl Ether by Method 8260
- Total Nitrogen by Method 300.0
- Chloride by Method 300.0
- Oil and Grease by Method 1664A
- Total Suspended Solids by Methods 160.2 and 2540D (97)
- Total Solids by Method 2540B (97)
- Settleable Solids by Method 160.5
- Carbonaceous BOD by Method 5210B (01)
- Flash Point by Method 1010
- Temperature (^{o}F) and pH will be analyzed in the field.

The above list includes the parameters required by NYCDEP for groundwater discharges to sanitary or combined sewers, as well as those required by NYSDEC for discharge to surface water via a State Pollutant Discharge Elimination System (SPDES) permit.

In addition, QA/QC samples for groundwater sampling shall include one trip blank per shipment (VOCs only). The sample containers will be labeled and placed in a cooler at 4^{o}C.

5.4 Equipment Decontamination

Non-dedicated sampling equipment used during the above outlined soil investigation will include the auger, resistivity meter, ORP meter, and stainless steel sampling utensils (i.e., spoons, bowls, etc.). All sampling equipment shall be cleaned prior to arrival onsite and in between sample locations by the following procedure:

- Wash and scrub with an Alconox soap and tap water solution
- Rinse with tap water
- Rinse with 10% nitric acid
- Distilled water rinse
- Rinse with isopropyl alcohol
- Distilled water rinse
- Air dry on clean polyethylene sheeting
- Wrap in aluminum foil, shiny side out for transport, if not used immediately.

During groundwater sampling, non-dedicated sampling equipment will include pumps, field meters and measurement tools. All equipment shall be cleaned prior to arrival onsite and in between sampling locations. Decontamination shall be performed onsite within a plastic tub. Equipment shall be cleaned using the following procedures:

- Wash with potable water
- Wash with non-phosphate laboratory grade detergent
- Rinse with deionized water
- Rinse with isopropyl alcohol
- Distilled water rinse.

5.5 Investigation Derived Waste

Decontamination fluids, well development water, and excess soils from drilling activities will be considered to be contaminated, and therefore will be collected, stored in Department of Transportation (DOT)-approved 55-gallon drums, labeled and staged on pallets at an appropriate location at the site until final classification and disposal. Initial labels will be green, non-hazardous, and will state date of drum closure/storage, name of Generator, and "Pending analysis". Drums will be characterized based on receipt of the soil and groundwater sampling analytical results, and re-labeled accordingly.

5.6 Laboratory Analysis and Quality Assurance/Quality Control

All chemical analysis will be provided by EnviroTest Laboratories, Inc. and Alpha Analytical, which are both New York State Department of Health ELAP certified laboratories. Applicable ELAP certificates are provided in Attachment D. Sample containers shall be provided by the laboratory and certified clean. Samples shall be packed on ice and shipped to the laboratories under rigorous chain of custody protocol. Sample preservation, holding times and analytical methods shall be in accordance with SW-846 protocol, as outlined in Table 2 and Table 3. Sample turnaround shall be 7-10 business days.

QA/QC samples shall include one trip blank (groundwater only). A trip blank is a sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping and field handling procedures. This type of blank is useful in documenting contamination of volatile organics samples.

6.0 SUBSURFACE INVESTIGATION REPORT

The results of the soil and groundwater sampling program will be incorporated into the Subsurface Investigation Report for submittal to NYCDEP. The report will include a detailed description of all field activities and findings. Soil sampling data will be presented in tabular form and compared to 6 NYCRR Part 375-6.8(a) and 6.8(b), supplemental Soil Cleanup Objectives from CP-51/Soil Cleanup Guidance Policy, and the Barretto Point SMP, Appendix A – Excavation Work Plan, A-7: Materials Reuse Onsite Backfill Limits. Groundwater data will be presented in tabular form and compared to NYSDEC/NYCDEP discharge criteria. Analytical data, photographs, and field notes will be included as appendices to the report.

Table 1 – Soil Boring Sampling Matrix

Soil Borings	Strata	Sample Type	Parameters
Inside the footprint of the former paint and varnish manufacturing facility:			
MR-2P MR-5 MR-6	Clean Fill	2 Composites[1]	SVOCs, TAL Metals, Hexavalent Chromium, PCBs/Pesticides, Corrosivity Sample Set, Extractable Petroleum Hydrocarbons.
		4 Grabs[1]	VOCs
	Glacial Deposits	1 Composite	SVOCs, TAL Metals, Hexavalent Chromium, PCBs/Pesticides, Corrosivity Sample Set, Extractable Petroleum Hydrocarbons, RCRA Characteristics, TCLP (VOCs, SVOCs, Metals, Pesticides, Herbicides).
		2 Grabs	VOCs
Outside the footprint of the former paint and varnish manufacturing facility[2]:			
MR-8P MR-9 MR-10	Fill	1 Composite[3]	SVOCs, TAL Metals, Hexavalent Chromium, PCBs/Pesticides, Corrosivity Sample Set, Extractable Petroleum Hydrocarbons, RCRA Characteristics, TCLP (VOCs, SVOCs, Metals, Pesticides, Herbicides).
		2 Grabs	VOCs
	Glacial Deposits	1 Composite[3]	SVOCs, TAL Metals, Hexavalent Chromium, PCBs/Pesticides, Corrosivity Sample Set, Extractable Petroleum Hydrocarbons, RCRA Characteristics, TCLP (VOCs, SVOCs, Metals, Pesticides, Herbicides).
		2 Grabs	VOCs

1: 1 composite/2 grab samples from above the water table & 1 composite/2 grab samples from below the water table.

2: An additional three composite and three grab samples may also be collected if suspect hot spots are encountered outside the paint and varnish manufacturing facility.

3: The composite sample will represent the entire depth of the strata.

Table 2 – Soil Sampling and Analytical Requirements

Parameter/Fraction	Sample Containers	Minimum Sample Volumes	Sample Preservation	Analytical Method	Holding Time
Volatile Organics	40 ml glass vial	4 vials @ 5 grams each	Cool to 4°C. Frozen within 48 hours	8260	14 days
Semi-Volatile Organics	8 oz. glass	30-50 grams	Cool to 4°C	8270	14 day ext*/40 days
TAL Metals:					
mercury	4 oz. glass	20 grams	Cool to 4°C	7471	28 days
Hexavalent Chromium	4 oz. glass	20 grams	Cool to 4°C	7196	30 days
all other metals	4 or 8 oz. glass	20 grams	Cool to 4°C	6010	6 months
PCBs/Pesticides	8 oz. glass	200 grams	Cool to 4°C	8082/8081	14/40 days ext*
Extractable Petroleum Hydrocarbons	4 or 8 oz. glass	50 grams	Cool to 4°C	EPH (NJ Method)	14 days

Parameter/Fraction	Sample Containers	Minimum Sample Volumes	Sample Preservation	Analytical Method	Holding Time
Corrosivity Sample Set:					
Chlorides	4 or 8 oz. glass	20 grams	Cool to 4ºC	EPA 9251	28 days
Sulfate	4 or 8 oz. glass	20 grams	Cool to 4ºC	EPA 9038	28 days
Sulfides	4or 8 oz. glass	30 grams	Cool to 4ºC	EPA 9030B	7 days
Corrosivity (as pH)	8 oz. glass and 4 oz. glass w/septa	20 grams	Cool to 4ºC	9045	1 day
Reactivity	4 or 8 oz. glass	10 grams	Cool to 4º	SW-846 Ch 7	14 days
Ignitability	4 or 8 oz. glass	20 grams	Cool to 4º	1010	14 days
TCLP	1 4 oz and 1 16 oz glass	500 grams	Cool to 4º	1311	14 days ext*/180 days ext*

***** - Extraction

Table 3 – Groundwater Sampling and Analytical Requirements

Parameter/Fraction	Sample Containers	Minimum Sample Volumes	Sample Preservation	Analytical Method	Holding Time
Volatile Organic Compounds	40 ml glass vial with HCl preservative	40 ml (3 vials)	Cool to 4º	624	14 days
PCBs	1 L amber glass jar	1 L	Cool to 4º	608	7 day ext*/40 days
Priority Pollutant Metals (Dissolved)					
mercury	250 ml plastic vial with HNO_3 preservative	250 ml	Cool to 4º	245.2	28 days
all other metals	250 ml plastic vial with HNO_3 preservative	250 ml	Cool to 4º	200 Series	6 months
Hexavalent Chromium	250 ml plastic vial	250 ml	Cool to 4º	3500-Cr	24 hours
Phenol	1 L amber glass jar	1 L	Cool to 4º	625	7 day ext*/40 days
Naphthalene	1 L amber glass jar	1 L	Cool to 4º	625	7 day ext*/40 days
Methyl Tert-Butyl Ether	1 L amber glass jar	1 L	Cool to 4º	8260	7 day ext*/40 days
Total Nitrogen					
Total Kjeldahl Nitrogen	250 ml plastic vial with H_2SO_4 preservative	250 ml	Cool to 4º	300.0	28 days

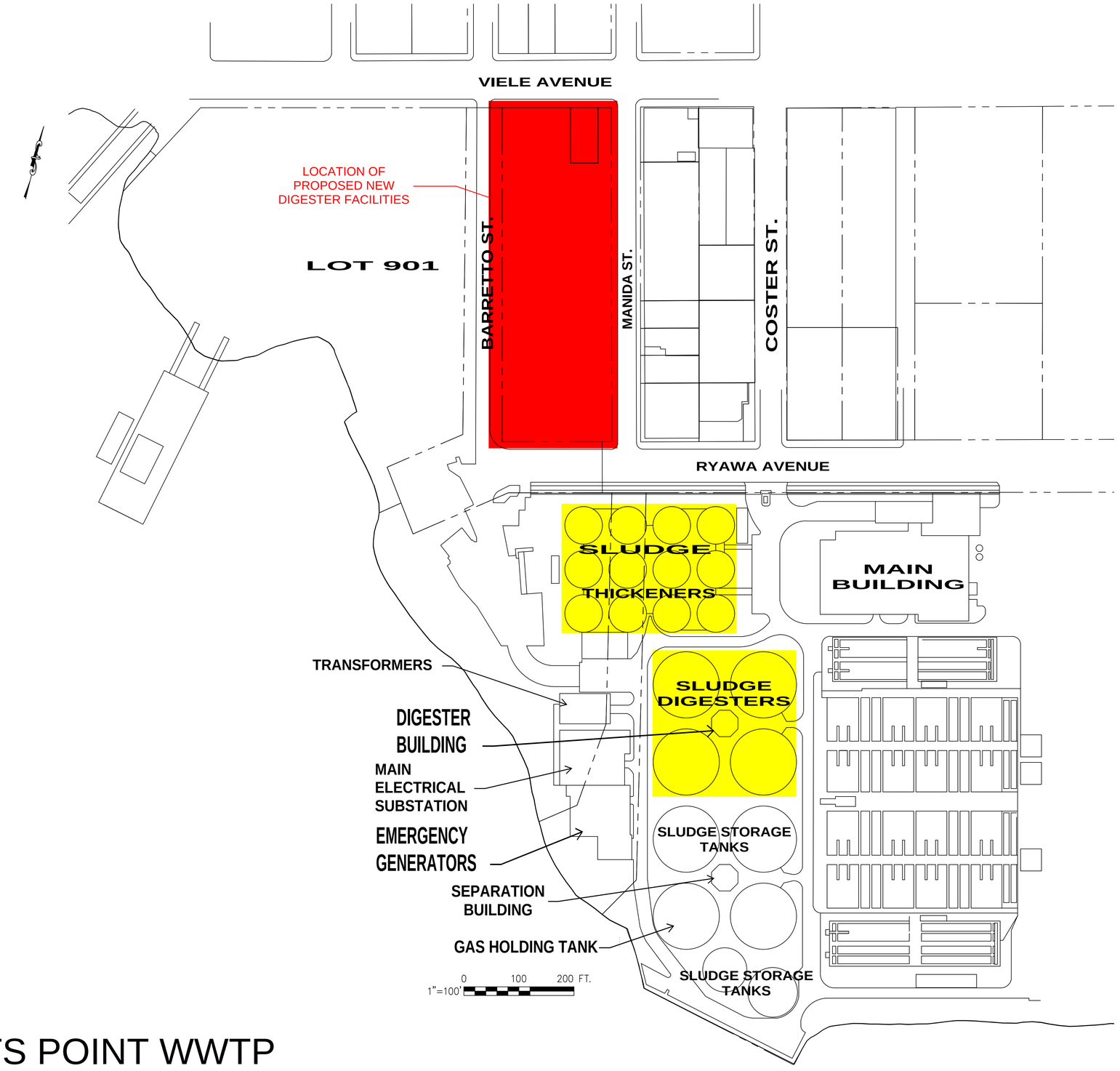
Table 3 Continued – Groundwater Sampling and Analytical Requirements

Parameter/Fraction	Sample Containers	Minimum Sample Volumes	Sample Preservation	Analytical Method	Holding Time
Nitrate and Nitrite	250 ml plastic vial	250 ml	Cool to 4º	300.0	48 hours
Chloride	250 ml plastic vial	250 ml	Cool to 4º	300.0	28 days
Flash Point	1 L amber glass jar	1 L	Cool to 4º	1010	-
Oil and Grease	1 L amber glass jar with H_2SO_4 preservative	1 L	Cool to 4º	1664A	7 day ext*/40 days
Total Suspended Solids	500 ml plastic jar	500 ml	Cool to 4º	2540D-97, 160.2	7 days
Total Solids	500 ml plastic jar	500 ml	Cool to 4º	2540B-97	7 days
Settleable Solids	1 L plastic jar	1 L	Cool to 4º	160.5	7 days
Carbonaceous Biochemical Oxygen Demand	1 L plastic jar	1 L	Cool to 4º	5210B-01	48 hours

* - Extraction.

Attachment A

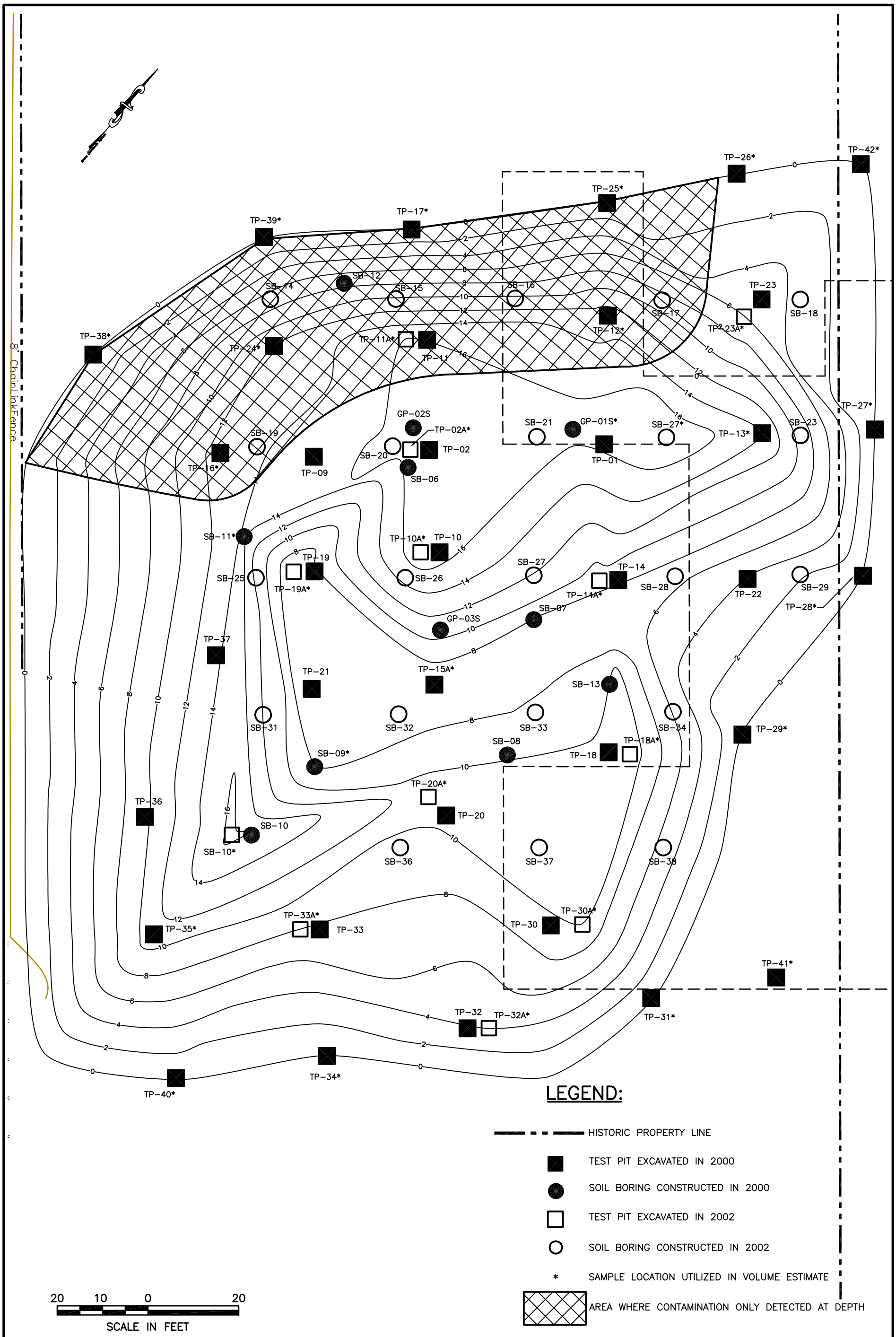
Figures Prepared by Others



HP-238 HUNTS POINT WWTP

SITE PLAN

Brown AND Caldwell



BARRETTO POINT SITE
BRONX, NEW YORK

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

ESTIMATED DEPTH OF SOIL REQUIRING REMEDIATION WITHIN FORMER PAINT AND VARNISH MANUFACTURING AREA

FIGURE 8

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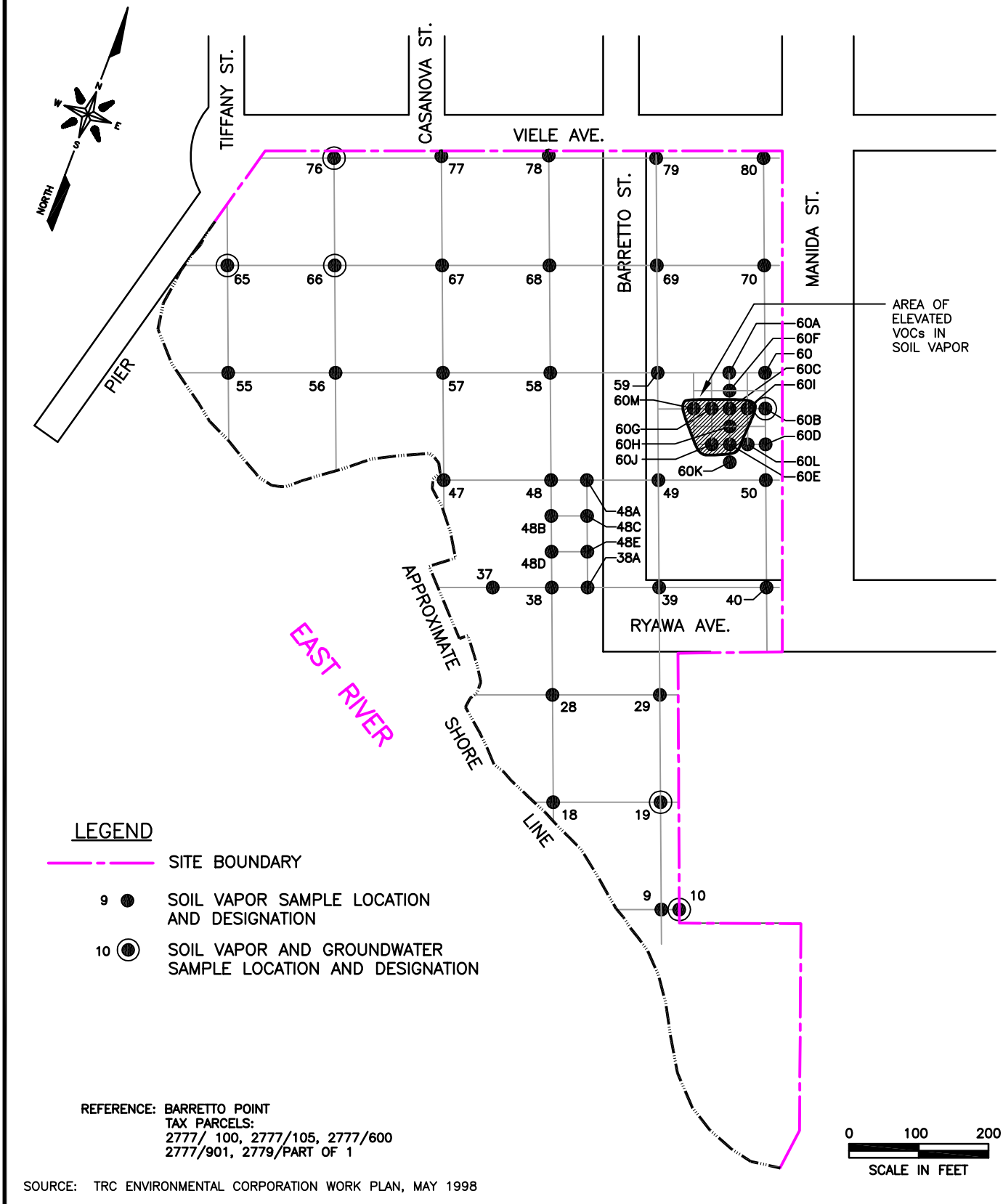
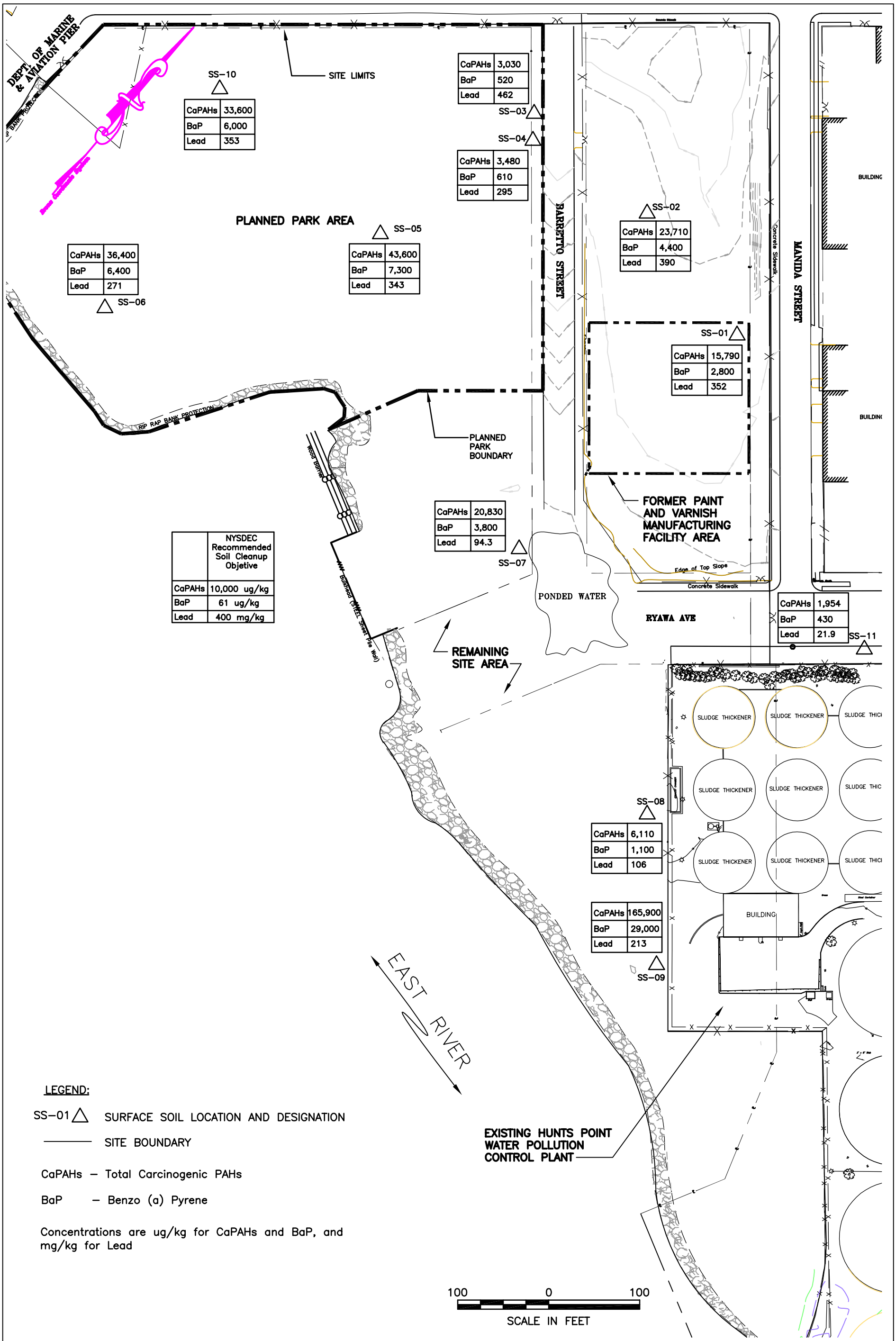


BARRETTO POINT SITE
BRONX, NEW YORK

AREA OF ELEVATED VOLATILE ORGANIC COMPOUNDS IN SOIL VAPOR

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 4



	NYSDEC Recommended Soil Cleanup Objetive
CaPAHs	10,000 ug/kg
BaP	61 ug/kg
Lead	400 mg/kg

LEGEND:

SS–01 △ SURFACE SOIL LOCATION AND DESIGNATION

——— SITE BOUNDARY

CaPAHs – Total Carcinogenic PAHs

BaP – Benzo (a) Pyrene

Concentrations are ug/kg for CaPAHs and BaP, and mg/kg for Lead

BARRETTO POINT SITE
BRONX, NEW YORK

SURFACE SOIL RESULTS FOR PRIMARY INDICATORS OF CONTAMINATION

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 5

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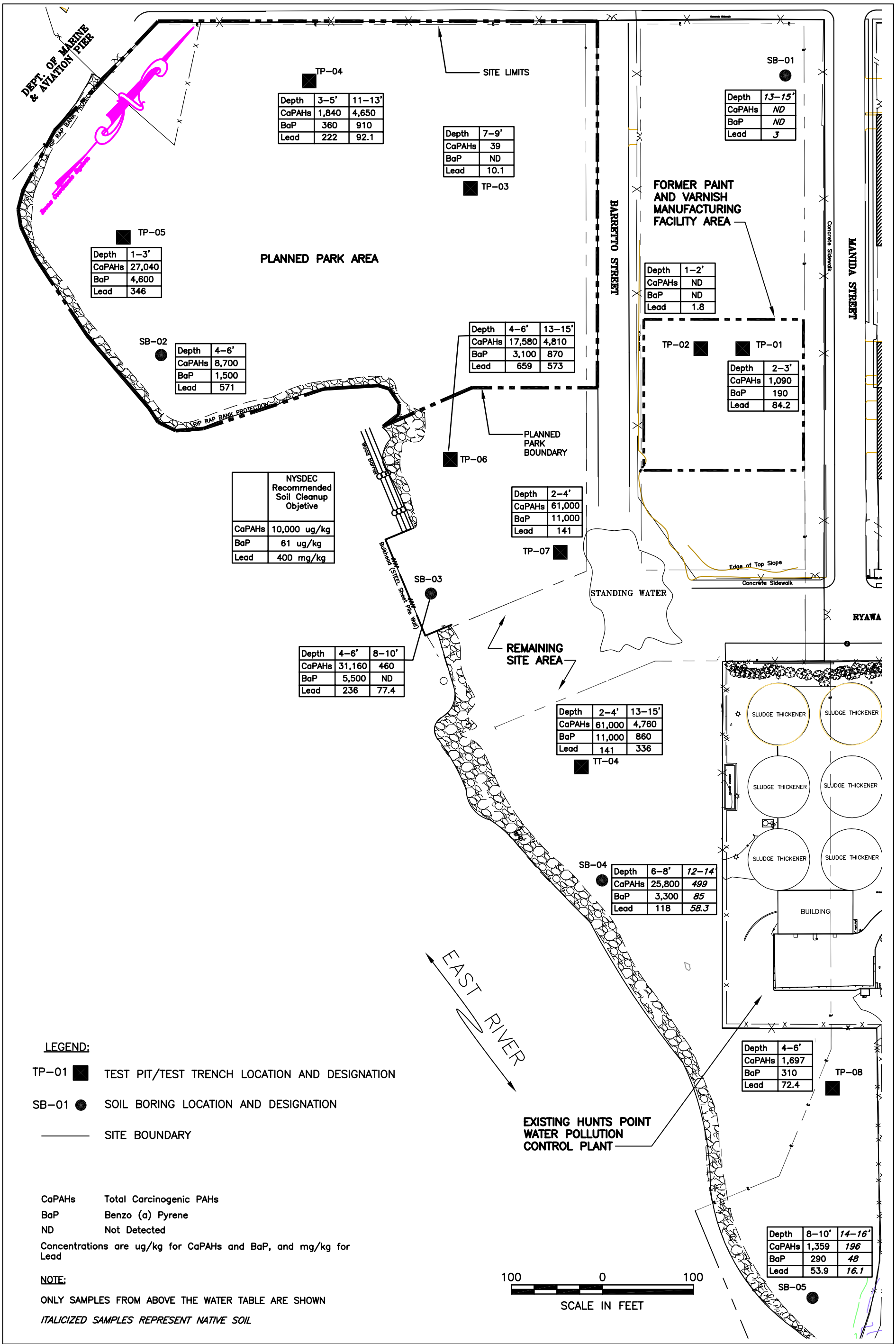


LEGEND:

TP–01 ■ TEST PIT/TEST TRENCH LOCATION AND DESIGNATION

SB–01 ● SOIL BORING LOCATION AND DESIGNATION

——— SITE BOUNDARY

CaPAHs	Total Carcinogenic PAHs
BaP	Benzo (a) Pyrene
ND	Not Detected

Concentrations are ug/kg for CaPAHs and BaP, and mg/kg for Lead

NOTE:

ONLY SAMPLES FROM ABOVE THE WATER TABLE ARE SHOWN

ITALICIZED SAMPLES REPRESENT NATIVE SOIL

BARRETTO POINT SITE
BRONX, NEW YORK

SUBSURFACE SOIL RESULTS FOR PRIMARY INDICATORS OF CONTAMINATION

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 6

TP-42 (15)		
DEPTH	PID	FID
0–15	0–5	0

TP-17 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–6	0–25	0–10		
6–15	0–30	30–200		
14			26	U

TP-25 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–15	0–3	0–30		
15			19	U

TP-26 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–2	0–5	0		
2–4	5–50	0–20		
4–15	0–5	0		
14			20	U

DISCOLORATION, VERY FAINT PETROLEUM ODOR 2–3'
GROUNDWATER AT 15'

TP-23 (4)		
DEPTH	PID	FID
0–2	35–150	–
2–4	1000–1500	50–100

CHEMICAL ODOR 1–2'
PETROLEUM ODOR, STAINING 2–4'
SCRAP METAL/POSSIBLE DRUM 2'

TP-39 (16)		
DEPTH	PID	FID
0–16	0–2	0–10

GROUNDWATER AT 16'

TP-23A (8)		
DEPTH	TVOCs	TICs
4	35,400	1,758,000

SOLVENT ODOR 2–6'

TP-38 (12)				
DEPTH	PID	FID	TVOCs	TICs
0–12	0	0		
11			17	U

GROUNDWATER AT 12'

SB-14 (12R)				
DEPTH	PID	TVOCs	TICs	
3–5	0	24	U	
9–9.5	70	38	2237	

SB-12 (18)				
DEPTH	PID	FID	TVOCs	TICs
0–18	0–3	–		
11–12		15	U	

GROUNDWATER AT 18'

SB-15 (6R)				
DEPTH	PID	TVOCs	TICs	
4–6	0	12	6	

SB-16 (7R)				
DEPTH	PID	TVOCs	TICs	
4–6	0	7	U	

SB-17 (9R)				
DEPTH	PID	TVOCs	TICs	
4–6	0	14	31	

SB-18 (8R)				
DEPTH	PID	TVOCs	TICs	
4–6	1200	13	74	

TP-11A (17)		
DEPTH	TVOCs	TICs
12.5	43	6,950

SOLVENT ODOR 9–16'

TP-12 (13)		
DEPTH	PID	FID
0–10	0–5	0–10
10–12	0–50	0–50
12–13	300–500	>1000

PETROLEUM STAINING/ODOR 12–13'

TP-24 (12)		
DEPTH	PID	FID
0–10	0–20	0–100
10–12	500–1000	>1000

PETROLEUM ODOR, STAINING 10–12'

TP-11 (12)		
DEPTH	PID	FID
0–2	10–50	100–300
2–5	5–10	100
5–8	0–10	0–10
8–11	100–400	50–100
11–12	500–1000	>1000

TRACE TO SLIGHT CHEMICAL ODOR 10–11'
STRONG CHEMICAL ODOR 11–12'

GP-01S (18)		
DEPTH	PID	FID
0–18	300–1500	50–600

GROUNDWATER AT 16'
SLIGHT PETROLEUM ODOR 4–12'
STRONG FUEL OIL ODOR 12–16'
STAINING/SHEEN 16–17'

SB-22 (20)			
DEPTH	PID	TVOCs	TICs
4–6	60	180	40,030
9–10.5	50	108	28,040
14–15.5	990	103	16,490
18–20	30	86	20,660

GROUNDWATER AT 18.5'
SLIGHT SOLVENT ODOR 4–18'

TP-13 (14)		
DEPTH	PID	FID
0–2	100–150	30–50
2–4	50–300	10–20
4–5	50–150	0–10
5–9	5–200	0–10
9–14	50–300	0–40

SLIGHT FUEL ODOR 9–14'
STAINING, CRUSHED DRUM 1–2'

SB-19 (3.5R)			
DEPTH	PID	TVOCs	TICs
3–3.5	90	28	7

GP-02S (10)		
DEPTH	PID	FID
0–2	0–5	0
2–10	25–400	10–100

SLIGHT CHEMICAL ODOR 6–10'

SB-21 (10R)			
DEPTH	PID	TVOCs	TICs
4–6	50	4500	1,553,000
9–10	280	677	170,300

TP-02 (2)				
DEPTH	PID	FID	TVOCs	TICs
0–2	>2000	>1000		
1–2			751,350	1,397,000

STRONG POSSIBLE PAINT THINNER ODOR

SB-23 (5R)				
DEPTH	PID	TVOCs	TICs	
3–5	30	17	80	

TP-16 (13)		
DEPTH	PID	FID
0–3	5–100	50–100
3–5	25–100	200–400
5–8	50–250	100
8–13	75–1500	100–500

TRACE TO SLIGHT FUEL OIL ODOR 8–13'

TP-09 (6)		
DEPTH	PID	FID
0–4	1–5	50–100
4–6	10–25	300

TRACE CHEMICAL ODOR 4–6'

SB-20 (5R)				
DEPTH	PID	TVOCs	TICs	
4–4.5	100	12	U	

SB-06 (24)				
DEPTH	PID	FID	TVOCs	TICs
10–12	200–600	0–100		
12–17	300–1000	>1000		
17–24	0–50	0–40		
17–19			900	1,238

SLIGHT CHEMICAL ODOR 10–17'
GROUNDWATER AT 19'

TP-01 (3)				
DEPTH	PID	FID	TVOCs	TICs
0–3	1200–>2000	400–>1000	–	–
2–3	–	–	U	1,830

VERY STRONG PAINT THINNER ODOR 0–3'

TP-02A (17)		
DEPTH	TVOCs	TICs
11	174,000	1,216,000

SOLVENT ODOR 2–17'

TP-27 (15)				
DEPTH	PID	TVOCs	TICs	
0–15	0–5			
15		20	U	

GROUNDWATER AT 15'

SB-11 (14R)		
DEPTH	PID	FID
0–10	0–5	0–2
10–14	20–40	–

SLIGHT PAINT ODOR 4–14'
POSSIBLE PAINT FLECKS 10–14'

TP-19A (8)		
DEPTH	TVOCs	TICs
4	48,200	710,500

SOLVENT ODOR 3–6'

TP-10A (17.5)		
DEPTH	TVOCs	TICs
4	659,000	5,247,000

SOLVENT ODOR 1–17.5'

TP-10 (2)			
DEPTH	PID	FID	
0–2	>1000	300–500	

STRONG CHEMICAL ODOR 0–2'

TP-14A (11)		
DEPTH	TVOCs	TICs
4	21	20,800

SOLVENT ODOR 1–9'

SB-28 (15R)			
DEPTH	PID	TVOCs	TICs
4–5	110	22	14
9–9.5	180	55	4,650

SB-29 (5R)				
DEPTH	PID	TVOCs	TICs	
4–5	65	31	991	

SB-24

SB-25 (5R)				
DEPTH	PID	TVOCs	TICs	
3–4.5	0–5	85	U	

TP-19 (1)		
DEPTH	PID	FID
0–1	>1000	>1000

VERY STRONG PAINT THINNER ODOR

SB-26 (6R)				
DEPTH	PID	TVOCs	TICs	
4–6	300	893	934	

PAINT ODOR 4–6'

SB-27 (7R)				
DEPTH	PID	TVOCs	TICs	
4–6	0	112	795	

TP-14 (5)		
DEPTH	PID	FID
0–2	25–100	10–100
2–5	100–300	100–300

STAINING 2–4'
STRONG TO VERY STRONG FUEL OIL ODOR 2–4'

TP-22 (3)		
DEPTH	PID	FID
0–1	0	0
1–3	150–250	100–200

PETROLEUM ODOR,
STAINING 1–3'

GP-03S (6R)		
DEPTH	PID	FID
0–6	0–5	1–2

SB-07 (14R)		
DEPTH	PID	FID
0–14	0–10	0

SLIGHT PETROLEUM ODOR AT 12'

TP-21 (3)		
DEPTH	PID	FID
0–3	100–300	>1000

STAINING, STRONG PETROLEUM ODOR 2–3'

TP-28 (16)		
DEPTH	PID	FID
0–16	0	0–10

GROUNDWATER AT 15'

TP-37 (7)		
DEPTH	PID	FID
0–2	0–5	10–100
2–3	0–5	100–500
3–5	25–100	200
5–7	1300–1500	700–>1000

CONTAINERS 2–3'
PAINT RESIDUE 2–5'
SLIGHT CHEMICAL ODOR 2–7'
STAINING AT 3'

SB-30

SB-31 (5R)				
DEPTH	PID	TVOCs	TICs	
3–5	200	442	115	

SB-32 (5R)				
DEPTH	PID	TVOCs	TICs	
4–5	105	55	675	

TP-15 (7)		
DEPTH	PID	FID
0–1	0	0
1–2	5–25	100
2–3	25–50	500–1000
3–4	150–250	500
4–7	100–800	>1000

SLIGHT CHEMICAL ODOR 5–6'
TRACE STAINING 2–3'

SB-13 (11R)				
DEPTH	PID	FID	TVOCs	TICs
0–11	0–1	–		
4–6			13	U

SB-33 (6R)				
DEPTH	PID	TVOCs	TICs	
4–6	0	34	407	

SB-34 (4R)				
DEPTH	PID	TVOCs	TICs	
3–4	45	18	798	

TP-29 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–15	0	0		
14			17	U

GROUNDWATER AT 15'

TP-20A (13)		
DEPTH	TVOCs	TICs
5	113	17,050

SOLVENT ODOR 3–11'

TP-18A (13)		
DEPTH	TVOCs	TICs
7	57,550	4,770,000

SOLVENT ODOR 5–11'

TP-SB10 (17.5)		
DEPTH	TVOCs	TICs
7	52,000	1,165,000

SOLVENT ODOR 2–16.5'

SB-09 (21)		
DEPTH	PID	FID
0–2	0	5
2–8	300–1900	100–350
8–21	0–50	0–5

GROUNDWATER AT 15'
PAINT RESIDUE 0–2',
PAINT THINNER ODOR 0–8'

SB-08 (17)		
DEPTH	PID	FID
0–4	0–10	0
4–6	5–50	10
6–17	0–25	0–6

GROUNDWATER AT 16'
PAINT RESIDUE 4–6'

TP-18 (7)		
DEPTH	PID	FID
0–6	5–20	10–100
6–7	500–1000	200

PAINT ODOR, POSSIBLE PAINT
RESIDUE/CONTAINER 6–7'

TP-36 (4)		
DEPTH	PID	FID
0–1	0–5	0–10
1–4	5–15	10–100

SB-35
CRUSHED PAINT CANS 1–4'
PAINT RESIDUE 3–4'

SB-10 (16)		
DEPTH	PID	FID
0–10	0–20	5
10–13	65–300	100–350
13–16	0–5	0–5

MODERATE PAINT ODOR 5–16'

SB-36 (20)			
DEPTH	PID	TVOCs	TICs
4–6	2	105	1,264
9–9.5	>2000	104	293
14–16	520	31	U
18–20	0	5	U

TP-20 (2)		
DEPTH	PID	FID
0–2	2–50	>1000

PAINT ODORS, STAINING,
PAINT RESIDUE 1–2'

SB-37 (20)			
DEPTH	PID	TVOCs	TICs
4–6	180	32	920
9–11	110	31	379
14–16	480	75	1,266
18–20	0	5	U

SB-38 (6R)			
DEPTH	PID	TVOCs	TICs
4–6	0	4	91

TP-33A (10)		
DEPTH	TVOCs	TICs
6	30,800	3,327,000

SOLVENT ODOR 4–8'

TP-30 (8)		
DEPTH	PID	FID
0–1	0	–
1–4	50–100	100–400
4–8	50–550	>1000

TP-30A (12)		
DEPTH	TVOCs	TICs
8	4,246	106,500

SOLVENT ODOR 4–10'

TP-35 (15)		
DEPTH	PID	FID
0–2	25–50	100–>1000*
2–4	50	50
4–5	5–10	200–300
5–10	25–200	>1000*
10–13	5–25	100–600
13–15	0	>1000

GROUNDWATER AT 14'
*DECAYING LUMBER IN ZONE
CRUSHED DRUMS AND PAINT
RESIDUE 2–5'
SLIGHT PAINT THINNER/VARNISH ODOR 2–11'

TP-33 (5)		
DEPTH	PID	FID
0–3	0–5	>1000*
3–4	10–35	10–30
4–5	–	–

STRONG POSSIBLE PAINT ODOR 4–5' (NO READINGS RECORDED)
CONTAINERS, POSSIBLE PAINT RESIDUE 4–5'
*DECAYING LUMBER IN ZONE

CHEMICAL ODOR 4–8'
CRUSHED 5 GAL CONTAINER 5–6'

TP-41 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–15	0	0–10		
14			7	U

TP-31 (16)		
DEPTH	PID	FID
0–2	0	0
2–5	10–50	100
5–8	0	100
8–16	0	0–10

GROUNDWATER AT 16'
SLIGHT FUEL ODOR,
DISCOLORED SOIL 2–5'

TP-40 (13)				
DEPTH	PID	FID	TVOCs	TICs
0–1	5–30	100		
1–2	25–30	50–100*		
2–4	50–150	>1000*		
4–5	10–25	>1000*		
5–6	2–10	100–200		
6–7	1–3	0–<10		
7–9	0	100–200		
9–10	5–50	10–20		
10–13	1–2	0–5		
12			58	11

GROUNDWATER AT 13'
*DECAYING LUMBER IN ZONE

TP-34 (15)		
DEPTH	PID	FID
0–2	0–25	100
2–6	0–2	200–500*
6–12	0	100
12–15	0	0

GROUNDWATER AT 15'
*DECAYING LUMBER IN ZONE

TP-32 (15)				
DEPTH	PID	FID	TVOCs	TICs
0–4	0	0–10		
4–6	25–100	10–100		
6–10	10–100	10–100		
10–15	0–10	0		
15			21	237

GROUNDWATER AT 15'
FUEL ODOR, DISCOLORED SOIL 6–10'

TP-32A (6)		
DEPTH	TVOCs	TICs
3	30	17,470

SOLVENT ODOR 2–4'

APPROXIMATE LOCATION OF THE FORMER PAINT AND VARNISH MANUFACTURING FACILITY

LEGEND:

- HISTORIC PROPERTY LINE
- ESTIMATED AREA OF SOIL REQUIRING REMEDIATION
- TEST PIT EXCAVATED IN 2000
- SOIL BORING CONSTRUCTED IN 2000
- TEST PIT EXCAVATED IN 2002
- SOIL BORING CONSTRUCTED IN 2002
- SOIL BORING NOT CONSTRUCTED
- (20) MAXIMUM DEPTH OF TEST PIT/SOIL BORING, 'R' INDICATES REFUSAL

PID AND FID READINGS IN PARTS PER MILLION

TVOCs: TOTAL VOLATILE ORGANIC COMPOUNDS, IN MICROGRAMS PER KILOGRAM

TICs: TOTAL TENTATIVELY IDENTIFIED COMPOUNDS, IN MICROGRAMS PER KILOGRAM

- VOCs GREATER THAN 1,000 MICROGRAMS PER KILOGRAM OR 1 MILLIGRAM PER KILOGRAM
- VOCs GREATER THAN 10,000 MICROGRAMS PER KILOGRAM OR 10 MILLIGRAM PER KILOGRAM
- VOCs GREATER THAN 100,000 MICROGRAMS PER KILOGRAM OR 100 MILLIGRAM PER KILOGRAM
- PID/FID READINGS GREATER THAN 1,000 PARTS PER MILLION

1 Milligram per Kilogram = 1 PPM
1 Microgram per Kilogram = 1 PPB

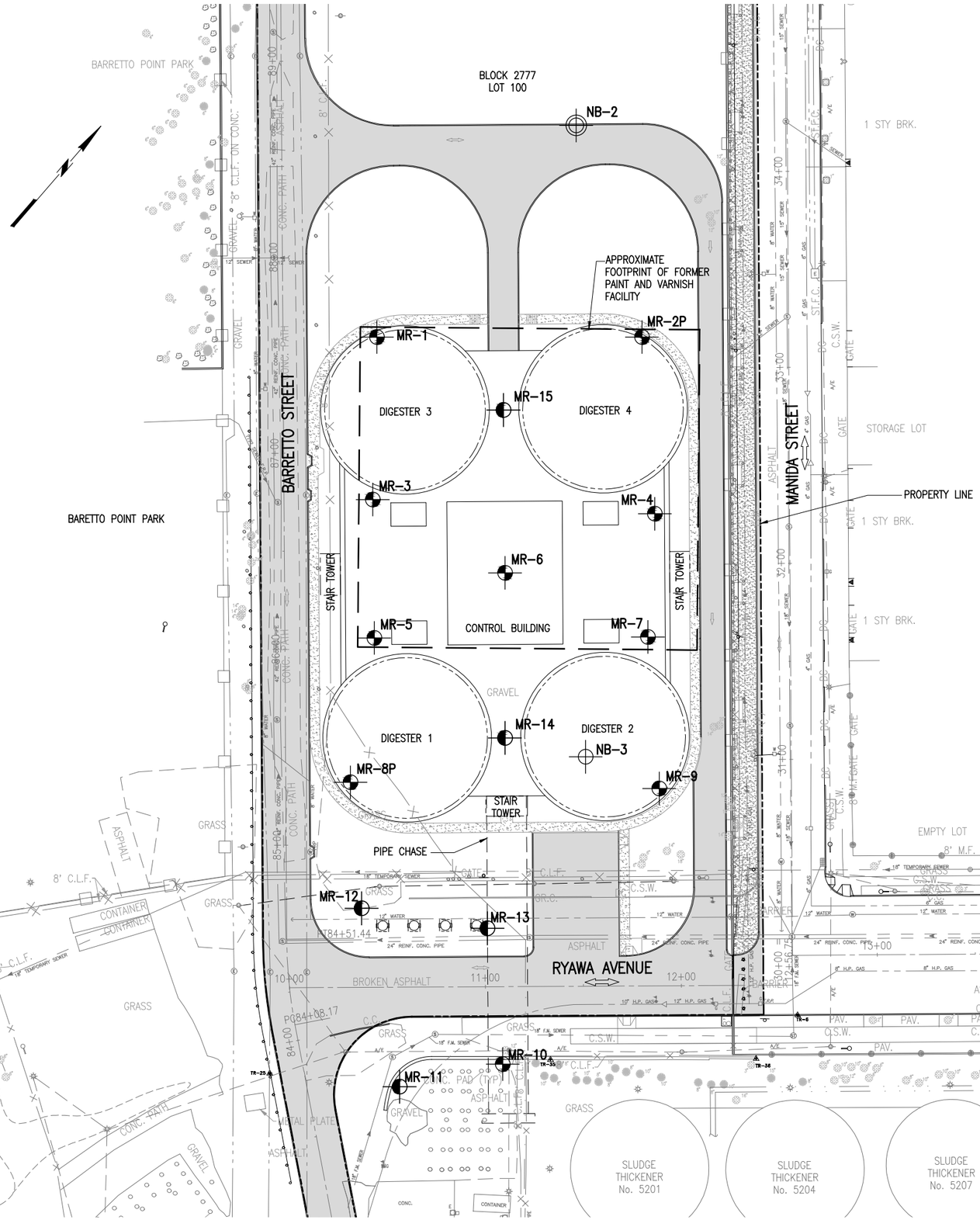
20 0 20
SCALE IN FEET

BARRETTO POINT SITE
BRONX, NEW YORK

Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

SUMMARY OF SOIL BORING AND TEST PIT SAMPLE RESULTS FORMER PAINT AND VARNISH MANUFACTURING FACILITY AREA

FIGURE 7



DRILLING PROCEDURE FOR PROPOSED BORINGS:

1. ALL BORINGS SHALL BE MADE AT LOCATIONS SHOWN ON THE BORING LOCATION PLAN.
2. BORINGS SHALL BE MADE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SUBSURFACE BORINGS AND SAMPLING BY MUESER RUTLEDGE CONSULTING ENGINEERS (MRCE).
3. THE TOP 6 FEET OF EACH BORING SHALL BE HAND AUGERED TO CLEAR UTILITIES.
4. THE BORING DIAMETER SHALL BE MINIMUM 3.5 INCHES. BORINGS SHALL BE MADE WITH A TRUCK MOUNTED DRILL RIG USING MUD-ROTARY DRILLING METHODS EMPLOYING DRILLING FLUIDS TO MAINTAIN A STABLE BOREHOLE. CASING SHALL BE USED ON AN AS-NEEDED BASIS TO SUPPLEMENT DRILLING FLUIDS.
5. CONTINUOUS SPLIT-SPOON SAMPLES WILL BE COLLECTED IN SOIL TO THE DEPTH OF WEATHERED ROCK/ROCK, USING A 2 INCH O.D. SPLIT-SPOON SAMPLER ADVANCED WITH A 140 LB HAMMER FALLING 30 INCHES.
6. BORINGS SHALL EXTEND A MINIMUM OF 10 FEET INTO COMPETENT BEDROCK. CORING SHALL BE DONE WITH AN N-SIZE, DOUBLE TUBE CORE BARREL.
7. A POSITIVE HEAD USING HEAVY DRILLING FLUID MUST BE MAINTAINED AT ALL TIMES.
8. PIEZOMETERS SHALL CONSIST OF 2-INCH MINIMIM I.D. WITH A MINIMUM OF 10 FEET IN LENGTH, 0.01" SLOTTED SCREEN AND SOLID PVC RISER UP TO THE GROUND SURFACE. THE ESTIMATED DEPTH OF EACH WELL IS APPROXIMATELY 30 FEET (SCREENED IN SOIL) AND 40 FEET (SCREENED IN BEDROCK).
9. ALL BORINGS NOT RECEIVING PIEZOMETER SHALL BE TREMIE GROUTED UPON COMPLETION AND SURFACE PATCHED IN KIND TO MATCH EXISTING SURFACE.
10. ALL BORINGS WILL BE MADE UNDER THE CONTINUOUS INSPECTION OF MRCE.

NOTES:

1. THE PLAN IS BASED ON TOPOGRAPHIC SURVEY BY MUNOZ ENGINEERING, P.C. DATED DECEMBER 9, 2016.
2. PROPOSED DIGESTER FACILITY FOOTPRINT WAS PROVIDED BY BROWN AND CALDWELL ON OCTOBER 9, 2017.
3. LIMITS OF FORMER PAINT AND VARNISH MANUFACTURING FACILITY IS BASED ON AREA SHOWN IN ENVIRONMENTAL RESTORATION RECORD OF DECISION REPORT, FIGURE 5, PREPARED BY DEC, DATED DECEMBER 2003.
4. BORING NOS. NB-1 THROUGH NB-3 WERE MADE BY AQUIFER DRILLING AND TESTING, INC. (ADT) IN 2002 UNDER INSPECTION BY URS. BORING LOCATIONS ARE BASED ON BORING LOCATION PLAN, FIGURE 2, PREPRAPED BY URS, FROM ENGINEERING EVALUATION AND FOUNDATION RECOMMENDATIONS PHASES I AND II DRAFT REPORT, DATED APRIL 30, 2002.
5. THE BORING CONTRACTOR SHALL LOCATE ALL UTILITIES, OBTAIN ALL NECESSARY PERMITS AND INSURANCE PRIOR TO PERFORMING WORK.

LEGEND:

NB-3 – PREVIOUS BORING (URS 2002)

NB-2 – PREVIOUS BORING AND MONITORING WELL (URS 2002)

MR-3P – PROPOSED PHASE I BORING "P" INDICATES PIEZOMETER

MR-14 – PROPOSED PHASE II BORING

GRAPHIC SCALE
30' 20' 10' 0 30' 60'

REV.	DATE	BY	DESCRIPTION

HP-238 HUNTS POINT WWTP – NEW ANAEROBIC DIGESTER FACILITIES
BRONX NEW YORK

BROWN AND CALDWELL
NEW YORK NEW YORK

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY: L.R.	DATE: 10-16-2017	FILE NUMBER
GRAPHIC	CH'KD BY: S.M.R.	DATE: 10-16-2017	12591

PROPOSED BORING LOCATION PLAN — DRAWING NUMBER PB-1

Last saved by: bsummerville on Monday, Oct 16, 2017 – 3:31:51 PM
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Attachment B

Bidwell Environmental Job Hazard Analysis

HP-238 Soil and Groundwater Sampling JHA

Task/Activity	Hazards	Environmental Considerations	Controls	Equipment	Training Requirements
Emergency Response	Delayed response		• Verify working cell phone service or land line is provided. • Provide site address to 911 Operator: **201 Manida St.,** **Bronx, NY** • Do not work alone in unoccupied or remote areas - use the buddy system. • Ensure designated individual meets emergency responders at site entrance and guides responders.	• Cell phone/ land line	
Site Evacuation	Lack of familiarity with evacuation procedures		• Review safety procedures and emergency egress routes as discussed in the orientation meeting. • Hand held air horn shall be used to signal evacuation. Signal shall be a single blast of 10 seconds. • Site Safety Officer shall maintain sign-in sheet for all personnel and verify that all personnel have been accounted for in the event of an evacuation. • Site Safety Officer shall inform emergency responders of whether or not all personnel have been accounted for.	• Air horn	

HP-238 Soil and Groundwater Sampling JHA

Task/Activity	Hazards	Environmental Considerations	Controls	Equipment	Training Requirements
Soil and Groundwater Sampling	Drill rig operation		• Personnel must keep a safe distance from the drill rig during operation.		
	Contaminated soil particulates & groundwater; contact with chemicals used for decontamination	Spill/release of chemicals used for decontamination	• Air Monitoring with 5 gas meter. • Compliance with air monitoring Action Levels. O_2 - 19.5-23.5% LEL - <10% H_2S - <10 ppm CO - <35 ppm VOCs - <5 ppm • If Action Levels are exceeded, all operations must stop immediately and workers upgrade PPE to level C, including:. • Respiratory protection for VOCs (half face, OV/P100 cartridges). • Chemical resistant coveralls, such as Tyvek. • Chemical resistant boot covers and outer gloves. • Stand upwind from excavation. • Remain at least 5 feet away from boring to allow for volatilization of vapors. • Safety goggles (if a splash potential exists). • Nitrile or Neoprene gloves.	• 5 gas meter • Decon. Solutions (Alconox, Isopropyl Alcohol, Nitric Acid) • Safety Goggles, as necessary • Nitrile Gloves • Level C PPE, as necessary, including respirators, chemical resistant coveralls, boot covers & outer gloves • Poly sheeting	• HazCom • HAZWOPER • SDS review • Knowledge of air monitoring equipment (for personnel required to perform monitoring) • Respiratory Protection, as necessary

HP-238 Soil and Groundwater Sampling JHA

Task/Activity	Hazards	Environmental Considerations	Controls	Equipment	Training Requirements
Soil and Groundwater Sampling Cont'd			• Work coveralls. Disposable protective coveralls may be used if splash potential exists. • Equipment decontamination shall take place over poly sheeting and suitable containment vessel. • List of chemicals onsite and relevant SDSs kept onsite and maintained throughout activity.		
	Working with tools		• Use cut-resistant work gloves. • Use tools only for their intended purposes.	•Work Gloves	

Attachment C

Field Meters

Call: **800-301-9663** CEMS: **877-427-7368**
Email: **info@pine-environmental.com**
www.pine-environmental.com

Fluke 1625 Advanced Soil Conductivity Meter

Key Features

- 3- and 4-pole earth ground measurement
- 4-Pole soil resistivity testing
- 2-pole resistance measurement AC
- 2- and 4-pole resistance measurement DC
- Selective testing, no disconnection of ground conductor (1 clamp)
- Stakeless testing, quick ground loop testing (2 clamps)
- Earth impedance measurement at 55 Hz
- Automatic frequency control (AFC) (94, 105, 111, 128 Hz)
- Measuring voltage switchable 20/48V
- Programmable limits, settings
- Continuity with buzzer

The Fluke 1625 is the advanced earth ground tester that performs all four types of earth ground tests and includes features that give quicker and more accurate readings.

Testing Methods

- 3- and 4-Pole Fall of Potential – standard earth ground testing using two ground stakes
- Selective testing – without disconnecting ground rods, a technician can measure ground resistance using a combination of stakes and a clamp.
- Stakeless testing – innovative solution using only clamps, instead of ground stakes, to measure earth ground loop resistance

The Fluke 1625 offers these advanced features

- Automatic Frequency Control (AFC) – identifies existing interference and chooses a measurement frequency to minimize its effect, providing a more accurate earth ground value.
- R* measurement – calculates earth ground impedance at 55 Hz to more accurately reflect the earth ground resistance that a fault-to-earth ground would see.
- Adjustable limits – for quick test result verification.

Technical Specification

Title	Values
RA 3-pole Ground Resistance Measurement (IEC 1557-5)	
Measuring voltage	250 mA AC

Title	Values
Measure frequency	94, 105, 111, 128Hz
Resolution	0.001 Ω to 100 Ω
Measuring range	0.001 Ω to 299.9 kΩ
Intrinsic error	± (2 % of reading + 2 d)
Operating error	± (5 % of reading + 5 d)
RA 4-pole Ground Resistance Measurement (IEC 1557-5)	
Measuring voltage	Vm = 20/48 V AC
Short circuit current	250 mA AC
Measure frequency	94, 105, 111, 128Hz
Resolution	0.001 Ω to 100 Ω
Measuring range	0.001 Ω to 299.9 kΩ
Intrinsic error	± (2 % of reading + 2 d)
Operating error	± (5 % of reading + 5 d)
RA 3-pole Ground Resistance Measurement With Current Clamp	
Measuring voltage	Vm = 20/48 V AC
Short circuit current	250 mA AC
Measure frequency	94, 105, 111, 128Hz
Resolution	0.001 Ω to 10 Ω
Measuring range	0.001 Ω to 29.99 kΩ
Intrinsic error	± (7 % of reading + 2 d)
RA 4-pole Selective Ground Resistance Measurement With Current Clamp	
Measuring voltage	Vm = 20/48 V AC
Short circuit current	250 mA AC
Measure frequency	94, 105, 111, 128Hz
Resolution	0.001 Ω to 10 Ω
Measuring range	0.001 Ω to 29.99 kΩ
Intrinsic error	± (7 % of reading + 2 d)
Operating error	± (10 % of reading + 5 d)
Stakeless Ground Loop Measurement	
Measuring voltage	Vm = 20/48 V AC
Measure frequency	94, 105, 111, 128Hz
Noise current (Iext)	Max. Iext = 3 A
Resolution	0.001 Ω to 10 Ω
Measuring range	0.001 Ω to 29.99 kΩ
Intrinsic error	± (7 % of reading + 2 d)
Operating error	± (10 % of reading + 5 d)
Environmental Specifications	
Working temperature	-10 °C to +50 °C
Operating temperature	0 °C to +35 °C
Nominal temperature	+18 °C to +28 °C
Storage temperature	-30 °C to +60 °C
Climatic class	C1 (IEC 654-1), -5 °C to + 45 °C, 5 % to 95 % RH
Protection type	IP56 for case, IP40 for battery door according to EN 60529
Safety Specifications	
Safety rating	CAT II, 300 V

Call: **800-301-9663** CEMS: **877-427-7368**
www.pine-environmental.com

PINE

HI 9024 • HI 9025

The Most Popular Waterproof pH Meters for Field Measurements

HI 9024 and HI 9025 are microprocessor-based pH meters in waterproof casings.

HI 9024 measures pH and temperature, and HI 9025 can also measure ORP in the mV range.

Both meters are housed in rugged, waterproof, ABS casings that are built to last.

The Auto-Instruction feature guides the user step-by-step through the calibration process with graphic symbols.

The automatic calibration procedure is simple and quick and can be performed at 1 or 2 points selected from 5 memorized buffers: pH 4.01, 6.86, 7.01, 9.18, 10.01. A stability indicator assures a correct calibration.

Both meters also feature automatic shut-off to save battery life.

Specifications

		HI 9024	HI 9025
Range	pH	0.00 to 14.00 pH	
	mV	—	±399.9 mV; ±1999 mV
	Temperature	0.0 to 100.0°C / 32.0°F to 212.0°F	
Resolution	pH	0.01 pH	
	mV	—	0.1 mV; 1 mV
	Temperature	0.1°C / 0.1°F	
Accuracy (@20°C)	pH	±0.01 pH	
	mV	—	±0.2 mV; ±1 mV
	Temperature	±0.4°C / ±0.8°F	
pH Calibration		automatic, 1 or 2 point with 5 memorized buffer values (pH 4.01, 6.86, 7.01, 9.18, 10.01); offset calibration: ±1 pH; slope calibration: 70 to 108%	
Temperature Compensation		automatic or manual, -5 to 105°C (23°F to 221°F)	
pH Electrode		HI 1230B, double junction, Ultem® body, gel filled, BNC connector and 1 m cable (included)	
Temperature Probe		HI 7669/2W with 1 m (3.3') cable (included)	
Input Impedance		10^{12} Ohm	
Battery Type / Life		4 x 1.5V AA / approx. 500 hours of continuous use; auto-off after 20 minutes of non-use (can be disabled)	
Environment		0 to 50°C (32 to 122°F); RH max 100%	
Dimensions / Weight		196 x 80 x 60 mm (7.7 x 3.1 x 2.4") / 500 g (1.1 lb.)	

Accessories

HI 1230B	pH electrode, gel filled, Ultem® body, BNC, 1 m cable
HI 3230B	ORP electrode, gel filled, Ultem® body, BNC, 1 m cable
HI 7669/2W	Temperature probe
HI 76405	Electrode holder
HI 7004L	pH 4.01 buffer solution, 500 mL bottle
HI 7006L	pH 6.86 buffer solution, 500 mL bottle
HI 7007L	pH 7.01 buffer solution, 500 mL bottle
HI 7009L	pH 9.18 buffer solution, 500 mL bottle
HI 7010L	pH 10.01 buffer solution, 500 mL bottle
HI 70300L	Electrode storage solution, 500 mL bottle
HI 8427	pH/mV electrode simulator
HI 931001	pH/mV electrode simulator with display

Ordering Information

HI 9024 is supplied complete with HI 1230B pH electrode, HI 7669/2W temperature probe, pH 4 and pH 7 buffer sachets, 100 mL plastic beaker, batteries, rugged carrying case and instructions.

HI 9025 is supplied complete with HI 1230B pH electrode, HI 7669/2W temperature probe, pH 4 and pH 7 buffer sachets, 100 mL plastic beaker, batteries, rugged carrying case and instructions.

For a complete range of calibration, cleaning and maintenance solutions, see section F. For pH and ORP electrodes, see section E. For accessories, see section U.

Attachment D

Envirotest Laboratories Inc. & Alpha Analytical

NYS ELAP Certificates

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2018
Issued April 01, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. JOSEPH L. WATKINS
ALPHA ANALYTICAL
8 WALKUP DR
WESTBOROUGH, MA 01581-1019

NY Lab Id No: 11148

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Bacteriology

Coliform, Total / E. coli (Qualitative)	SM 18-22 9223B (-97) (Colilert)
E. coli (Enumeration)	SM 18-22 9223B (-97) (Colilert)
Heterotrophic Plate Count	SM 18-22 9215B (-00)

Fuel Additives

Methyl tert-butyl ether	EPA 524.2
Naphthalene	EPA 524.2

Microextractibles

1,2-Dibromo-3-chloropropane	EPA 504.1
1,2-Dibromoethane	EPA 504.1

Miscellaneous

Odor	SM 18-22 2150B (-97)
Organic Carbon, Total	SM 21-22 5310C (-00)
Perchlorate	EPA 332.0 Rev. 1
Turbidity	SM 18-22 2130 B (-01)
	EPA 180.1 Rev. 2.0

Non-Metals

Alkalinity	SM 18-22 2320B (-97)
Chloride	EPA 300.0 Rev. 2.1
Color	SM 18-22 2120B (-01)
Cyanide	SM 18-22 4500-CN E (-99)
Fluoride, Total	EPA 300.0 Rev. 2.1
	SM 18-22 4500-F C (-97)
Nitrate (as N)	SM 18-22 4500-NO3 F (-00)
Nitrite (as N)	SM 18-22 4500-NO3 F (-00)

Non-Metals

Solids, Total Dissolved	SM 18-22 2540C (-97)
Specific Conductance	SM 18-22 2510B (-97)
Sulfate (as SO4)	EPA 300.0 Rev. 2.1

Trihalomethanes

Bromodichloromethane	EPA 524.2
Bromoform	EPA 524.2
Chloroform	EPA 524.2
Dibromochloromethane	EPA 524.2
Total Trihalomethanes	EPA 524.2

Volatile Aromatics

1,2,3-Trichlorobenzene	EPA 524.2
1,2,4-Trichlorobenzene	EPA 524.2
1,2,4-Trimethylbenzene	EPA 524.2
1,2-Dichlorobenzene	EPA 524.2
1,3,5-Trimethylbenzene	EPA 524.2
1,3-Dichlorobenzene	EPA 524.2
1,4-Dichlorobenzene	EPA 524.2
2-Chlorotoluene	EPA 524.2
4-Chlorotoluene	EPA 524.2
Benzene	EPA 524.2
Bromobenzene	EPA 524.2
Chlorobenzene	EPA 524.2
Ethyl benzene	EPA 524.2
Hexachlorobutadiene	EPA 524.2
Isopropylbenzene	EPA 524.2

Serial No.: 55906

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Volatile Aromatics	
n-Butylbenzene	EPA 524.2
n-Propylbenzene	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 524.2
sec-Butylbenzene	EPA 524.2
Styrene	EPA 524.2
tert-Butylbenzene	EPA 524.2
Toluene	EPA 524.2
Total Xylenes	EPA 524.2
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 524.2
1,1,1-Trichloroethane	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 524.2
1,1,2-Trichloroethane	EPA 524.2
1,1-Dichloroethane	EPA 524.2
1,1-Dichloroethene	EPA 524.2
1,1-Dichloropropene	EPA 524.2
1,2,3-Trichloropropane	EPA 524.2
1,2-Dichloroethane	EPA 524.2
1,2-Dichloropropane	EPA 524.2
1,3-Dichloropropane	EPA 524.2
2,2-Dichloropropane	EPA 524.2
Bromochloromethane	EPA 524.2
Bromomethane	EPA 524.2
Carbon tetrachloride	EPA 524.2
Chloroethane	EPA 524.2

Volatile Halocarbons	
Chloromethane	EPA 524.2
cis-1,2-Dichloroethene	EPA 524.2
cis-1,3-Dichloropropene	EPA 524.2
Dibromomethane	EPA 524.2
Dichlorodifluoromethane	EPA 524.2
Methylene chloride	EPA 524.2
Tetrachloroethene	EPA 524.2
trans-1,2-Dichloroethene	EPA 524.2
trans-1,3-Dichloropropene	EPA 524.2
Trichloroethene	EPA 524.2
Trichlorofluoromethane	EPA 524.2
Vinyl chloride	EPA 524.2

Serial No.: 55906

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

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All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260C
	EPA 624
Acrylonitrile	EPA 8260C
	EPA 624
Ethyl methacrylate	EPA 8260C
Methyl methacrylate	EPA 8260C
Amines	
1,2-Diphenylhydrazine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
Aniline	EPA 625
	EPA 8270D
Carbazole	EPA 625
	EPA 8270D
Diphenylamine	EPA 8270D
Pyridine	EPA 625
	EPA 8270D
Bacteriology	
Coliform, Fecal	SM 9221C,E-2006
	SM 9222D-2006
Coliform, Total	SM 9221B-2006
	SM 9222B-2006
Heterotrophic Plate Count	SM 18-21 9215B

Benzidines	
3,3'-Dichlorobenzidine	EPA 625
	EPA 8270D
Benzidine	EPA 625
	EPA 8270D
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
	EPA 608
4,4'-DDE	EPA 8081B
	EPA 608
4,4'-DDT	EPA 8081B
	EPA 608
Aldrin	EPA 8081B
	EPA 608
alpha-BHC	EPA 8081B
	EPA 608
alpha-Chlordane	EPA 8081B
beta-BHC	EPA 8081B
	EPA 608
Chlordane Total	EPA 8081B
	EPA 608
delta-BHC	EPA 8081B
	EPA 608
Dieldrin	EPA 8081B
	EPA 608
Endosulfan I	EPA 8081B

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Chlorinated Hydrocarbon Pesticides

Endosulfan I	EPA 608
Endosulfan II	EPA 8081B
	EPA 608
Endosulfan sulfate	EPA 8081B
	EPA 608
Endrin	EPA 8081B
	EPA 608
Endrin aldehyde	EPA 8081B
	EPA 608
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608
Heptachlor epoxide	EPA 8081B
	EPA 608
Lindane	EPA 8081B
	EPA 608
Methoxychlor	EPA 8081B
	EPA 608
Toxaphene	EPA 8081B
	EPA 608

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 625

Chlorinated Hydrocarbons

1,2,4-Trichlorobenzene	EPA 8270D
2-Chloronaphthalene	EPA 625
	EPA 8270D
Hexachlorobenzene	EPA 625
	EPA 8270D
Hexachlorobutadiene	EPA 625
	EPA 8270D
Hexachlorocyclopentadiene	EPA 625
	EPA 8270D
Hexachloroethane	EPA 625
	EPA 8270D

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A

Demand

Biochemical Oxygen Demand	SM 5210B-01,-11
Carbonaceous BOD	SM 5210B-01,-11
Chemical Oxygen Demand	EPA 410.4 Rev. 2.0
	SM 5220D-97,-11

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Fuel Oxygenates	
Di-isopropyl ether	EPA 8260C
Ethanol	EPA 8260C
Methyl tert-butyl ether	EPA 8260C
	EPA 624
tert-amyl methyl ether (TAME)	EPA 8260C
tert-butyl alcohol	EPA 8260C
tert-butyl ethyl ether (ETBE)	EPA 8260C
Haloethers	
2,2'-Oxybis(1-chloropropane)	EPA 625
	EPA 8270D
4-Bromophenylphenyl ether	EPA 625
	EPA 8270D
4-Chlorophenylphenyl ether	EPA 625
	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 625
	EPA 8270D
Bis(2-chloroethyl)ether	EPA 625
	EPA 8270D
Low Level Halocarbons	
1,2-Dibromo-3-chloropropane, Low Level	EPA 8011
1,2-Dibromoethane, Low Level	EPA 8011
Low Level Polynuclear Aromatics	
Acenaphthene Low Level	EPA 8270D SIM
Acenaphthylene Low Level	EPA 8270D SIM

Low Level Polynuclear Aromatics	
Anthracene Low Level	EPA 8270D SIM
Benzo(a)anthracene Low Level	EPA 8270D SIM
Benzo(a)pyrene Low Level	EPA 8270D SIM
Benzo(b)fluoranthene Low Level	EPA 8270D SIM
Benzo(g,h,i)perylene Low Level	EPA 8270D SIM
Benzo(k)fluoranthene Low Level	EPA 8270D SIM
Chrysene Low Level	EPA 8270D SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM
Fluoranthene Low Level	EPA 8270D SIM
Fluorene Low Level	EPA 8270D SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM
Naphthalene Low Level	EPA 8270D SIM
Phenanthrene Low Level	EPA 8270D SIM
Pyrene Low Level	EPA 8270D SIM
Metals II	
Chromium VI	EPA 7196A
	SM 3500-Cr B-09,-11
Mineral	
Acidity	SM 2310B-97,-11
Alkalinity	SM 2320B-97,-11
Chloride	EPA 300.0 Rev. 2.1
	SM 4500-Cl- E-97,-11
Fluoride, Total	EPA 300.0 Rev. 2.1
	SM 4500-F C-97,-11
Sulfate (as SO4)	EPA 300.0 Rev. 2.1

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All approved analytes are listed below:

Mineral	
Sulfate (as SO4)	SM 4500-SO4 E-97,-11
Miscellaneous	
Bromide	EPA 300.0 Rev. 2.1
Color	SM 2120B-01,-11
Cyanide, Total	LACHAT QuikChem 10-204-00-1-X
	SM 4500-CN E-99,-11
Formaldehyde	EPA 8315A
Oil and Grease Total Recoverable (HEM)	EPA 1664A
Organic Carbon, Total	SM 5310C-00,-11
Phenols	EPA 420.1 Rev. 1978
	EPA 9065
Silica, Dissolved	EPA 200.7 Rev. 4.4
Specific Conductance	EPA 120.1 Rev. 1982
	SM 2510B-97,-11
Sulfide (as S)	SM 4500-S2- D-00,-11
Surfactant (MBAS)	SM 5540C-00,-11
Total Petroleum Hydrocarbons	EPA 1664A
Turbidity	SM 2130 B-01,-11
	EPA 180.1 Rev. 2.0
Nitroaromatics and Isophorone	
1,3-Dinitrobenzene	EPA 8270D
2,4-Dinitrotoluene	EPA 625
	EPA 8270D
2,6-Dinitrotoluene	EPA 625
	EPA 8270D
Nitroaromatics and Isophorone	
Isophorone	EPA 625
	EPA 8270D
Nitrobenzene	EPA 625
	EPA 8270D
Nitrosoamines	
N-Nitrosodimethylamine	EPA 625
	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 625
	EPA 8270D
N-Nitrosodiphenylamine	EPA 625
	EPA 8270D
Nutrient	
Ammonia (as N)	SM 4500-NH3 H-97,-11
	EPA 350.1 Rev. 2.0
Kjeldahl Nitrogen, Total	EPA 351.1 Rev. 1978
	LACHAT 10-107-06-2
Nitrate (as N)	EPA 353.2 Rev. 2.0
	EPA 300.0 Rev. 2.1
	SM 4500-NO3 F-00,-11
Nitrate-Nitrite (as N)	EPA 353.2 Rev. 2.0
	SM 4500-NO3 F-00,-11
Nitrite (as N)	EPA 353.2 Rev. 2.0
	SM 4500-NO3 F-00,-11
	SM 4500-NO2 B-00,-11
Orthophosphate (as P)	SM 4500-P E-99,-11

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Nutrient	
Phosphorus, Total	SM 4500-P E-99,-11
Organophosphate Pesticides	
Atrazine	EPA 8270D
Parathion ethyl	EPA 8270D
Thionazin	EPA 8270D
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015C
Gasoline Range Organics	EPA 8015C
Phthalate Esters	
Benzyl butyl phthalate	EPA 625
	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 625
	EPA 8270D
Diethyl phthalate	EPA 625
	EPA 8270D
Dimethyl phthalate	EPA 625
	EPA 8270D
Di-n-butyl phthalate	EPA 625
	EPA 8270D
Di-n-octyl phthalate	EPA 625
	EPA 8270D
Polychlorinated Biphenyls	
PCB-1016	EPA 8082A
	EPA 608
Polychlorinated Biphenyls	
PCB-1221	EPA 8082A
	EPA 608
PCB-1232	EPA 8082A
	EPA 608
PCB-1242	EPA 8082A
	EPA 608
PCB-1248	EPA 8082A
	EPA 608
PCB-1254	EPA 8082A
	EPA 608
PCB-1260	EPA 8082A
	EPA 608
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A
Polynuclear Aromatics	
Acenaphthene	EPA 625
	EPA 8270D
Acenaphthylene	EPA 625
	EPA 8270D
Anthracene	EPA 625
	EPA 8270D
Benzo(a)anthracene	EPA 625
	EPA 8270D
Benzo(a)pyrene	EPA 625
	EPA 8270D

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Polynuclear Aromatics	
Benzo(b)fluoranthene	EPA 625
	EPA 8270D
Benzo(ghi)perylene	EPA 625
	EPA 8270D
Benzo(k)fluoranthene	EPA 625
	EPA 8270D
Chrysene	EPA 625
	EPA 8270D
Dibenzo(a,h)anthracene	EPA 625
	EPA 8270D
Fluoranthene	EPA 625
	EPA 8270D
Fluorene	EPA 625
	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 625
	EPA 8270D
Naphthalene	EPA 625
	EPA 8270D
Phenanthrene	EPA 625
	EPA 8270D
Pyrene	EPA 625
	EPA 8270D

Priority Pollutant Phenols	
2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 625

Priority Pollutant Phenols	
2,4,5-Trichlorophenol	EPA 8270D
2,4,6-Trichlorophenol	EPA 625
	EPA 8270D
2,4-Dichlorophenol	EPA 625
	EPA 8270D
2,4-Dimethylphenol	EPA 625
	EPA 8270D
2,4-Dinitrophenol	EPA 625
	EPA 8270D
2-Chlorophenol	EPA 625
	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 625
	EPA 8270D
2-Methylphenol	EPA 625
	EPA 8270D
2-Nitrophenol	EPA 625
	EPA 8270D
3-Methylphenol	EPA 625
	EPA 8270D
4-Chloro-3-methylphenol	EPA 625
	EPA 8270D
4-Methylphenol	EPA 625
	EPA 8270D
4-Nitrophenol	EPA 625
	EPA 8270D
Cresols, Total	EPA 8270D

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Priority Pollutant Phenols	
Pentachlorophenol	EPA 625
	EPA 8270D
Phenol	EPA 625
	EPA 8270D
Residue	
Settleable Solids	SM 2540 F-97,-11
Solids, Total	SM 2540 B-97,-11
Solids, Total Dissolved	SM 2540 C-97,-11
Solids, Total Suspended	SM 2540 D-97,-11
Solids, Volatile	SM 2540 E-97,-11
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270D
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D
2-Methylnaphthalene	EPA 8270D
Acetophenone	EPA 625
	EPA 8270D
Benzaldehyde	EPA 8270D
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
n-Decane	EPA 625
n-Octadecane	EPA 625

Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
1,2-Dichlorobenzene	EPA 8260C
	EPA 624
1,3,5-Trimethylbenzene	EPA 8260C
1,3-Dichlorobenzene	EPA 8260C
	EPA 624
1,4-Dichlorobenzene	EPA 8260C
	EPA 624
2-Chlorotoluene	EPA 8260C
4-Chlorotoluene	EPA 8260C
Benzene	EPA 8260C
	EPA 624
Bromobenzene	EPA 8260C
Chlorobenzene	EPA 8260C
	EPA 624
Ethyl benzene	EPA 8260C
	EPA 624
Isopropylbenzene	EPA 8260C
m/p-Xylenes	EPA 8260C
Naphthalene, Volatile	EPA 8260C
n-Butylbenzene	EPA 8260C
n-Propylbenzene	EPA 8260C
o-Xylene	EPA 8260C
p-Isopropyltoluene (P-Cymene)	EPA 8260C
sec-Butylbenzene	EPA 8260C

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2018
Issued April 01, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. JOSEPH L. WATKINS
ALPHA ANALYTICAL
8 WALKUP DR
WESTBOROUGH, MA 01581-1019

NY Lab Id No: 11148

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics	
Styrene	EPA 8260C
	EPA 624
tert-Butylbenzene	EPA 8260C
Toluene	EPA 8260C
	EPA 624
Total Xylenes	EPA 8260C
	EPA 624
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,1-Trichloroethane	EPA 8260C
	EPA 624
1,1,2,2-Tetrachloroethane	EPA 8260C
	EPA 624
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
	EPA 624
1,1-Dichloroethane	EPA 8260C
	EPA 624
1,1-Dichloroethene	EPA 8260C
	EPA 624
1,1-Dichloropropene	EPA 8260C
1,2,3-Trichloropropane	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C

Volatile Halocarbons	
1,2-Dichloroethane	EPA 624
1,2-Dichloropropane	EPA 8260C
	EPA 624
1,3-Dichloropropane	EPA 8260C
2,2-Dichloropropane	EPA 8260C
2-Chloroethylvinyl ether	EPA 8260C
	EPA 624
Bromochloromethane	EPA 8260C
Bromodichloromethane	EPA 8260C
	EPA 624
Bromoform	EPA 8260C
	EPA 624
Bromomethane	EPA 8260C
	EPA 624
Carbon tetrachloride	EPA 8260C
	EPA 624
Chloroethane	EPA 8260C
	EPA 624
Chloroform	EPA 8260C
	EPA 624
Chloromethane	EPA 8260C
	EPA 624
cis-1,2-Dichloroethene	EPA 8260C
	EPA 624
cis 1,3 Dichloropropene	EPA 8260C
	EPA 624

Serial No.: 55907

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Volatile Halocarbons

Dibromochloromethane	EPA 8260C
	EPA 624
Dibromomethane	EPA 8260C
Dichlorodifluoromethane	EPA 8260C
	EPA 624
Hexachlorobutadiene, Volatile	EPA 8260C
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C
	EPA 624
Tetrachloroethene	EPA 8260C
	EPA 624
trans-1,2-Dichloroethene	EPA 8260C
	EPA 624
trans-1,3-Dichloropropene	EPA 8260C
	EPA 624
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C
	EPA 624
Trichlorofluoromethane	EPA 8260C
	EPA 624
Vinyl chloride	EPA 8260C
	EPA 624

Volatiles Organics

1,4-Dioxane	EPA 8260C
2-Butanone (Methylethyl ketone)	EPA 8260C

Volatiles Organics

2-Hexanone	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
Acetone	EPA 8260C
	EPA 624
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Di-ethyl ether	EPA 8260C
Ethyl Acetate	EPA 8260C
Isopropanol	EPA 8260C
Methyl acetate	EPA 8260C
Methyl cyclohexane	EPA 8260C
n-Butanol	EPA 8260C
Vinyl acetate	EPA 8260C
	EPA 624

Sample Preparation Methods

EPA 5030C
SM 4500-CN B or C-99,-11
EPA 9030B
EPA 3510C
SM 4500-NH3 B-97,-11
EPA 9010C

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All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260C
Acrylonitrile	EPA 8260C
Ethyl methacrylate	EPA 8260C
Amines	
1,2-Diphenylhydrazine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
Aniline	EPA 8270D
Carbazole	EPA 8270D
Diphenylamine	EPA 8270D
Benzidines	
3,3'-Dichlorobenzidine	EPA 8270D
Benzidine	EPA 8270D
Characteristic Testing	
Corrosivity	EPA 9040C
	EPA 9045D
Free Liquids	EPA 9095B
Ignitability	EPA 1030
	EPA 1010A
Synthetic Precipitation Leaching Proc.	EPA 1312
TCLP	EPA 1311

Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
4,4'-DDE	EPA 8081B
4,4'-DDT	EPA 8081B
Aldrin	EPA 8081B
alpha-BHC	EPA 8081B
alpha-Chlordane	EPA 8081B
Atrazine	EPA 8270D
beta-BHC	EPA 8081B
Chlordane Total	EPA 8081B
delta-BHC	EPA 8081B
Dieldrin	EPA 8081B
Endosulfan I	EPA 8081B
Endosulfan II	EPA 8081B
Endosulfan sulfate	EPA 8081B
Endrin	EPA 8081B
Endrin aldehyde	EPA 8081B
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
Heptachlor epoxide	EPA 8081B
Lindane	EPA 8081B
Methoxychlor	EPA 8081B
Pentachloronitrobenzene	EPA 8270D
Toxaphene	EPA 8081B

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All approved analytes are listed below:

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 8270D
2-Chloronaphthalene	EPA 8270D
Hexachlorobenzene	EPA 8270D
Hexachlorobutadiene	EPA 8270D
Hexachlorocyclopentadiene	EPA 8270D
Hexachloroethane	EPA 8270D

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A
MCPA	EPA 8151A
MCPP	EPA 8151A

Haloethers

2,2'-Oxybis(1-chloropropane)	EPA 8270D
4-Bromophenylphenyl ether	EPA 8270D
4-Chlorophenylphenyl ether	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 8270D
Bis(2-chloroethyl)ether	EPA 8270D

Low Level Polynuclear Aromatic Hydrocarbons

Acenaphthene Low Level	EPA 8270D SIM
Acenaphthylene Low Level	EPA 8270D SIM
Anthracene Low Level	EPA 8270D SIM
Benzo(a)anthracene Low Level	EPA 8270D SIM
Benzo(a)pyrene Low Level	EPA 8270D SIM
Benzo(b)fluoranthene Low Level	EPA 8270D SIM
Benzo(g,h,i)perylene Low Level	EPA 8270D SIM
Benzo(k)fluoranthene Low Level	EPA 8270D SIM
Chrysene Low Level	EPA 8270D SIM
Dibenzo(a,h)anthracene Low Level	EPA 8270D SIM
Fluoranthene Low Level	EPA 8270D SIM
Fluorene Low Level	EPA 8270D SIM
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D SIM
Naphthalene Low Level	EPA 8270D SIM
Phenanthrene Low Level	EPA 8270D SIM
Pyrene Low Level	EPA 8270D SIM

Metals II

Chromium VI	EPA 7196A

Minerals

Chloride	EPA 9251
Sulfate (as SO4)	EPA 9038

Miscellaneous

Cyanide, Total	EPA 9014
	EPA 9012B

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Miscellaneous	
Extractable Organic Halides	EPA 9023
Phenols	EPA 9065
Specific Conductance	EPA 9050A
Nitroaromatics and Isophorone	
2,4-Dinitrotoluene	EPA 8270D
2,6-Dinitrotoluene	EPA 8270D
Isophorone	EPA 8270D
Nitrobenzene	EPA 8270D
Pyridine	EPA 8270D
Nitrosoamines	
N-Nitrosodimethylamine	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 8270D
N-Nitrosodiphenylamine	EPA 8270D
Organophosphate Pesticides	
Parathion ethyl	EPA 8270D
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015C
Gasoline Range Organics	EPA 8015C
Oil and Grease Total Recoverable (HEM)	EPA 9071B (Solvent:Hexane)
Phthalate Esters	
Benzyl butyl phthalate	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 8270D
Diethyl phthalate	EPA 8270D

Phthalate Esters	
Dimethyl phthalate	EPA 8270D
Di-n-butyl phthalate	EPA 8270D
Di-n-octyl phthalate	EPA 8270D
Polychlorinated Biphenyls	
PCB-1016	EPA 8082A
PCB-1221	EPA 8082A
PCB-1232	EPA 8082A
PCB-1242	EPA 8082A
PCB-1248	EPA 8082A
PCB-1254	EPA 8082A
PCB-1260	EPA 8082A
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A
PCBs in Oil	EPA 8082A
Polynuclear Aromatic Hydrocarbons	
Acenaphthene	EPA 8270D
Acenaphthylene	EPA 8270D
Anthracene	EPA 8270D
Benzo(a)anthracene	EPA 8270D
Benzo(a)pyrene	EPA 8270D
Benzo(b)fluoranthene	EPA 8270D
Benzo(ghi)perylene	EPA 8270D
Benzo(k)fluoranthene	EPA 8270D
Chrysene	EPA 8270D
Dibenzo(a,h)anthracene	EPA 8270D

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Polynuclear Aromatic Hydrocarbons	
Fluoranthene	EPA 8270D
Fluorene	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 8270D
Naphthalene	EPA 8270D
Phenanthrene	EPA 8270D
Pyrene	EPA 8270D
Priority Pollutant Phenols	
2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 8270D
2,4,6-Trichlorophenol	EPA 8270D
2,4-Dichlorophenol	EPA 8270D
2,4-Dimethylphenol	EPA 8270D
2,4-Dinitrophenol	EPA 8270D
2-Chlorophenol	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 8270D
2-Methylphenol	EPA 8270D
2-Nitrophenol	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 8270D
4-Methylphenol	EPA 8270D
4-Nitrophenol	EPA 8270D
Pentachlorophenol	EPA 8270D
Phenol	EPA 8270D
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270D

Semi-Volatile Organics	
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D
2-Methylnaphthalene	EPA 8270D
Acetophenone	EPA 8270D
Benzaldehyde	EPA 8270D
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
1,2-Dichlorobenzene	EPA 8260C
1,3,5-Trimethylbenzene	EPA 8260C
1,3-Dichlorobenzene	EPA 8260C
1,4-Dichlorobenzene	EPA 8260C
2-Chlorotoluene	EPA 8260C
4-Chlorotoluene	EPA 8260C
Benzene	EPA 8260C
Bromobenzene	EPA 8260C
Chlorobenzene	EPA 8260C
Ethyl benzene	EPA 8260C
Isopropylbenzene	EPA 8260C
m/p-Xylenes	EPA 8260C

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All approved analytes are listed below:

Volatile Aromatics

Naphthalene, Volatile	EPA 8260C
n-Butylbenzene	EPA 8260C
n-Propylbenzene	EPA 8260C
o-Xylene	EPA 8260C
p-Isopropyltoluene (P-Cymene)	EPA 8260C
sec-Butylbenzene	EPA 8260C
Styrene	EPA 8260C
tert-Butylbenzene	EPA 8260C
Toluene	EPA 8260C
Total Xylenes	EPA 8260C

Volatile Halocarbons

1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,1-Trichloroethane	EPA 8260C
1,1,2,2-Tetrachloroethane	EPA 8260C
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
1,1-Dichloroethane	EPA 8260C
1,1-Dichloroethene	EPA 8260C
1,1-Dichloropropene	EPA 8260C
1,2,3-Trichloropropane	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
1,2-Dichloropropane	EPA 8260C
1,3-Dichloropropane	EPA 8260C

Volatile Halocarbons

2,2-Dichloropropane	EPA 8260C
2-Chloroethylvinyl ether	EPA 8260C
Bromochloromethane	EPA 8260C
Bromodichloromethane	EPA 8260C
Bromoform	EPA 8260C
Bromomethane	EPA 8260C
Carbon tetrachloride	EPA 8260C
Chloroethane	EPA 8260C
Chloroform	EPA 8260C
Chloromethane	EPA 8260C
cis-1,2-Dichloroethene	EPA 8260C
cis-1,3-Dichloropropene	EPA 8260C
Dibromochloromethane	EPA 8260C
Dibromomethane	EPA 8260C
Dichlorodifluoromethane	EPA 8260C
Hexachlorobutadiene, Volatile	EPA 8260C
Methylene chloride	EPA 8260C
Tetrachloroethene	EPA 8260C
trans-1,2-Dichloroethene	EPA 8260C
trans-1,3-Dichloropropene	EPA 8260C
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C
Trichlorofluoromethane	EPA 8260C
Vinyl chloride	EPA 8260C

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All approved analytes are listed below:

Volatile Organics

1,4-Dioxane	EPA 8260C
2-Butanone (Methylethyl ketone)	EPA 8260C
2-Hexanone	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
Acetone	EPA 8260C
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Di-ethyl ether	EPA 8260C
Ethyl Acetate	EPA 8260C
Methyl acetate	EPA 8260C
Methyl cyclohexane	EPA 8260C
Methyl tert-butyl ether	EPA 8260C
n-Butanol	EPA 8260C
tert-butyl alcohol	EPA 8260C
Vinyl acetate	EPA 8260C

Sample Preparation Methods

EPA 5035A-L
EPA 5035A-H
EPA 3580A
EPA 9030B
EPA 3540C
EPA 3546
EPA 3060A
EPA 9010C

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Revised June 30, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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MS. RENEE M. CUSACK
ENVIROTEST LABORATORIES, INC.
315 FULLERTON AVE
NEWBURGH, NY 12550

NY Lab Id No: 10142

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Bacteriology		**Metals I**	
Coliform, Total / E. coli (Qualitative)	Colisure	Chromium, Total	EPA 200.8 Rev. 5.4
	SM 18-22 9222A,B,C (-97)/40 CFR 141..	Copper, Total	EPA 200.7 Rev. 4.4
	SM 18-22 9223B (-97) (Colilert)		EPA 200.8 Rev. 5.4
E. coli (Enumeration)	SM 18-22 9223B (-97) (Colilert)	Iron, Total	EPA 200.7 Rev. 4.4
Heterotrophic Plate Count	SimPlate	Lead, Total	EPA 200.8 Rev. 5.4
	SM 18-22 9215B (-00)	Manganese, Total	EPA 200.7 Rev. 4.4
Disinfection By-products			EPA 200.8 Rev. 5.4
Bromochloroacetic acid	EPA 552.2	Mercury, Total	EPA 245.1 Rev. 3.0
Dibromoacetic acid	EPA 552.2	Selenium, Total	EPA 200.8 Rev. 5.4
Dichloroacetic acid	EPA 552.2	Silver, Total	EPA 200.7 Rev. 4.4
Monobromoacetic acid	EPA 552.2		EPA 200.8 Rev. 5.4
Monochloroacetic acid	EPA 552.2	Zinc, Total	EPA 200.7 Rev. 4.4
Trichloroacetic acid	EPA 552.2		EPA 200.8 Rev. 5.4
Fuel Additives		**Metals II**	
Methyl tert-butyl ether	EPA 524.2	Aluminum, Total	EPA 200.7 Rev. 4.4
	EPA 502.2/ SEE ITEM 198.5		EPA 200.8 Rev. 5.4
Naphthalene	EPA 524.2	Antimony, Total	EPA 200.8 Rev. 5.4
Metals I		Beryllium, Total	EPA 200.7 Rev. 4.4
Arsenic, Total	EPA 200.8 Rev. 5.4		EPA 200.8 Rev. 5.4
Barium, Total	EPA 200.7 Rev. 4.4	Molybdenum, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4		EPA 200.8 Rev. 5.4
Cadmium, Total	EPA 200.7 Rev. 4.4	Nickel, Total	EPA 200.7 Rev. 4.4
	EPA 200.8 Rev. 5.4		EPA 200.8 Rev. 5.4
Chromium, Total	EPA 200.7 Rev. 4.4	Thallium, Total	EPA 200.8 Rev. 5.4
		Vanadium, Total	EPA 200.7 Rev. 4.4

Serial No.: 56651

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315 FULLERTON AVE
NEWBURGH, NY 12550

NY Lab Id No: 10142

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All approved analytes are listed below:

Metals II	
Vanadium, Total	EPA 200.8 Rev. 5.4
Metals III	
Boron, Total	EPA 200.7 Rev. 4.4
Calcium, Total	EPA 200.7 Rev. 4.4
Magnesium, Total	EPA 200.7 Rev. 4.4
Potassium, Total	EPA 200.7 Rev. 4.4
Sodium, Total	EPA 200.7 Rev. 4.4
Miscellaneous	
Benzo(a)pyrene	EPA 525.2
Bis(2-ethylhexyl) phthalate	EPA 525.2
Di (2-ethylhexyl) adipate	EPA 525.2
Odor	SM 18-22 2150B (-97)
Organic Carbon, Dissolved	SM 21-22 5310C (-00)
Organic Carbon, Total	SM 21-22 5310C (-00)
Surfactant (MBAS)	SM 18-22 5540C (-00)
Turbidity	SM 18-22 2130 B (-01)
	EPA 180.1 Rev. 2.0
Non-Metals	
Alkalinity	SM 18-22 2320B (-97)
Calcium Hardness	EPA 200.7 Rev. 4.4
	SM 18-22 2340B (-97)
Chloride	SM 18-22 4500-Cl- B (-97)
	EPA 300.0 Rev. 2.1
Color	SM 18-22 2120B (-01)
Non-Metals	
Corrosivity	SM 18-22 2330
Cyanide	SM 18-22 4500-CN E (-99)
Fluoride, Total	EPA 300.0 Rev. 2.1
	SM 18-22 4500-F C (-97)
Nitrate (as N)	LACHAT 10-107-4-1C
	EPA 300.0 Rev. 2.1
Nitrite (as N)	EPA 300.0 Rev. 2.1
	SM 18-22 4500-NO2 B (-00)
Orthophosphate (as P)	EPA 300.0 Rev. 2.1
	SM 18-22 4500-P E (-99)
Silica, Dissolved	EPA 200.7 Rev. 4.4
Solids, Total Dissolved	SM 18-22 2540C (-97)
Specific Conductance	EPA 120.1 Rev. 1982
	SM 18-22 2510B (-97)
Sulfate (as SO4)	EPA 300.0 Rev. 2.1
Organohalide Pesticides	
Aldrin	EPA 525.2
Metribuzin	EPA 525.2
Trihalomethanes	
Bromodichloromethane	EPA 502.2
	EPA 524.2
Bromoform	EPA 502.2
	EPA 524.2
Chloroform	EPA 502.2
	EPA 524.2

Serial No.: 56651

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2018
Issued April 01, 2017
Revised June 30, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. RENEE M. CUSACK
ENVIROTEST LABORATORIES, INC.
315 FULLERTON AVE
NEWBURGH, NY 12550

NY Lab Id No: 10142

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Trihalomethanes	
Dibromochloromethane	EPA 502.2
	EPA 524.2
Total Trihalomethanes	EPA 502.2
	EPA 524.2
Volatile Aromatics	
1,2,3-Trichlorobenzene	EPA 502.2
	EPA 524.2
1,2,4-Trichlorobenzene	EPA 502.2
	EPA 524.2
1,2,4-Trimethylbenzene	EPA 502.2
	EPA 524.2
1,2-Dichlorobenzene	EPA 502.2
	EPA 524.2
1,3,5-Trimethylbenzene	EPA 502.2
	EPA 524.2
1,3-Dichlorobenzene	EPA 502.2
	EPA 524.2
1,4-Dichlorobenzene	EPA 502.2
	EPA 524.2
2-Chlorotoluene	EPA 502.2
	EPA 524.2
4-Chlorotoluene	EPA 502.2
	EPA 524.2
Benzene	EPA 502.2
	EPA 524.2
Volatile Aromatics	
Bromobenzene	EPA 502.2
	EPA 524.2
Chlorobenzene	EPA 502.2
	EPA 524.2
Ethyl benzene	EPA 502.2
	EPA 524.2
Hexachlorobutadiene	EPA 502.2
	EPA 524.2
Isopropylbenzene	EPA 502.2
	EPA 524.2
n-Butylbenzene	EPA 502.2
	EPA 524.2
n-Propylbenzene	EPA 502.2
	EPA 524.2
p-Isopropyltoluene (P-Cymene)	EPA 502.2
	EPA 524.2
sec-Butylbenzene	EPA 502.2
	EPA 524.2
Styrene	EPA 502.2
	EPA 524.2
tert-Butylbenzene	EPA 502.2
	EPA 524.2
Toluene	EPA 502.2
	EPA 524.2
Total Xylenes	EPA 502.2
	EPA 524.2

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Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 502.2
	EPA 524.2
1,1,1-Trichloroethane	EPA 502.2
	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 502.2
	EPA 524.2
1,1,2-Trichloroethane	EPA 502.2
	EPA 524.2
1,1-Dichloroethane	EPA 502.2
	EPA 524.2
1,1-Dichloroethene	EPA 502.2
	EPA 524.2
1,1-Dichloropropene	EPA 502.2
	EPA 524.2
1,2,3-Trichloropropane	EPA 502.2
	EPA 524.2
1,2-Dichloroethane	EPA 502.2
	EPA 524.2
1,2-Dichloropropane	EPA 502.2
	EPA 524.2
1,3-Dichloropropane	EPA 502.2
	EPA 524.2
2,2-Dichloropropane	EPA 502.2
	EPA 524.2
Bromochloromethane	EPA 502.2
	EPA 524.2

Volatile Halocarbons	
Bromomethane	EPA 502.2
	EPA 524.2
Carbon tetrachloride	EPA 502.2
	EPA 524.2
Chloroethane	EPA 502.2
	EPA 524.2
Chloromethane	EPA 502.2
	EPA 524.2
cis-1,2-Dichloroethene	EPA 502.2
	EPA 524.2
cis-1,3-Dichloropropene	EPA 502.2
	EPA 524.2
Dibromomethane	EPA 502.2
	EPA 524.2
Dichlorodifluoromethane	EPA 502.2
	EPA 524.2
Methylene chloride	EPA 502.2
	EPA 524.2
Tetrachloroethene	EPA 502.2
	EPA 524.2
trans-1,2-Dichloroethene	EPA 502.2
	EPA 524.2
trans-1,3-Dichloropropene	EPA 502.2
	EPA 524.2
Trichloroethene	EPA 502.2
	EPA 524.2

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Volatile Halocarbons

Trichlorofluoromethane	EPA 502.2
	EPA 524.2
Vinyl chloride	EPA 502.2
	EPA 524.2

Sample Preparation Methods

SM 18-20 4500-CN C

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Acrylates	
Acrolein (Propenal)	EPA 8260C
	EPA 624
Acrylonitrile	EPA 8260C
	EPA 624
Ethyl methacrylate	EPA 8260C
Methyl acrylonitrile	EPA 8260C
Methyl methacrylate	EPA 8260C
Amines	
1,2-Diphenylhydrazine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
Aniline	EPA 625
	EPA 8270D
Carbazole	EPA 625
	EPA 8270D
Propionitrile	EPA 8260C
Pyridine	EPA 625
	EPA 8270D
Bacteriology	
Coliform, Fecal	SM 9222D-2006
Coliform, Total	SM 9222B-2006
E. coli (Enumeration)	EPA 1603
	SM 9223B-04
Bacteriology	
Enterococci	Enterolert
Heterotrophic Plate Count	SimPlate
	SM 18-21 9215B
Benzidines	
3,3'-Dichlorobenzidine	EPA 625
	EPA 8270D
Benzidine	EPA 625
	EPA 8270D
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
	EPA 608
4,4'-DDE	EPA 8081B
	EPA 608
4,4'-DDT	EPA 8081B
	EPA 608
Aldrin	EPA 8081B
	EPA 608
alpha-BHC	EPA 8081B
	EPA 608
alpha-Chlordane	EPA 8081B
beta-BHC	EPA 8081B
	EPA 608
Chlordane Total	EPA 8081B
	EPA 608
delta-BHC	EPA 8081B

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Chlorinated Hydrocarbon Pesticides

delta-BHC	EPA 608
Dieldrin	EPA 8081B
	EPA 608
Endosulfan I	EPA 8081B
	EPA 608
Endosulfan II	EPA 8081B
	EPA 608
Endosulfan sulfate	EPA 8081B
	EPA 608
Endrin	EPA 8081B
	EPA 608
Endrin aldehyde	EPA 8081B
	EPA 608
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608
Heptachlor epoxide	EPA 8081B
	EPA 608
Lindane	EPA 8081B
	EPA 608
Methoxychlor	EPA 8081B
	EPA 608
Toxaphene	EPA 8081B
	EPA 608

Chlorinated Hydrocarbons

1,2,3-Trichlorobenzene	EPA 8260C
	EPA 8021B
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 625
	EPA 8270D
2-Chloronaphthalene	EPA 625
	EPA 8270D
Hexachlorobenzene	EPA 625
	EPA 8270D
Hexachlorobutadiene	EPA 625
	EPA 8270D
Hexachlorocyclopentadiene	EPA 625
	EPA 8270D
Hexachloroethane	EPA 8260C
	EPA 625
	EPA 8270D

Chlorophenoxy Acid Pesticides

2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A

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Demand	
Biochemical Oxygen Demand	SM 5210B-01,-11
Carbonaceous BOD	SM 5210B-01,-11
Chemical Oxygen Demand	HACH 8000
	EPA 410.4 Rev. 2.0
Fuel Oxygenates	
Di-isopropyl ether	EPA 8260C
Ethanol	EPA 8015D
Methyl tert-butyl ether	EPA 8260C
	EPA 8021B
	EPA 624
tert-amyl methyl ether (TAME)	EPA 8260C
tert-butyl alcohol	EPA 8260C
Haloethers	
2,2'-Oxybis(1-chloropropane)	EPA 625
	EPA 8270D
4-Bromophenylphenyl ether	EPA 625
	EPA 8270D
4-Chlorophenylphenyl ether	EPA 625
	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 625
	EPA 8270D
Bis(2-chloroethyl)ether	EPA 625
	EPA 8270D

Low Level Polynuclear Aromatics	
Acenaphthene Low Level	EPA 8270D
Acenaphthylene Low Level	EPA 8270D
Anthracene Low Level	EPA 8270D
Benzo(a)anthracene Low Level	EPA 8270D
Benzo(a)pyrene Low Level	EPA 8270D
Benzo(b)fluoranthene Low Level	EPA 8270D
Benzo(g,h,i)perylene Low Level	EPA 8270D
Benzo(k)fluoranthene Low Level	EPA 8270D
Chrysene Low Level	EPA 8270D
Dibenzo(a,h)anthracene Low Level	EPA 8270D
Fluoranthene Low Level	EPA 8270D
Fluorene Low Level	EPA 8270D
Indeno(1,2,3-cd)pyrene Low Level	EPA 8270D
Naphthalene Low Level	EPA 8270D
Phenanthrene Low Level	EPA 8270D
Pyrene Low Level	EPA 8270D
Metals I	
Barium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Cadmium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4

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Metals I	
Calcium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Chromium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Copper, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Iron, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Lead, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Magnesium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Manganese, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Nickel, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Metals I	
Potassium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Silver, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Sodium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Strontium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Metals II	
Aluminum, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
Antimony, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Arsenic, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Beryllium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A

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Metals II	
Beryllium, Total	EPA 200.8 Rev. 5.4
Chromium VI	SM 3500-Cr B-09,-11
Mercury, Total	EPA 245.1 Rev. 3.0
	EPA 7470A
Selenium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Vanadium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Zinc, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Metals III	
Cobalt, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Gold, Total	EPA 200.7 Rev. 4.4
Molybdenum, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A

Metals III	
Molybdenum, Total	EPA 200.8 Rev. 5.4
Palladium, Total	EPA 200.7 Rev. 4.4
Platinum, Total	EPA 200.7 Rev. 4.4
Thallium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
	EPA 6020A
	EPA 200.8 Rev. 5.4
Tin, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Titanium, Total	EPA 200.7 Rev. 4.4
	EPA 6010C
Mineral	
Alkalinity	SM 2320B-97,-11
Calcium Hardness	EPA 200.7 Rev. 4.4
	SM 2340B-97,-11
Chloride	SM 4500-Cl- B-97,-11
	EPA 300.0 Rev. 2.1
Fluoride, Total	EPA 300.0 Rev. 2.1
	SM 4500-F C-97,-11
Hardness, Total	EPA 200.7 Rev. 4.4
	SM 2340B-97,-11
Sulfate (as SO4)	EPA 300.0 Rev. 2.1
Miscellaneous	
Boron, Total	EPA 200.7 Rev. 4.4
	EPA 6010C

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Miscellaneous

Bromide	EPA 300.0 Rev. 2.1
Color	SM 2120B-01,-11
Corrosivity	SM 2330
Cyanide, Total	EPA 9014
	SM 4500-CN E-99,-11
	EPA 335.4 Rev. 1.0
	EPA 9012B
Oil and Grease Total Recoverable (HEM)	EPA 1664A
Organic Carbon, Total	SM 5310C-00,-11
Phenols	LACHAT 10-210-00-1-A
	EPA 420.4 Rev. 1.0
Silica, Dissolved	EPA 200.7 Rev. 4.4
Specific Conductance	EPA 120.1 Rev. 1982
	SM 2510B-97,-11
Sulfide (as S)	SM 4500-S2- D-00,-11
Surfactant (MBAS)	SM 5540C-00,-11
Total Petroleum Hydrocarbons	EPA 1664A
Turbidity	SM 2130 B-01,-11

Nitroaromatics and Isophorone

1,3-Dinitrobenzene	EPA 8270D
2,4-Dinitrotoluene	EPA 625
	EPA 8270D
2,6-Dinitrotoluene	EPA 625
	EPA 8270D
Isophorone	EPA 625

Nitroaromatics and Isophorone

Isophorone	EPA 8270D
Nitrobenzene	EPA 625
	EPA 8270D

Nitrosoamines

N-Nitrosodiethylamine	EPA 8270D
N-Nitrosodimethylamine	EPA 625
	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 625
	EPA 8270D
N-Nitrosodiphenylamine	EPA 625
	EPA 8270D
N-Nitrosopyrrolidine	EPA 8270D

Nutrient

Ammonia (as N)	SM 4500-NH3 G-97,-11
Kjeldahl Nitrogen, Total	EPA 351.2 Rev. 2.0
	LACHAT 10-107-06-2
Nitrate (as N)	LACHAT 10-107-4-1C
	EPA 300.0 Rev. 2.1
Nitrate-Nitrite (as N)	LACHAT 10-107-4-1C
	EPA 353.2 Rev. 2.0
Nitrite (as N)	LACHAT 10-107-4-1C
	EPA 300.0 Rev. 2.1
	SM 4500-NO2 B-00,-11
Orthophosphate (as P)	EPA 300.0 Rev. 2.1
	SM 4500-P E-99,-11

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Nutrient	
Phosphorus, Total	EPA 365.3 Rev. 1978
Organophosphate Pesticides	
Atrazine	EPA 8270D
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015D
Phthalate Esters	
Benzyl butyl phthalate	EPA 625
	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 625
	EPA 8270D
Diethyl phthalate	EPA 625
	EPA 8270D
Dimethyl phthalate	EPA 625
	EPA 8270D
Di-n-butyl phthalate	EPA 625
	EPA 8270D
Di-n-octyl phthalate	EPA 625
	EPA 8270D
Polychlorinated Biphenyls	
PCB-1016	EPA 8082A
	EPA 608
PCB-1221	EPA 8082A
	EPA 608
PCB-1232	EPA 8082A
Polychlorinated Biphenyls	
PCB-1232	EPA 608
PCB-1242	EPA 8082A
	EPA 608
PCB-1248	EPA 8082A
	EPA 608
PCB-1254	EPA 8082A
	EPA 608
PCB-1260	EPA 8082A
	EPA 608
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A
Polynuclear Aromatics	
Acenaphthene	EPA 625
	EPA 8270D
Acenaphthylene	EPA 625
	EPA 8270D
Anthracene	EPA 625
	EPA 8270D
Benzo(a)anthracene	EPA 625
	EPA 8270D
Benzo(a)pyrene	EPA 625
	EPA 8270D
Benzo(b)fluoranthene	EPA 625
	EPA 8270D
Benzo(ghi)perylene	EPA 625

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All approved analytes are listed below:

Polynuclear Aromatics

Benzo(ghi)perylene	EPA 8270D
Benzo(k)fluoranthene	EPA 625
	EPA 8270D
Chrysene	EPA 625
	EPA 8270D
Dibenzo(a,h)anthracene	EPA 625
	EPA 8270D
Fluoranthene	EPA 625
	EPA 8270D
Fluorene	EPA 625
	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 625
	EPA 8270D
Naphthalene	EPA 625
	EPA 8270D
Phenanthrene	EPA 625
	EPA 8270D
Pyrene	EPA 625
	EPA 8270D

Priority Pollutant Phenols

2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 625
	EPA 8270D
2,4,6-Trichlorophenol	EPA 625
	EPA 8270D

Priority Pollutant Phenols

2,4-Dichlorophenol	EPA 625
	EPA 8270D
2,4-Dimethylphenol	EPA 625
	EPA 8270D
2,4-Dinitrophenol	EPA 625
	EPA 8270D
2-Chlorophenol	EPA 625
	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 625
	EPA 8270D
2-Methylphenol	EPA 625
	EPA 8270D
2-Nitrophenol	EPA 625
	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 625
	EPA 8270D
4-Methylphenol	EPA 625
	EPA 8270D
4-Nitrophenol	EPA 625
	EPA 8270D
Cresols, Total	EPA 625
	EPA 8270D
Pentachlorophenol	EPA 625
	EPA 8270D
Phenol	EPA 625

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

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Revised July 11, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. RENEE M. CUSACK
ENVIROTEST LABORATORIES, INC.
315 FULLERTON AVE
NEWBURGH, NY 12550

NY Lab Id No: 10142

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Priority Pollutant Phenols	
Phenol	EPA 8270D
Residue	
Settleable Solids	SM 2540 F-97,-11
Solids, Total	SM 2540 B-97,-11
Solids, Total Dissolved	SM 2540 C-97,-11
Solids, Total Suspended	SM 2540 D-97,-11
Solids, Volatile	SM 2540 E-97,-11
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270D
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D
2-Methylnaphthalene	EPA 8270D
2-Picoline	EPA 8270D
Acetophenone	EPA 625
	EPA 8270D
alpha-Terpineol	EPA 625
Benzaldehyde	EPA 8270D
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260C

Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8021B
1,2,4-Trimethylbenzene	EPA 8260C
	EPA 8021B
1,2-Dichlorobenzene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
	EPA 524.2
1,3,5-Trimethylbenzene	EPA 8260C
	EPA 8021B
1,3-Dichlorobenzene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
1,4-Dichlorobenzene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
2-Chlorotoluene	EPA 8260C
	EPA 8021B
4-Chlorotoluene	EPA 8260C
	EPA 8021B
Benzene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602

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Volatile Aromatics	
Benzene	EPA 524.2
Bromobenzene	EPA 8260C
	EPA 8021B
Chlorobenzene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
	EPA 602
	EPA 524.2
Ethyl benzene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
Isopropylbenzene	EPA 8260C
	EPA 8021B
m/p-Xylenes	EPA 8260C
	EPA 624
Naphthalene, Volatile	EPA 8260C
	EPA 8021B
n-Butylbenzene	EPA 8260C
	EPA 8021B
n-Propylbenzene	EPA 8260C
	EPA 8021B
o-Xylene	EPA 8260C
	EPA 624
p-Isopropyltoluene (P-Cymene)	EPA 8260C

Volatile Aromatics	
p-Isopropyltoluene (P-Cymene)	EPA 8021B
sec-Butylbenzene	EPA 8260C
	EPA 8021B
Styrene	EPA 8260C
	EPA 8021B
	EPA 624
tert-Butylbenzene	EPA 8260C
	EPA 8021B
Toluene	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
	EPA 524.2
Total Xylenes	EPA 8260C
	EPA 8021B
	EPA 624
	EPA 602
Volatile Chlorinated Organics	
Benzyl chloride	EPA 8260C
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 8260C
	EPA 8021B
1,1,1-Trichloroethane	EPA 8260C
	EPA 8021B
	EPA 601

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Volatile Halocarbons	
1,1,1-Trichloroethane	EPA 624
1,1,2,2-Tetrachloroethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
	EPA 8021B
1,1,2-Trichloroethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
1,1-Dichloroethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
1,1-Dichloroethene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
1,1-Dichloropropene	EPA 8260C
	EPA 8021B
1,2,3-Trichloropropane	EPA 8260C
	EPA 8021B
1,2-Dibromo-3-chloropropane	EPA 8260C
	EPA 8021B
1,2-Dibromoethane	EPA 8260C

Volatile Halocarbons	
1,2-Dibromoethane	EPA 8021B
1,2-Dichloro-1,1,2-Trifluoroethane	EPA 8260C
	EPA 8021B
1,2-Dichloroethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
	EPA 524.2
1,2-Dichloropropane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
1,3-Dichloropropane	EPA 8260C
	EPA 8021B
2,2-Dichloropropane	EPA 8260C
	EPA 8021B
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C
2-Chloroethylvinyl ether	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
3-Chloropropene (Allyl chloride)	EPA 8260C
Bromochloromethane	EPA 8260C
	EPA 8021B
Bromodichloromethane	EPA 8260C
	EPA 8021B

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Volatile Halocarbons	
Bromodichloromethane	EPA 601
	EPA 624
Bromoform	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Bromomethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Carbon tetrachloride	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Chloroethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Chloroform	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
	EPA 524.2
Chloromethane	EPA 8260C
	EPA 8021B
	EPA 601

Volatile Halocarbons	
Chloromethane	EPA 624
cis-1,2-Dichloroethene	EPA 8260C
	EPA 8021B
	EPA 624
cis-1,3-Dichloropropene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Dibromochloromethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Dibromomethane	EPA 8260C
	EPA 8021B
Dichlorodifluoromethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Hexachlorobutadiene, Volatile	EPA 8260C
	EPA 8021B
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
	EPA 524.2

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Volatile Halocarbons

Tetrachloroethene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
trans-1,2-Dichloroethene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
trans-1,3-Dichloropropene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Trichlorofluoromethane	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624
Vinyl chloride	EPA 8260C
	EPA 8021B
	EPA 601
	EPA 624

Volatiles Organics

1,4-Dioxane	EPA 8260C
2-Butanone (Methylethyl ketone)	EPA 8260C
2-Hexanone	EPA 8260C
2-Nitropropane	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
	EPA 524.2
Acetone	EPA 8260C
	EPA 624
	EPA 524.2
Acetonitrile	EPA 8260C
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Di-ethyl ether	EPA 8260C
Ethylene Glycol	EPA 8015D
Isobutyl alcohol	EPA 8260C
Isopropanol	EPA 8260C
Methanol	EPA 8015D
Methyl acetate	EPA 8260C
Methyl cyclohexane	EPA 8260C
Tetrahydrofuran	EPA 8260C
	EPA 524.2
Vinyl acetate	EPA 8260C

Sample Preparation Methods

	EPA 5030C
	SM 4500-CN B or C-99,-11

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Sample Preparation Methods

EPA 3015A
EPA 3010A
EPA 3005A
EPA 3510C
SM 4500-NH3 B-97,-11
SM 4500-CN G-99,-11
EPA 9010C

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All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260C
Acrylonitrile	EPA 8260C
Ethyl methacrylate	EPA 8260C
Methyl methacrylate	EPA 8260C
Amines	
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
Aniline	EPA 8270D
Carbazole	EPA 8270D
Benzidines	
3,3'-Dichlorobenzidine	EPA 8270D
Benzidine	EPA 8270D
Characteristic Testing	
Corrosivity	EPA 9040C
	EPA 9045D
Free Liquids	EPA 9095B
TCLP	EPA 1311
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
4,4'-DDE	EPA 8081B
4,4'-DDT	EPA 8081B
Aldrin	EPA 8081B

Chlorinated Hydrocarbon Pesticides	
alpha-BHC	EPA 8081B
alpha-Chlordane	EPA 8081B
Atrazine	EPA 8270D
beta-BHC	EPA 8081B
Chlordane Total	EPA 8081B
delta-BHC	EPA 8081B
Dieldrin	EPA 8081B
Endosulfan I	EPA 8081B
Endosulfan II	EPA 8081B
Endosulfan sulfate	EPA 8081B
Endrin	EPA 8081B
Endrin aldehyde	EPA 8081B
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
Heptachlor epoxide	EPA 8081B
Lindane	EPA 8081B
Methoxychlor	EPA 8081B
Toxaphene	EPA 8081B
Chlorinated Hydrocarbons	
1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 8270D
2-Chloronaphthalene	EPA 8270D
Hexachlorobenzene	EPA 8270D

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Chlorinated Hydrocarbons	
Hexachlorobutadiene	EPA 8270D
Hexachlorocyclopentadiene	EPA 8270D
Hexachloroethane	EPA 8260C
	EPA 8270D
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8151A
2,4,5-TP (Silvex)	EPA 8151A
2,4-D	EPA 8151A
2,4-DB	EPA 8151A
Dalapon	EPA 8151A
Dicamba	EPA 8151A
Dichloroprop	EPA 8151A
Dinoseb	EPA 8151A
MCPA	EPA 8151A
MCPP	EPA 8151A
Haloethers	
2,2'-Oxybis(1-chloropropane)	EPA 8270D
4-Bromophenylphenyl ether	EPA 8270D
4-Chlorophenylphenyl ether	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 8270D
Bis(2-chloroethyl)ether	EPA 8270D
Metals I	
Barium, Total	EPA 6010C
Cadmium, Total	EPA 6010C
Metals I	
Calcium, Total	EPA 6010C
Chromium, Total	EPA 6010C
Copper, Total	EPA 6010C
Iron, Total	EPA 6010C
Lead, Total	EPA 6010C
Magnesium, Total	EPA 6010C
Manganese, Total	EPA 6010C
Nickel, Total	EPA 6010C
Potassium, Total	EPA 6010C
Silver, Total	EPA 6010C
Sodium, Total	EPA 6010C
Strontium, Total	EPA 6010C
Metals II	
Aluminum, Total	EPA 6010C
Antimony, Total	EPA 6010C
Arsenic, Total	EPA 6010C
Beryllium, Total	EPA 6010C
Mercury, Total	EPA 7471B
Selenium, Total	EPA 6010C
Vanadium, Total	EPA 6010C
Zinc, Total	EPA 6010C
Metals III	
Cobalt, Total	EPA 6010C
Molybdenum, Total	EPA 6010C
Thallium, Total	EPA 6010C

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Metals III	
Tin, Total	EPA 6010C
Miscellaneous	
Boron, Total	EPA 6010C
Cyanide, Total	EPA 9014
	EPA 9012B
Nitroaromatics and Isophorone	
1,3-Dinitrobenzene	EPA 8270D
2,4-Dinitrotoluene	EPA 8270D
2,6-Dinitrotoluene	EPA 8270D
Isophorone	EPA 8270D
Nitrobenzene	EPA 8270D
Pyridine	EPA 8270D
Nitrosoamines	
N-Nitrosodiethylamine	EPA 8270D
N-Nitrosodimethylamine	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 8270D
N-Nitrosodiphenylamine	EPA 8270D
N-Nitrosopyrrolidine	EPA 8270D
Petroleum Hydrocarbons	
Diesel Range Organics	EPA 8015D
Phthalate Esters	
Benzyl butyl phthalate	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 8270D
Phthalate Esters	
Diethyl phthalate	EPA 8270D
Dimethyl phthalate	EPA 8270D
Di-n-butyl phthalate	EPA 8270D
Di-n-octyl phthalate	EPA 8270D
Polychlorinated Biphenyls	
PCB-1016	EPA 8082A
PCB-1221	EPA 8082A
PCB-1232	EPA 8082A
PCB-1242	EPA 8082A
PCB-1248	EPA 8082A
PCB-1254	EPA 8082A
PCB-1260	EPA 8082A
PCB-1262	EPA 8082A
PCB-1268	EPA 8082A
Polynuclear Aromatic Hydrocarbons	
Acenaphthene	EPA 8270D
Acenaphthylene	EPA 8270D
Anthracene	EPA 8270D
Benzo(a)anthracene	EPA 8270D
Benzo(a)pyrene	EPA 8270D
Benzo(b)fluoranthene	EPA 8270D
Benzo(ghi)perylene	EPA 8270D
Benzo(k)fluoranthene	EPA 8270D
Chrysene	EPA 8270D
Dibenzo(a,h)anthracene	EPA 8270D

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Polynuclear Aromatic Hydrocarbons	
Fluoranthene	EPA 8270D
Fluorene	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 8270D
Naphthalene	EPA 8270D
Phenanthrene	EPA 8270D
Pyrene	EPA 8270D
Priority Pollutant Phenols	
2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 8270D
2,4,6-Trichlorophenol	EPA 8270D
2,4-Dichlorophenol	EPA 8270D
2,4-Dimethylphenol	EPA 8270D
2,4-Dinitrophenol	EPA 8270D
2-Chlorophenol	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 8270D
2-Methylphenol	EPA 8270D
2-Nitrophenol	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 8270D
4-Methylphenol	EPA 8270D
4-Nitrophenol	EPA 8270D
Pentachlorophenol	EPA 8270D
Phenol	EPA 8270D
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270D
Semi-Volatile Organics	
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D
2-Methylnaphthalene	EPA 8270D
2-Picoline	EPA 8270D
Acetophenone	EPA 8270D
Benzaldehyde	EPA 8270D
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
	EPA 8021B
1,2-Dichlorobenzene	EPA 8260C
	EPA 8021B
1,3,5-Trimethylbenzene	EPA 8260C
	EPA 8021B
1,3-Dichlorobenzene	EPA 8260C
	EPA 8021B
1,4-Dichlorobenzene	EPA 8260C
	EPA 8021B
2-Chlorotoluene	EPA 8260C
	EPA 8021B

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NEWBURGH, NY 12550

NY Lab Id No: 10142

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:

Volatile Aromatics	
4-Chlorotoluene	EPA 8260C
	EPA 8021B
Benzene	EPA 8260C
	EPA 8021B
Bromobenzene	EPA 8260C
	EPA 8021B
Chlorobenzene	EPA 8260C
	EPA 8021B
Ethyl benzene	EPA 8260C
	EPA 8021B
Isopropylbenzene	EPA 8260C
	EPA 8021B
m/p-Xylenes	EPA 8260C
Naphthalene, Volatile	EPA 8260C
	EPA 8021B
n-Butylbenzene	EPA 8260C
	EPA 8021B
n-Propylbenzene	EPA 8260C
	EPA 8021B
o-Xylene	EPA 8260C
p-Isopropyltoluene (P-Cymene)	EPA 8260C
	EPA 8021B
sec-Butylbenzene	EPA 8260C
	EPA 8021B
Styrene	EPA 8260C
	EPA 8021B

Volatile Aromatics	
tert-Butylbenzene	EPA 8260C
	EPA 8021B
Toluene	EPA 8260C
	EPA 8021B
Total Xylenes	EPA 8260C
	EPA 8021B
Volatile Chlorinated Organics	
Benzyl chloride	EPA 8260C
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 8260C
	EPA 8021B
1,1,1-Trichloroethane	EPA 8260C
	EPA 8021B
1,1,2,2-Tetrachloroethane	EPA 8260C
	EPA 8021B
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
	EPA 8021B
1,1-Dichloroethane	EPA 8260C
	EPA 8021B
1,1-Dichloroethene	EPA 8260C
	EPA 8021B
1,1-Dichloropropene	EPA 8260C
	EPA 8021B
1,2,3-Trichloropropane	EPA 8260C

Serial No.: 55577

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2018
Issued April 01, 2017

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. RENEE M. CUSACK
ENVIROTEST LABORATORIES, INC.
315 FULLERTON AVE
NEWBURGH, NY 12550

NY Lab Id No: 10142

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All approved analytes are listed below:

Volatile Halocarbons	
1,2,3-Trichloropropane	EPA 8021B
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
	EPA 8021B
1,2-Dichloropropane	EPA 8260C
	EPA 8021B
1,3-Dichloropropane	EPA 8260C
	EPA 8021B
2,2-Dichloropropane	EPA 8260C
	EPA 8021B
2-Chloroethylvinyl ether	EPA 8260C
	EPA 8021B
3-Chloropropene (Allyl chloride)	EPA 8260C
Bromochloromethane	EPA 8260C
	EPA 8021B
Bromodichloromethane	EPA 8260C
	EPA 8021B
Bromoform	EPA 8260C
	EPA 8021B
Bromomethane	EPA 8260C
	EPA 8021B
Carbon tetrachloride	EPA 8260C
	EPA 8021B
Chloroethane	EPA 8260C
	EPA 8021B

Volatile Halocarbons	
Chloroform	EPA 8260C
	EPA 8021B
Chloromethane	EPA 8260C
	EPA 8021B
cis-1,2-Dichloroethene	EPA 8260C
	EPA 8021B
cis-1,3-Dichloropropene	EPA 8260C
	EPA 8021B
Dibromochloromethane	EPA 8260C
	EPA 8021B
Dibromomethane	EPA 8260C
	EPA 8021B
Dichlorodifluoromethane	EPA 8260C
	EPA 8021B
Hexachlorobutadiene, Volatile	EPA 8260C
	EPA 8021B
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C
	EPA 8021B
Tetrachloroethene	EPA 8260C
	EPA 8021B
trans-1,2-Dichloroethene	EPA 8260C
	EPA 8021B
trans-1,3-Dichloropropene	EPA 8260C
	EPA 8021B
trans-1,4-Dichloro-2-butene	EPA 8260C

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Volatile Halocarbons	
Trichloroethene	EPA 8260C
	EPA 8021B
Trichlorofluoromethane	EPA 8260C
	EPA 8021B
Vinyl chloride	EPA 8260C
	EPA 8021B
Volatile Organics	
1,4-Dioxane	EPA 8260C
2-Butanone (Methylethyl ketone)	EPA 8260C
2-Hexanone	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
Acetone	EPA 8260C
Acetonitrile	EPA 8260C
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Methyl acetate	EPA 8260C
Methyl cyclohexane	EPA 8260C
Methyl tert-butyl ether	EPA 8260C
	EPA 8021B
tert-butyl alcohol	EPA 8260C
Vinyl acetate	EPA 8260C
Sample Preparation Methods	
	EPA 5035A-L
	EPA 5035A-H
	EPA 3010A

Sample Preparation Methods
EPA 3005A
EPA 3050B
EPA 3546
EPA 3051A
EPA 9010C

Serial No.: 55577

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

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WADSWORTH CENTER

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ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:

Miscellaneous	
Lead in Dust Wipes	EPA 6010C
Lead in Paint	EPA 6010C
Sample Preparation Methods	
	EPA 3050B

Serial No.: 55578

Draft Community Air Monitoring Plan for Design Investigations Related to HP-238 New Anaerobic Digester Facilities

Prepared for
New York City Department of Environmental Protection
November 2017

Prepared by: Bidwell Environmental, LLC
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For:

Brown and Caldwell Associates
1359 Broadway, Suite 1140
New York, NY 10018

Table of Contents

List of Abbreviations

µg/m^3	micrograms per cubic meter
BEDC	Bureau of Engineering, Design, and Construction
CAMP	Community Air Monitoring Plan
DEC	New York State Department of Environmental Conservation
DEP	New York City Department of Environmental Protection
DOH	New York State Department of Health
HASP	Health and Safety Plan
PAH	Petroleum Aromatic Hydrocarbons
PID	photoionization detector
PDI	predesign investigation
PM	project manager
PM10	particulate matter
PPM	parts per million
TWA	time-weighted average
VOC	Volatile Organic Compounds
WWTP	Waste Water Treatment Plant

Section 1

Introduction and Purpose

This Community Air Monitoring Plan (CAMP) has been prepared on behalf of The New York City Department of Environmental Protection (DEP) Bureau of Engineering Design & Construction (BEDC) for use during Design Phase intrusive field investigations to be conducted to support the design of the new anaerobic digester facilities at Hunt's Point Waste Water Treatment Plant (WWTP). The Hunts Point WWTP is located on Ryawa Ave in the Hunt's Point section of Bronx County, NY,

As detailed in the Site Plan provided as Appendix A, the new anaerobic sludge digestion facilities will be constructed in a vacant area located immediately north of the Hunts Point WWTP, between Viele Avenue and Ryawa Avenue to the north and south, respectively, and Manida Street and Barretto Street to the east and west, respectively. The property is owned by the City of New York, and is part of the larger Barretto Point Site, which was previously subject to remedial action under the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation. Remaining contamination consists mostly of petroleum aromatic hydrocarbons (PAHs) and lower concentrations of volatile organic compounds (VOCs).

A geotechnical and environmental investigation will be performed during the Design Phase of the project, to determine subsurface conditions, and characterize soil and groundwater at the proposed site. The subsurface investigation will consist of a two phase boring program. Phase I of the investigation includes the advancement of ten borings as shown on the boring location plan presented in Appendix B. Seven of these borings will be located inside the footprint of the former paint and varnish manufacturing facility, and three will be located outside this footprint. Geotechnical samples will be collected from each boring to a depth of approximately 35 to 40 feet, and environmental samples will be collected from six of these borings to a depth of approximately 35 to 40 feet, with a minimum of 10 feet into bedrock. Monitoring wells will be installed at two of these boring locations for subsequent groundwater sampling. One well will be screened in bedrock, and the other will be screened in glacial sands.

During Phase II of the subsurface investigation, an additional five geotechnical borings will be advanced, including one within the footprint of the former paint and varnish manufacturing facility and four outside. The depths of the Phase II borings are also anticipated to be 35 to 40 feet, with a minimum of 10 feet into bedrock.

1.1 Community Air Monitoring Plan (CAMP) Purpose

The community air monitoring program will generate data to document that the quality of the air at the site perimeter during implementation of intrusive field investigations does not exceed applicable

criteria as a result of the potential release of site-related contaminants. Furthermore, the data will be used to confirm that the air quality in adjacent neighborhoods is not being adversely impacted. This CAMP conforms to the requirements of the New York State Department of Health (DOH) "Generic Community Air Monitoring Plan, Revision 1, June 2000" guidelines as presented in Appendix 1A and Appendix 1B "Fugitive Dust and Particulate Monitoring" of the New York State Department of Environmental Conservation (DEC), Final DER-10, "Technical Requirements for Site Remediation", dated May 2010. This CAMP will also provide a basis for implementation of response actions to mitigate potential air emissions that may result from intrusive field activities.

A site-specific Health and Safety Plan (HASP) has been prepared which addresses potential exposures to on-site personnel implementing the investigations. The HASP specifies air monitoring requirements within the work zone. Thus, this CAMP is focused on perimeter monitoring during intrusive field activities.

1.2 Potential Air Emission Sources

The primary air quality concern during implementation of intrusive field activities is the generation and migration of volatile organic compounds (VOCs) and particulates (i.e., dust). Potential activities which could impact air quality at the site perimeter include drilling, well installation and development, soil borings and sampling, materials handling, and vehicular traffic.

Section 2

Community Air Monitoring Program

DOH Generic CAMP protocol requires continuous perimeter air monitoring during all ground intrusive activities. Ground intrusive activities are defined in the DOH Generic CAMP protocol as including, but not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

DOH Generic CAMP protocol requires periodic monitoring for VOCs during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from monitoring wells. Examples of "periodic" monitoring presented in the DOH Generic CAMP include collection of air quality data upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and prior to leaving a sample location. DOH Generic CAMP protocol further states that in some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities.

This CAMP will consist primarily of continuous air monitoring during drilling, soil sampling, and monitoring well installation activities, with the use of periodic monitoring on an as needed basis during non-intrusive activities, such as well development and ground water sampling. For the continuous air monitoring, a minimum of two air monitoring stations will be established and monitored for 1 day prior to the start of intrusive activities to establish background conditions.

2.1 Continuous Air Monitoring

Continuous monitoring of particulates and VOCs will be conducted at each of the air monitoring stations. Real-time data will be recorded in 15-minute intervals. Continuous monitoring will be conducted prior to commencement of work to establish baseline conditions, and throughout the duration of intrusive field activities. Monitoring will occur continuously during working hours at each of the stations. Data will be downloaded once every 24 hours by on-site oversight personnel. Alarms will sound when recorded levels exceed action levels.

2.1.1 Station Layout

The initial location of the air monitoring stations will consist of a minimum of one upwind and one downwind of each boring location at the site perimeter, and placement will be based on prevailing wind directions and the direction of potential off-site receptors. The wind direction will be checked periodically throughout the day and the locations of the upwind and downwind stations will be adjusted, if needed.

A wind rose[1] for the Site appears in Appendix C. The following observations can be made:

- The primary wind direction across Bronx, NY is from the West/Northwest.
- Secondary wind directions across Bronx, NY are from the Southwest and to a lesser extent, the south.

Any adjustments to the station layout will be recorded in the daily field reports generated during documentation of the field work.

Meteorological instrumentation will be installed at the Site to measure wind speed and direction, ambient temperature, and relative humidity.

2.1.2 Analytical Instrumentation

Each monitoring station will be equipped with a particulate meter and a photoionization detector (PID) for continuous measurement of air quality parameters in the ambient air. The particulate meters and the PIDs will each be configured to provide 15-minute time-weighted average (TWA) values. Both instruments will be housed in weather tight enclosures.

2.1.3 Meteorological System

As indicated above, a meteorological station will be installed at the site to measure wind speed, direction, ambient temperature, and relative humidity. The system computes the five-minute running average wind direction which will be used to identify which of the monitoring stations is upwind, downwind, or crosswind. Meteorological data will be stored electronically.

2.2 Action Levels

Action levels are designated with either a “Green”, “Yellow” or “Red” status. These color-coded levels correspond to points at which the Field Team Lead and Project Manager (PM) will be notified that the activities being performed are having an impact on air quality and that immediate mitigation is necessary (e.g., control measures are to be implemented). The mitigation/control measures shall be determined by the drilling contractor in consultation with the Field Team Lead and/or PM. The types of mitigation measures which may be used include, but are not limited to:

- Wetting of soil and other media or other means to control dust;
- Modification of work activities to control odors or dust;
- Application of suppressant foams to control odors.

Due to the industrial nature of the area surrounding the site, elevated levels of ambient (background) suspended particulates and VOCs may occur. The use of upwind and downwind

[1] Wind rose obtained from the New York State Small Wind Explorer website: http://nyswe.awstruepower.com, Accessed November 14, 2017.

monitoring is critical to assess whether action level conditions are the result of intrusive field activities or ambient (background) conditions (i.e., migration from upgradient or localized conditions). Therefore, a baseline round of continuous monitoring (1 day) will be conducted to establish background levels of particulates and VOCs prior to the start of field activities.

2.2.1 Volatile Organic Vapor Action Levels

In accordance with the DOH Generic CAMP, if the ambient air concentration of total volatile organic vapors at the downwind site perimeter exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total volatile organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

To mitigate the chance that field activities will generate air impacts at or in excess of 5 ppm above background, a tiered approach to alarm levels consisting of a lower (yellow) action level, and a high-action level (red) will be established. Mitigation/control measures will be implemented based on the level of the alarm, progressively becoming more urgent until a halt work is required. The alarm will be triggered based on total levels, but work would not be halted or any mitigation measures implemented unless the differential between background and downwind readings exceeds the action levels. In the case of this CAMP, no mitigation measures will be required for total volatile organic vapor levels below 2.5 ppm above background as indicated in the green color code in Table 1 below.

Data from continuous monitoring will be used to calculate 15-minute time-weighted average (TWA) values for comparison to the action level.

Table 1 details the action levels for total volatile organic vapors:

Table 1. Volatile Organic Vapor Action Levels	
Action Level	**Response**
< 2.5 ppm above background for the 15-minute average	Continue and/or resume work activities
> 2.5 ppm to <5.0 ppm above background (15-minute average)	Notify contractor of need to implement mitigation measures. Employ vapor/dust suppression techniques or modify work activities.
> 5 ppm above background (15-minute average) or odors are observed at the site perimeter	Work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring. Mitigation measures will be implemented to keep odors at a minimum. Notify PM of exceedance and corrective measures implemented.
>5 ppm to <25 ppm above background (15-minute average)	Work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total volatile organic vapor level 200 feet downwind of the site perimeter 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 over background for the 15-minute average. Notify PM of exceedance and corrective measures implemented.
>25 ppm above background (15-minute average)	Activities must be shut down. Notify PM of exceedance and corrective measures implemented.

The 15-minute readings will be recorded and maintained. Instantaneous readings, if any, used for decision making purposes will also be recorded.

2.2.1.1 Odor Complaints

Community complaints regarding odors and the response taken will be documented. Response actions taken will depend on the number and/or magnitude of the complaints. At a minimum the response action will consist of documenting the date and time the complaint is received. In accordance with the Action Levels presented above, response actions will progressively become more urgent until a halt work is required. The Project Manager will be notified about the complaints and the corrective measures implemented.

2.2.2 Particulate Matter (PM10) Action Levels

In accordance with the DOH Generic CAMP protocol, the action level for perimeter air monitoring at the Site is 150 micrograms per cubic meter (µg/m^3) of respirable particulate matter above background for the 15-minute average. Particulates that are 10 microns or smaller and are considered respirable are known as PM10. In addition, no visible dust can be seen migrating from the site perimeter. Particulate data from continuous monitoring will be used to calculate 15-minute TWA values for comparison to the action level.

To mitigate the chance that field activities will generate visible dust or air impacts at or above 150 µg/m^3 above background, a tiered approach described below will be established. In the case of this CAMP, no mitigation measures will be required for particulate matter below 100 µg/m^3 above background as indicated in the green color code in Table 2 below. Table 2 details the action levels for particulates:

Table 2 Action Levels for Particulates

Action Level	Response
Below 100 µg/m^3 above background for the 15-minute average	Continue and/or resume work activities
> 100 to < 150 µg/m^3 above background for the 15-minute average or if airborne dust is observed leaving the site perimeter	Dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM10 particulate levels do not exceed 150 µg/m^3 above the upwind level and provided that no visible dust is migrating from the site perimeter.
If, after implementation of dust suppression techniques, downwind PM10 particulate levels are greater than 150 µg/m^3 above the upwind 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 particulate concentration to within 150 µg/m^3 of the upwind level and in preventing visible dust migration. Notify PM of exceedance and corrective measures implemented.

The 15-minute readings will be recorded and be maintained.

2.3 Data Usability

Factors that affect data usability generated as part of an ambient air monitoring program are generally known and consist of but are not limited to:

- High relative humidity.
- Excessive moisture (i.e., rain).
- Proximity to non-remedial activities (i.e., truck traffic).
- Internal contamination of instrumentation.

Steps will be taken to limit these impacts on the field instruments by using weather shelters, modifying monitoring locations to limit impacts from activities not related to intrusive field work, performing maintenance in accordance with manufacturer specifications and replacing or rotating instruments out for off-site servicing on an as needed basis.

Section 3

Procedures

This section outlines the routine and contingency procedures for implementation of the CAMP. The air monitoring activities will be directed by the Field Team Lead. During the implementation of field work, the Field Team Lead will report to the PM.

3.1 Ambient Air Monitoring Program Schedule

The CAMP is anticipated to consist of baseline monitoring and daily monitoring for the duration of intrusive field activities.

3.1.1 Baseline Monitoring

Prior to commencement of field activities, monitoring will be conducted to establish baseline conditions and evaluate the potential range of background concentrations that may be present during implementation of field work. To establish baseline conditions, continuous monitoring will be conducted at the monitoring stations for at least one day (minimum of 8-hour period).

3.1.2 Daily Monitoring

Daily monitoring will consist of a combination of continuous air monitoring and periodic monitoring. Continuous air monitoring will be executed for the duration of intrusive field work when there is the potential for exposure to contaminants. Ambient air monitoring data will be collected via the two monitoring stations located upwind and downwind of the proposed boring locations (Appendix B) for the entire work day.

3.2 Routine Procedures

Routine air monitoring procedures will consist of the following:

- Daily inspection of the monitoring stations to confirm that they are secure and operating properly. Check for damage, loss of air flow, dirt or moisture buildup, and replace inlet filters, as necessary, or as prescribed by the manufacturer of the monitoring equipment.
- Daily calibration of particulate meters in accordance with manufacturer specifications. Calibration frequency may be modified, as appropriate, based on communication with manufacturer/vendor.
- Daily calibration of PID in accordance with manufacturer specifications. Calibration frequency may be modified, as appropriate, based on communication with manufacturer/vendor.

- Daily inspection of operational set points on particulate meters.
- Daily inspection of the meteorological station for proper operation.
- Troubleshooting of potential system issues.
- Observe daily conditions, including particulate levels and meteorological data. Based on wind direction, adjust location of air monitoring stations, as appropriate.
- Monitor each station throughout the workday for action level conditions. Section 3.3 outlines response procedures to action level conditions.
- Generate daily field reports. Document system troubleshooting, station layout adjustments, action level conditions and corresponding response actions, if any.
- Back-up air monitoring data onto thumb drive or other suitable transportable media. Transport back-up files off site to a remote project record file.

3.3 Response Procedures

As detailed in Section 2.2, the "red" action level for community air monitoring at the site perimeter is 5 ppm and above for VOCs and 150 µg/m^3 for PM10. The system will be monitored for potential exceedances of the established action level(s). The lower "yellow" action levels have been established to implement control measures before reaching the stop work ("Red") action level.

Due to the active commercial/industrial operations at and surrounding the site, elevated levels of ambient VOCs and suspended particulates are anticipated. As a result, the use of upwind and work zone monitoring is critical to assess whether action level conditions are the result of intrusive field activities or ambient (background) conditions (i.e., migration from upgradient or localized conditions). Work would not be halted or control measures implemented until upwind and work zone readings are compared to the continuous monitoring readings, with the exception of visible dust or odoriferous conditions.

The following steps outline the procedures the Field Team Lead shall follow in response to action level conditions:

1. Identify whether the station is upwind, downwind, or crosswind to the work area.
   a. If station is upwind, then continue work with air monitoring. Note the condition and response in the Daily Field Report.
   b. If station is downwind or crosswind, then proceed to Step 2.
2. Compare the reading to upwind readings.
   a. If the upwind reading is above action levels, then continue work with air monitoring. Note the condition and response in the Daily Field Report.
   b. If the upwind reading is below action levels, then proceed to Step 3.

3. Determine the difference between the readings obtained at the upwind and downwind stations. Based on visual determination, assess whether the exceedance is due to a localized ambient (background) condition (i.e., dust from upwind sites or roadways) in the vicinity of the station:
    a. If it is suspected that the reading is not the result of a localized ambient (background) condition, then inform the drilling contractor to take corrective action. Note the condition, response and corrective actions implemented in the Daily Field Report.
    b. If it is suspected that the reading is the result of a localized background condition, then obtain readings from the downwind boundary of the work zone with a handheld instrument and compare to the station reading.
        i. If the work zone reading is less than the station reading, then continue work with air monitoring. Note the condition and response in the Daily Field Report.
        ii. If work zone reading is greater than the station reading, then inform the drilling contractor to take corrective action.

Visible dust or odors emanating from the site perimeter will require immediate implementation of mitigation measures without progressing through the steps outlined above.

3.3.1 VOCs

If intrusive activities result in a concentration of total volatile organic vapors at the downwind site perimeter in excess of 5 ppm over background, activities will be managed in accordance with DOH Generic CAMP guidance as follows:

- If the concentration of total volatile organic vapors at the downwind site perimeter exceeds 5 ppm over background, but less than 25 ppm, for a 15-minute average, work activities will be temporarily halted and monitoring continued. If concentrations drop rapidly, work activities can resume with continued monitoring.
- If concentrations between 5 ppm and 25 ppm above background persist, work must be stopped and the source of the vapors identified and mitigated. Mitigation measures may include engineering controls such as application of foam or the use of temporary enclosures and modification of work protocols (e.g., drilling procedures). After work activities resume, the total organic vapor concentration at the contingency location (defined as 200 feet downwind of the site perimeter or half the distance to the nearest receptor, whichever is less) must remain below 5 ppm on a 15-minute-averaged basis.
- If the concentrations exceed 25 ppm at the site perimeter, work activities will be halted. Air sampling in accordance with this CAMP will continue in the event that elevated PID levels are detected, so that this information will be available to assess the potential impacts to offsite receptors or to develop mitigation measures.

3.3.2 Particulates

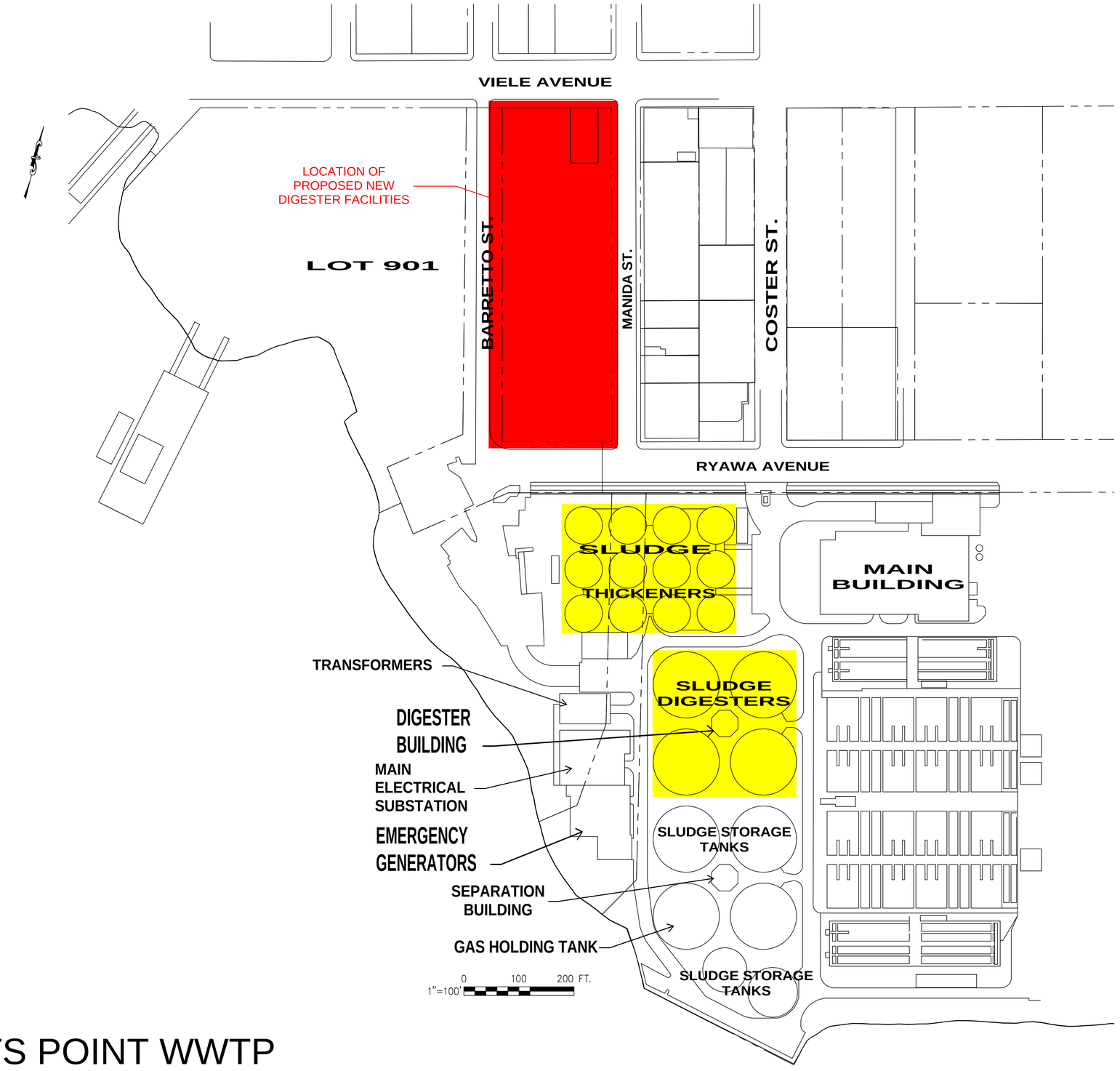
Dust suppression levels are implemented at the yellow action level (initially 100 µg/m^3 of PM10). DOH CAMP provides the following guidance:

- If the concentration of total PM10 particulates at the downwind site perimeter exceeds 100 µg/m^3 over background for a 15-minute average, dust suppression techniques must be instituted.
- Work may continue after employment of dust suppression as long as the downwind perimeter PM10 levels are below 150 µg/m^3 over background and there is no visible dust emanating from the Site.
- If levels below 150 µg/m^3 cannot be achieved, work must stop and can only resume when additional controls are successful in keeping perimeter dust levels less than 150 µg/m3 above background.

3.4 Communication Plan

Any "Red" stop-work condition, the associated control measures implemented by the drilling contractor and the resumption of field work will each be immediately communicated to the PM upon occurrence. The PM will also be notified if response actions are not implemented according to this plan. All daily field reports and air monitoring data will be recorded in the project files and will be available for NYSDEC and NYSDOH review.

Appendix A: Site Plan

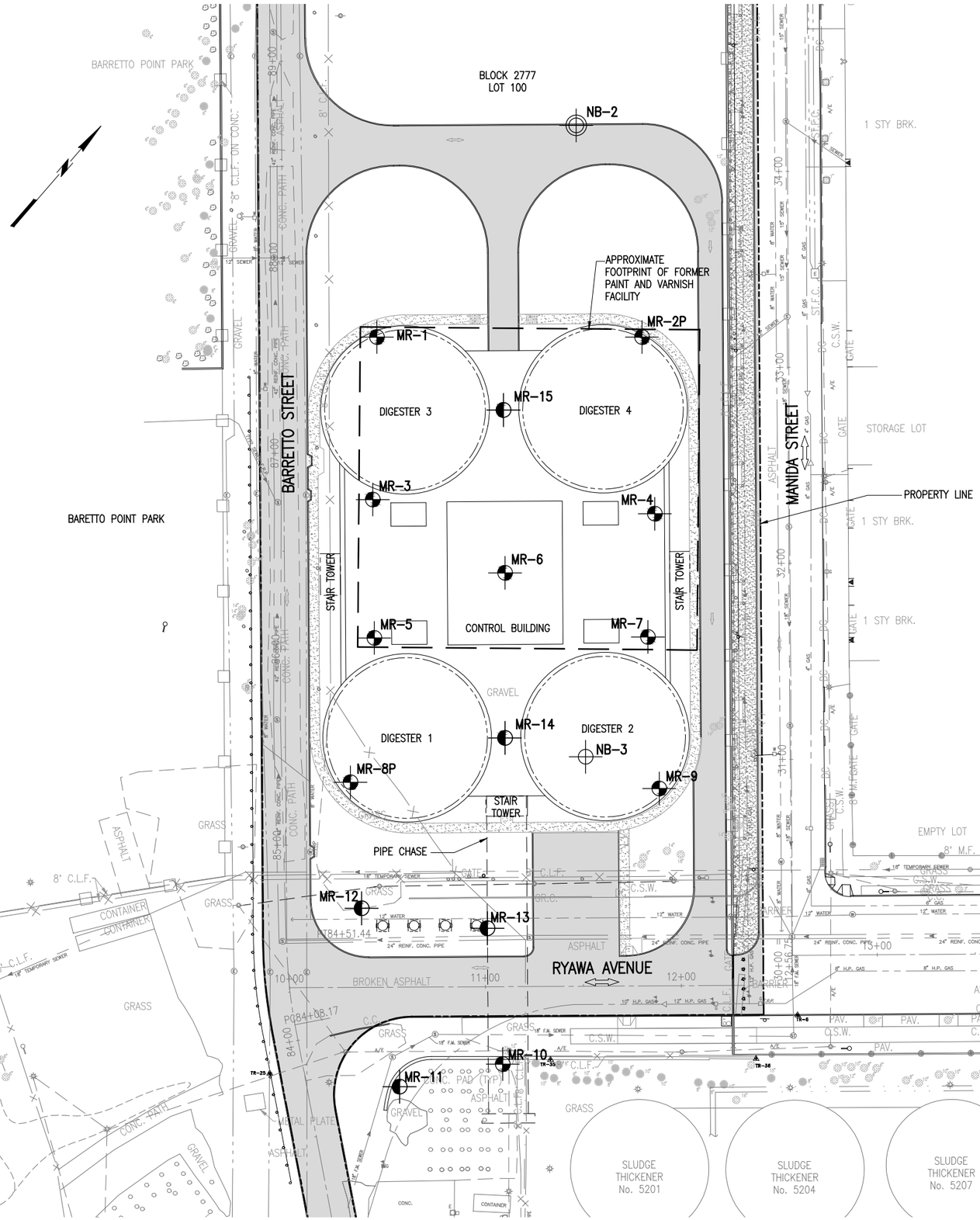


HP-238 HUNTS POINT WWTP

SITE PLAN

Brown AND Caldwell

Appendix B: Boring Location Plan



DRILLING PROCEDURE FOR PROPOSED BORINGS:

1. ALL BORINGS SHALL BE MADE AT LOCATIONS SHOWN ON THE BORING LOCATION PLAN.
2. BORINGS SHALL BE MADE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SUBSURFACE BORINGS AND SAMPLING BY MUESER RUTLEDGE CONSULTING ENGINEERS (MRCE).
3. THE TOP 6 FEET OF EACH BORING SHALL BE HAND AUGERED TO CLEAR UTILITIES.
4. THE BORING DIAMETER SHALL BE MINIMUM 3.5 INCHES. BORINGS SHALL BE MADE WITH A TRUCK MOUNTED DRILL RIG USING MUD-ROTARY DRILLING METHODS EMPLOYING DRILLING FLUIDS TO MAINTAIN A STABLE BOREHOLE. CASING SHALL BE USED ON AN AS-NEEDED BASIS TO SUPPLEMENT DRILLING FLUIDS.
5. CONTINUOUS SPLIT-SPOON SAMPLES WILL BE COLLECTED IN SOIL TO THE DEPTH OF WEATHERED ROCK/ROCK, USING A 2 INCH O.D. SPLIT-SPOON SAMPLER ADVANCED WITH A 140 LB HAMMER FALLING 30 INCHES.
6. BORINGS SHALL EXTEND A MINIMUM OF 10 FEET INTO COMPETENT BEDROCK. CORING SHALL BE DONE WITH AN N-SIZE, DOUBLE TUBE CORE BARREL.
7. A POSITIVE HEAD USING HEAVY DRILLING FLUID MUST BE MAINTAINED AT ALL TIMES.
8. PIEZOMETERS SHALL CONSIST OF 2-INCH MINIMIM I.D. WITH A MINIMUM OF 10 FEET IN LENGTH, 0.01" SLOTTED SCREEN AND SOLID PVC RISER UP TO THE GROUND SURFACE. THE ESTIMATED DEPTH OF EACH WELL IS APPROXIMATELY 30 FEET (SCREENED IN SOIL) AND 40 FEET (SCREENED IN BEDROCK).
9. ALL BORINGS NOT RECEIVING PIEZOMETER SHALL BE TREMIE GROUTED UPON COMPLETION AND SURFACE PATCHED IN KIND TO MATCH EXISTING SURFACE.
10. ALL BORINGS WILL BE MADE UNDER THE CONTINUOUS INSPECTION OF MRCE.

NOTES:

1. THE PLAN IS BASED ON TOPOGRAPHIC SURVEY BY MUNOZ ENGINEERING, P.C. DATED DECEMBER 9, 2016.
2. PROPOSED DIGESTER FACILITY FOOTPRINT WAS PROVIDED BY BROWN AND CALDWELL ON OCTOBER 9, 2017.
3. LIMITS OF FORMER PAINT AND VARNISH MANUFACTURING FACILITY IS BASED ON AREA SHOWN IN ENVIRONMENTAL RESTORATION RECORD OF DECISION REPORT, FIGURE 5, PREPARED BY DEC, DATED DECEMBER 2003.
4. BORING NOS. NB-1 THROUGH NB-3 WERE MADE BY AQUIFER DRILLING AND TESTING, INC. (ADT) IN 2002 UNDER INSPECTION BY URS. BORING LOCATIONS ARE BASED ON BORING LOCATION PLAN, FIGURE 2, PREPRAPED BY URS, FROM ENGINEERING EVALUATION AND FOUNDATION RECOMMENDATIONS PHASES I AND II DRAFT REPORT, DATED APRIL 30, 2002.
5. THE BORING CONTRACTOR SHALL LOCATE ALL UTILITIES, OBTAIN ALL NECESSARY PERMITS AND INSURANCE PRIOR TO PERFORMING WORK.

LEGEND:

NB-3 – PREVIOUS BORING (URS 2002)

NB-2 – PREVIOUS BORING AND MONITORING WELL (URS 2002)

MR-3P – PROPOSED PHASE I BORING "P" INDICATES PIEZOMETER

MR-14 – PROPOSED PHASE II BORING

GRAPHIC SCALE
30' 20' 10' 0 30' 60'

REV.	DATE	BY	DESCRIPTION

HP-238 HUNTS POINT WWTP – NEW ANAEROBIC DIGESTER FACILITIES
BRONX NEW YORK

BROWN AND CALDWELL
NEW YORK NEW YORK

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY: L.R.	DATE: 10-16-2017	FILE NUMBER
GRAPHIC	CH'KD BY: S.M.R.	DATE: 10-16-2017	12591

PROPOSED BORING LOCATION PLAN — DRAWING NUMBER PB-1

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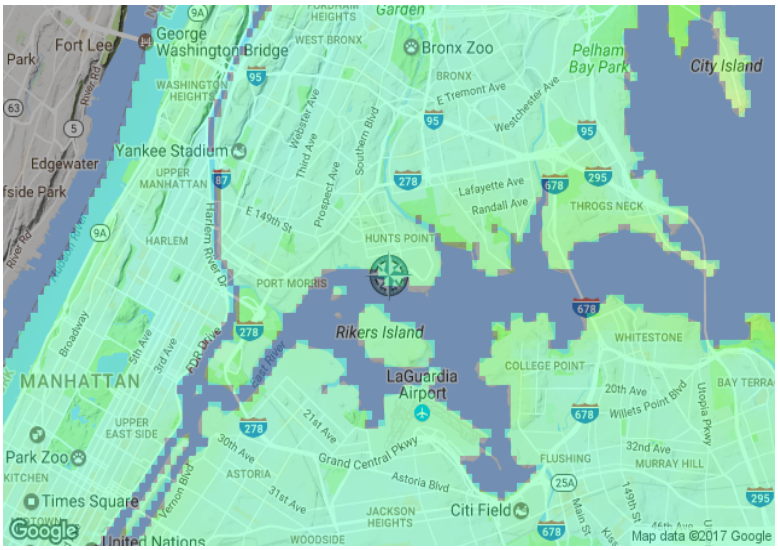
Appendix C: Site Wind Rose

WIND ROSE


George Washington Bridge
Fort Lee Park
Edgewater
Yankee Stadium
Bronx Zoo
Pelham Bay Park
City Island
MANHATTAN
HARLEM
HUNTS POINT
PORT MORRIS
Rikers Island
LaGuardia Airport
COLLEGE POINT
WHITESTONE
THROGS NECK
FLUSHING
MURRAY HILL
ASTORIA
JACKSON HEIGHTS
Citi Field
Times Square
Park Zoo
Google
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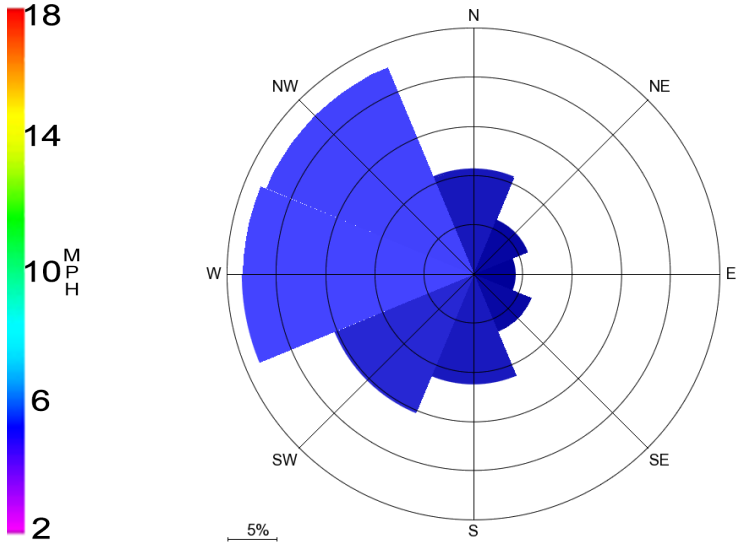
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