REMEDIAL INVESTIGATION REPORT

for

1095 Southern Boulevard
Block 2727, Lot 41
New York, NY 10459
NYSBCP Site No. C203055

Prepared For:

Urban Health Plan, Inc.
1065 Southern Boulevard
Bronx, NY 10459

Prepared By:

Langan Engineering and Environmental Service, Inc., PC
21 Penn Plaza
.360 West 31st Street, 8th Floor
New York, New York 10001
NJ Certificate of Authorization No: 24GA27996400

Joel B. Landes
Professional Engineer License No. 16 076348

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ENGINEERING & ENVIRONMENTAL SERVICES

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ACRONYM LIST

Acronym	Definition
AAR	Alternatives Analysis Report
AMSL	Above Mean Sea Level
AOC	Area of Concern
ASP	Analytical Services Protocol
AS/SVE	Air Sparging/Soil Vapor Extraction
AWQSG	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
bgs	Below Ground Surface
BOA	Brownfield Opportunity Area
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAMP	Community Air Monitoring Plan
CAR	Corrective Action Requests
CC	Chain of Custody
CD	Compact Disc
C/D	Construction/Demolition
cm/s	centimeters per second
COC	Certificate of Completion
CP	Commissioner's Policy
CPP	Citizens Participation Plan
CQAP	Construction Quality Assurance Plan
C-RAWP	Conceptual Remedial Action Work Plan
CRQL	Contract Required Detection Limit
CSOP	Contractors Site Operation Plan
CVOCs	Chlorinated Volatile Organic Compounds
DD	Decision Document
DCE	Dichloroethene
DCR	Declaration of Covenants and Restrictions
DER	Division of Environmental Remediation
DNAPL	Dense, Non-Aqueous Phase Liquid
DUSR	Data Usability Summary Report
EDP	EQuIS™ Data Processor
EIMS	Environmental Information Management System
ELAP	Environmental Laboratory Approval Program
ECs/ICs	Engineering and Institutional Controls
EDD	Electronic Data Deliverable
EquIS™	Environmental Quality Information System

Acronym	Definition
ESCP	Erosion and Sediment Control Plan
FER	Final Engineering Report
FSP	Field Sampling Plan
GPS	Geographic Positioning System
GQS	Groundwater Quality Standard
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
ISS	In Situ Stabilization
LCS	Laboratory Control Sample
MGP	Manufactured Gas Plant
MNA	Monitored Natural Attenuation
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NIST	National Institute of Standards and Technology
NOC	Notice of Completion
NYCBCP	New York City Brownfield Cleanup Program
NYCDEP	New York City Department of Environmental Protection
NYCDOHMH	New York City Department of Health and Mental Hygiene
NYCRR	Official Compilation of New York Codes, Rules and Regulations
NYCOER	New York City Office of Environmental Remediation
NYSDEC	New York State Department of Environmental Conservation
NYSDEC DER	NYSDEC Division of Environmental Remediation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCE	Tetrachloroethene
PE	Professional Engineer
PID	Photoionization Detector
PM_{10}	Particulate matter with aerodynamic diameter <10 µm
PPE	Personal Protective Equipment
PPL	Priority Pollutant List
psi	pounds per square inch (lb/in^2)
ppm	Parts per million
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RA	Remedial Action
RAOs	Remedial Action Objectives

Acronym	Definition
RAQA	Remedial Action Quality Assurance
RAR	Remedial Action Report
RCRA	Resource Conversation and Recovery Act
RPD	Relative Percent Difference
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SSHO	Site Safety and Health Officer
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical & Operational Guidance Series
TOV	Total Organic Vapors
USEPA	United States Environmental Protection Agency
UCS	Unconfined Compressive Strength
UN-DOT	United Nations Department of Transportation
USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
VC	Vinyl Chloride

CERTIFICATION

I Joel B. Landes certify that I am currently a NYS registered professional engineer and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Professional Engineer/Qualified Environment Professional Signature and Date

1.0 INTRODUCTION

This remedial investigation report (RIR) was prepared on behalf of Urban Health Plan, Inc. (UHP) in accordance with the New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigation and Remediation. The RIR documents the remedial investigation (RI) performed at 1095 Southern Boulevard, Bronx, New York (the "Site"). UHP, a contract vendee contemplating purchase of the property, entered into the New York State Brownfield Cleanup Program (NYSBCP) as a Volunteer on 4 March 2011 (NYSBCP Site No. C203055).

The RI was performed to evaluate the vertical and areal extent of contamination resulting from the release of dry cleaning solvents into the ground. Hydro Tech Environmental, Corp. began the RI in November 2011, in accordance with its NYSDEC-approved revised remedial investigation work plan (RIWP), dated 4 August 2011. Hydro Tech did not prepare a formal remedial investigation report; they provided their data, information and results to the NYSDEC and UHP with a summary letter of their site investigation activities. Hydro Tech's data was provided to Langan and incorporated into this RIR. Langan prepared a supplemental remedial investigation work plan (SRIWP), which was approved by NYSDEC on 14 August 2012. The supplemental RI field work was completed in September 2012 and the results are reported in this RIR. Regulatory correspondence relevant to the RI is included in Appendix A.

UHP is contemplating three possible development alternatives for the Site:

1. A mixed-use, multi-story, commercial office building with two floors of mechanically ventilated parking beneath sidewalk grade. This development option is referred to as the "bathtub" development because it involves the construction of an underground, watertight foundation; and

2. A slab-on-grade construction with one floor of mechanically ventilated parking at sidewalk grade and mixed-use, multistory, commercial offices above.

3. UHP is also considering the option of developing the Site as an open-air parking lot. This development scenario would likely be an interim use, pending construction of options 1 and 2 above.

Our discussion of remedial concepts addresses both development alternatives.

1.1 Site Overview

The Site, shown on Figure 1, is a 10,000-square-foot (0.23-acre), vacant lot in the Bronx, New York and is listed as Block 2727, Lot 41, on the New York City tax map. The Site opens to Southern Boulevard to the east and is bound by a five-story residential building to the north, a

two-story commercial building to the south, and one five-story and three two-story residential buildings to the west (Figure 2). Chain-link security fencing borders the Site along Southern Boulevard, and plywood sheeting borders the Site along the northern property boundary. A demolition debris stockpile covers most of the western and central portions of the Site.

1.1.1 Adjoining Property Description

The Site is in a residential and light-commercial neighborhood. The property north of the Site is a five-story, multi-tenant, residential building that contains a first-floor storefront. The properties west of the Site open to Simpson Street and consist of one multi-tenant, five-story building and three two-story single-family residential buildings. The property that borders the Site to the south contains a two-story commercial building. This property, 1093 Southern Boulevard, houses a day-care facility (Brightside Academy), which has an outdoor playground that opens to the Site's southwest corner. Southern Boulevard and elevated rail (New York City Subway 2 and 5 tracks) border the Site to the east. Further to the east (across Southern Blvd) is a parking lot.

1.1.2 Location and Physical Setting

The Site is in the Bronx borough of New York City. Within the Bronx, the Site is in the Morrisania neighborhood, which is within Bronx Community District 2. The Site lies within C2-4 commercial district zoning, which supports local retail needs intended to serve residential districts. The nearest surface water bodies are the Bronx River, approximately 2,000 feet to east and the East River, approximately 1.4 miles to the south.

Site topography was assessed according to the Bronx Highway datum, which is +2.547 feet above mean sea level as measured at Sandy Hook, New Jersey. Site elevation varies from a high of 60.13 feet in the Site center to a low of 57.11 feet in the northeast corner. The reason for the elevation change is the stockpiling of what was reported to be demolition debris. Sidewalk elevation at the Site center is 57.05 feet. In the absence of the stockpiled debris, the Site slopes gradually from west to east, changing from about 58.5 to 57.1 feet.

1.1.3 Geologic Setting

Geology of the Site and the surrounding area is characterized by the metamorphosed sequence of pelitic schists known as the Manhattan Prong of the Hartland Formation. The Hartland Formation was formed during the late Cambrian to early Ordovician Period and consists of undivided pelitic schist with gneiss and amphibolite. The formation is frequently crosscut by transverse and parallel faults. The area is overlain by Pleistocene age glacial till deposits.

1.1.4 Historical Operation and Land Use

According to Hydro Tech's review of historic records summarized in their Phase I Environmental Site Assessment, dated 10 February 2010, the Site was vacant and undeveloped between 1896 and 1915. The eastern part of the Site was developed with a one-story building,

used as a store, with basement from 1950 to 1993. A New York City Department of Buildings record, dated 26 August 1993, indicated historical Site usage as a dry cleaner. This building remained until November 2008, when it was destroyed by fire. Since destruction of the building by fire in 2008, the Site has remained vacant.

1.2 Summary of Previous Investigations

Hydro Tech prepared the following environmental reports for the Site:

- Phase I Environmental Site Assessment Report, 10 February 2010
- Phase II Environmental Site Assessment, 5 April 2010
- Groundwater Investigation, 21 April 2010
- Additional Groundwater Investigation, 17 May 2010
- Groundwater Investigation Report, 5 November 2010

These reports are summarized below, and electronic copies of these reports are provided in Appendix B.

1.2.1 Phase I Environmental Site Assessment Report, Hydro Tech, 10 February 2010

A Phase I Environmental Site Assessment Report (ESA) was prepared by Hydro Tech in February 2010. The Phase I ESA was conducted consistent with the standard practice guidelines established in American Society for Testing and Materials Practice E 1527-00 as part of the due diligence at the Site. The Phase I ESA included a review of federal, state, and local regulatory agency databases, interviews with local government officials about known environmental conditions at the Site or in the area and a Site reconnaissance.

The Phase I ESA identified the following recognized environmental conditions (REC):

- REC 1: Historical use of the Site as a dry cleaning facility.
- REC 2: Destruction of the former building by fire may have resulted in the possible release of metals, semivolatile organic compounds, and/or asbestos into Site soils.

1.2.2 Phase II Environmental Site Assessment, Hydro Tech, 5 April 2010

A Phase II Environmental Site Assessment was prepared by Hydro Tech in April 2010 to investigate RECs identified at the Site in the Phase I ESA. Subsurface investigation activities included the advancement of six soil borings to 8 feet below grade. Soil samples were collected and analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), eight Resource Conversation and Recovery Act (RCRA) metals and asbestos. Polyaromatic hydrocarbons (PAH) were detected at concentrations that exceed their respective Technical and Administrative Guidance Memorandum (TAGM) #4046 Remedial Soil Cleanup Objectives (RSCO). Maximum concentrations for benzo(a)anthracene (464 µg/kg), chrysene (604 µg/kg), and benzo(a)pyrene (295 µg/kg) were detected near the eastern Site boundary.

Arsenic, barium, chromium, lead, and mercury concentrations were detected at concentrations exceeding their respective RSCOs near the southwest corner of the Site. Additionally, chromium was detected in two soil borings at concentrations greater than its respective RSCO. Hydro Tech concluded that PAH and metal concentrations detected within soil are indicative of historic urban fill. Chlorinated volatile organic compounds (CVOC), tetrachloroethene (PCE) and cis-1,2-dichloroethene (DCE), were detected at concentrations below their respective soil cleanup objectives.

1.2.3 Groundwater Investigation, Hydro Tech, 21 April 2010

A groundwater investigation letter report was prepared by Hydro Tech in April 2010 to supplement the Phase II ESA and determine whether groundwater contamination is present at the Site. Four monitoring wells were installed with screens straddling the water table. Groundwater in these four wells was observed at depths between 8.79 and 11.92 feet bgs and was sampled for VOCs. The CVOCs PCE, DCE, and vinyl chloride (VC) were detected at concentrations exceeding their respective groundwater quality standards (GQS), which is the NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, in at least one of the four monitoring wells.

1.2.4 Additional Groundwater Investigation, Hydro Tech, 17 May 2010

An Additional Groundwater Investigation Report was prepared by Hydro Tech in May 2010. Additional groundwater investigation was conducted to further delineate groundwater contamination identified during the April 2010 investigation and to determine whether groundwater contamination migrated off Site. Subsurface investigation included advancement of four soil borings which were then converted into overburden monitoring wells along the western and eastern sides of Southern Boulevard (downgradient with respect to groundwater flow direction, as determined by Hydro Tech). Soil samples were collected from depth intervals of 2 to 4 feet and 6 to 8 feet below grade surface (bgs) in each boring. A groundwater sample was collected from each of the newly installed wells. Soil and groundwater samples were analyzed for VOCs via EPA method 8260B. VOC concentrations detected in soil did not exceed respective RSCOs. CVOCs of concern — trichloroethene (TCE), PCE, DCE, and VC — were detected at concentrations exceeding their respective TOGS 1.1.1 GQS in one down-gradient well.

1.2.5 Groundwater Investigation Report, Hydro Tech, November 5, 2010

A Groundwater Investigation Report was prepared by Hydro Tech in November 2010 to identify the source of CVOC impacts to soil and groundwater. Three soil borings were advanced and converted to overburden groundwater monitoring wells. Grab VOC soil samples were collected from two depth intervals from each boring, and groundwater samples were collected from each monitoring well for VOCs. DCE concentrations exceeded respective RSCOs in soil samples

collected at two locations. Groundwater samples contained concentrations of VC, DCE, PCE, and/or TCE that exceeded groundwater quality standards.

The Hydro Tech studies identified CVOCs in soil and groundwater primarily in the southeast area of the Site, indicative of the Site's dry cleaning history. Semivolatile organic compounds and metals were also detected in Site soils at concentrations indicative of urban fill. Hydro Tech's Site investigations did not reveal whether DNAPL is present or if bedrock was affected by historic dry cleaning operations.

The investigations' results prompted UHP to enter into the NYSBCP. In accordance with the Brownfield Cleanup Agreement with the NYSDEC, Hydro Tech prepared a revised remedial investigation work plan (4 August 2011). The methodology and results of Hydro Tech's RI, together with the methodology and results of Langan's supplemental RI, are presented in Section 2.0.

2.0 REMEDIAL INVESTIGATION

The initial scope of work for the RI is described in Hydro Tech's revised RIWP, dated 4 August 2011 (Hydro Tech Revised RIWP). Investigation activities completed under the 2011 revised RIWP included soil boring advancement, monitoring-well installation, soil-vapor probe installation, and collection of soil, groundwater, and soil vapor samples. Field activities were implemented by Hydro Tech between November 11 and December 2, 2011. The *Results of RIR and Proposed Remedial Action* was prepared and submitted by Hydro Tech to the NYSDEC on December 28, 2011. The NYSDEC expressed concerns that the RI sample results indicated the potential presence of dense, nonaqueous phase liquid (DNAPL) and that fractured bedrock may serve as a conduit for contaminant migration. Because of these concerns, the NYSDEC requested additional investigation. A supplemental RIWP was prepared and submitted by Langan to the NYSDEC on August 10, 2012 (Langan Supplemental RIWP). The following sections describe the investigation activities completed under each of the work plans.

2.1 Remedial Investigation, Hydro Tech, November to December 2011

2.1.1 Drilling and Soil Logging

The soil investigation included ten environmental soil borings (SP-1 through SP-3, SP-5, SP-6, and SP-14 through SP-18) completed using a direct-push Geoprobe 6620DT® drill rig under the supervision of Hydro Tech personnel. Five soil borings were advanced at previous boring locations SP-1, SP-2, SP-3, SP-5 and SP-6 to characterize soil from 8 to 40 feet bgs or the top of bedrock. Three borings — SP-14, SP-15, and SP-16 — were advanced in the western and central portions of the Site, and two borings — SP-17 and SP-18 — were advanced in the southeastern and northeastern portions of the Site to characterize subsurface conditions. Boring depths, sample intervals, and photoionization detector (PID) readings are summarized in Table 1. Boring locations are shown on Figure 2.

Soil samples were collected continuously throughout each environmental boring in 4-foot Macro-Core® sample barrels with dedicated acetate liners. Soil samples retrieved from each boring were visually classified for soil type, grain size and texture. Each sample was screened for visual, olfactory and instrumental evidence of anthropogenic impacts. Instrument screening for the presence of VOCs was performed with a PID equipped with a 10.6 electron volt lamp. Boring logs that document these observations are included as Appendix C.

Seventeen grab soil samples were collected from ten soil borings — SP-1, SP-2, SP-3, SP-5, SP-6, and SP-14 through SP-18 — and analyzed for VOCs via EPA method 8260B. Additionally, soil samples collected from soil borings SP-14, SP-16, and SP-17 were analyzed for the following parameters:

- SVOCs via EPA method 8270,
- polychlorinated biphenyls (PCB) via EPA method 8082,

- pesticides via EPA method 8081A,
- herbicides via EPA method 8151A,
- target analyte list (TAL) metals by EPA method 6010B/7000 series, and
- trivalent and hexavalent chromium by EPA method 7196A.

Soil samples were collected into laboratory-supplied containers and were picked up and delivered via courier service to York Analytical Laboratories, Inc. — a New York State Department of Health Environmental Laboratory Accreditation Program (ELAP)-certified laboratory in Stratford, Conn. — under standard chain-of-custody protocol. A sample log showing soil samples and corresponding analysis is provided as Table 1. Analytical Services Protocol category B (ASP-B) data packages and chain-of-custody documentation are provided in Appendix D.

2.1.2 Overburden Groundwater Monitoring and Well Construction

Five groundwater monitoring wells (MW-3, MW-12, MW-13, MW-14 and MW-15) and two nested well pairs (MW-9A/9B and MW-10A/10B) were installed and two wells, MW-4 and MW-11, were reinstalled. The following soil borings and monitoring wells were collocated: SP-5/MW-3, SP-6/MW-4, SP-13/MW-11, SP-18/MW-12, SP-15/MW-13, SP-1/MW-14, and SP-17/MW-15. Monitoring wells were installed in accordance with the procedures set forth in the Hydro Tech Revised RIWP. Total well depths ranged from 12 to 24 feet bgs. The monitoring wells were screened across the water table interface to allow for the monitoring of light, nonaqueous phase liquid (LNAPL), if present.

The wells were constructed with 2-inch-diameter, threaded, flush-joint, polyvinyl chloride (PVC) casing and approximately 15 feet of 0.01-inch slot screens. Clean sand (Morie #1) was used to fill the annulus around the well screen to a height of approximately 2 feet above the top of the screened interval. The remainder of the annular space was filled with a layer of hydrated bentonite clay seal to near the ground surface. A sample log showing groundwater samples and corresponding analysis is provided as Table 2. Monitoring well construction details are summarized in Table 3. Monitoring well locations are shown on Figure 2. On 5 October 2012, Langan surveyed the monitoring well locations. A copy of the survey is provided in Appendix E.

The monitoring wells were purged and sampled using low-flow purging techniques to minimize drawdown. Water quality parameters [pH, temperature, specific conductance, turbidity, oxidation reduction potential (ORP), and dissolved oxygen (DO)] were measured and recorded at 5- to 10-minute intervals. Measurements were collected until the parameters stabilized for at least three consecutive readings.

Groundwater samples were collected from seven newly installed and four existing monitoring wells into laboratory-supplied glassware from MW-1, MW-3, MW-4, MW-5, MW-8, MW-9A and B, MW-10A and B, MW-11, MW-12, MW-14, and MW-15 and delivered via courier service to York. Groundwater samples were analyzed for TCL VOCs by EPA method 8260B and TCL

SVOCs by EPA method 8270. Additionally, groundwater samples collected from monitoring wells MW-1 and MW-3 were analyzed for pesticides via EPA method 8081A, herbicides via EPA method 8151A, PCBs by EPA method 8082, and TAL metals by EPA methods 6010B/7471A.

2.1.3 Soil-Vapor Investigation

Five soil-vapor points were installed and sampled on November 28, 2011, in accordance with the revised remedial investigation work plan. The sampling was completed to evaluate the presence of volatile constituents in soil vapor. A sample log showing soil vapor samples and corresponding analysis is provided as Table 4. Soil-vapor sample locations are shown on Figure 2.

Soil vapor sampling points were installed via direct-push technology to approximately 1 foot above the groundwater interface. A dedicated, 0.25-inch, stainless-steel screen implant was threaded to polyethylene tubing and lowered to the bottom of the hole. Approximately 1 to 2 feet of glass beads were installed around the screen implant by pouring the material into the annulus followed by sand (Morie #2) filter pack. The remaining annular space was backfilled to grade with hydrated bentonite.

After allowing the bentonite seal to set, a pre-sample tracer gas test was performed using helium. The helium-tracer test is a quality assurance and quality control (QA/QC) measure to confirm the integrity of the implant seals by evaluating whether surface outdoor air intrusion is impacting the soil-vapor sample (i.e., that no "short circuiting" is occurring). None of the soil-vapor sample locations failed the helium-tracer gas test.

With the seal confirmed, a 60-cubic centimeter (cm^3) plastic syringe was used to purge a volume of at least three times that of the tubing and screen setup, taking into account the volume purged during the helium-tracer gas test. After purging was complete, a laboratory-supplied 6-liter Summa canister with a flow controller was attached to the polyethylene tubing. Each Summa canister arrived from the lab with approximately 30 inches of mercury vacuum. Each 6-liter sample was collected over approximately 6 hours. The soil vapor samples were transported from the Site to York by a laboratory-provided courier for analysis of VOCs via EPA method TO-15.

2.2 Supplemental Remedial Investigation, Langan, September 2012

2.2.1 Drilling and Soil Logging

Three soil borings, BW-1, BW-2, BW-3, were advanced to characterize overburden soil, core bedrock, and install bedrock monitoring wells, in accordance with the Langan Supplemental RIWP. During the field investigation, three geotechnical borings, GB-1, GB-2 and GB-3, were advanced to gather building design information. BW-1, BW-2, BW-3 and GB-1 were completed using a Sonic® rig and borings GB-2 and GB-3 were advanced using a CME truck rig equipped

with a tri-cone roller bit using drive-and-wash drilling techniques. Boring advancement was supervised and logged by a Langan engineer.

Soil borings GB-2 and GB-3 were advanced to gather depth to bedrock and rock quality designations for bedrock (overburden was not screened or sampled). GB-1 was advanced to characterize overburden soil and bedrock. Soil borings BW-1 through BW-3 were converted to bedrock monitoring wells. Samples of saturated soil layers were collected for analysis of fraction organic carbon. Boring depths, sample intervals, and PID readings are summarized in Table 1. Boring locations are shown on Figure 2. A copy of each soil boring log is included in Appendix C.

2.2.2 Bedrock Groundwater Monitoring and Well Construction

Three bedrock groundwater monitoring wells, BW-1 through BW-3, were installed in accordance with the procedures set forth in the Langan Supplemental RIWP. Total well depths ranged from 41 to 46 feet bgs. Bedrock wells were constructed as open-hole bedrock wells with a 3-inch-diameter stainless steel well casing extending from the surface grade to a minimum of 2 feet into sound bedrock. The completed bedrock wells were finished to grade with a protective flush-mount vault. On 5 October 2012, Langan surveyed the bedrock monitoring well locations; a copy of the survey is provided in Appendix E.

Before sampling, the bedrock wells were developed to remove residual drilling fluids and agitated groundwater from the well. The estimated volume of water lost during installation plus at least one well volume of groundwater was purged from each well.

The monitoring wells were purged and sampled using low-flow purging techniques to minimize drawdown. Water quality parameters [pH, temperature, specific conductance, turbidity, oxidation reduction potential (ORP), and dissolved oxygen (DO)] were measured and recorded at 5- to 10-minute intervals. Measurements were collected until the parameters stabilized for at least three consecutive readings.

Four groundwater samples were collected, one from each well plus a blind duplicate, into laboratory supplied glassware and delivered via courier service to York Analytical, Inc. Groundwater samples were analyzed for TCL VOCs by EPA method 8260B. Analytical results in ASP-B category B format were specified.

2.2.3 Management of Investigative-Derived Waste

Soil cuttings and purge water were generated during supplemental RI activities and managed as F-listed hazardous waste. Two 55-gallon drums of purge water, containing water generated from well development and groundwater sampling, were generated. One 55-gallon drum of soil cuttings was generated. The three drums are sealed and labeled and await transport for off-site disposal. Waste manifests will be provided to the NYSDEC after waste disposal is complete.

2.2.4 Data Validation and Reporting

Remedial investigation data was validated by a third party data validator, EnviroAnalytics of Utica, New York. EnviroAnalytics validated the data in accordance with USEPA and NYSDEC validation protocols. Copies of the data usability summary reports (DUSR) are provided in Appendix F. According to the data validator, the data collected for this RI is usable for qualitative and quantitative purposes with qualifications, where applicable.

3.0 REMEDIAL INVESTIGATION RESULTS

Field observations and the results of sampling and analysis performed by Hydro Tech and Langan during their respective RIs were used to characterize the affected media, determine the extent of CVOC impacts, identify the amount of contaminant mass, and provide potential treatment options for CVOC-impacted areas. Soil, overburden groundwater, and soil-vapor samples were collected by Hydro Tech in November 2011. Bedrock groundwater samples were collected by Langan in September 2012.

Based on a review of the Phase I ESA, Phase II ESA, and Hydro Tech's subsequent investigations, one subject of concern, subsurface impacts from former dry cleaning solvent disposal, required additional investigation. The scope of the Langan Supplemental RIWP included discrete sampling with bias toward areas of known or suspected contamination to further evaluate this concern.

The sampling performed and data presented in this RIR, together with data collected during previous investigations, provides sufficient basis for a qualitative human health exposure assessment and evaluation of NYSDEC concerns, remedial action alternatives, and selection of a final remedy.

3.1 Site Geology

Four site-specific geologic units were identified during implementation of the Langan Supplemental RIWP. These units are listed in depth order (shallow to deep):

1. Historic fill
2. Native overburden
3. Decomposed bedrock
4. Bedrock

Further characterization of these units is provided in the following subsections. Interpretation of these units is based on soil borings BW-1, BW-2, BW-3, GB-1, GB-2 and GB-3, with GB-2 and GB-3 providing only bedrock information. These layers are depicted on the cross section provided in Figures 3A and 3B. Soil borings logs are provided in Appendix C.

3.1.1 Historic Fill

Historic fill encountered at the surface of the Site is primarily characterized as a brown, medium to fine grained sand with trace silt, some gravel, and trace anthropogenic materials (i.e., ash, brick, cinders, wood, and metal). The historic fill layer terminates between elevations 45.1 and 50.6 feet (6.6 and 15.0 feet below grade), after which native overburden is encountered.

3.1.2 Native Overburden

The native overburden beneath the fill layer can be subdivided into two stratigraphic layers: gray clayey silt and gray silty sand. The gray clayey silt, also referred to as the confining layer, is beneath the fill layer and above the gray silty sand. The clayey silt was observed to terminate between elevations 40.9 and 37.2 feet, which is 16.7 to 20.0 feet below Site grade.

The gray silty sand, which was not observed in the northwestern boring GB-1, was observed at elevations between 34.0 and 45.0 feet (20.0 and 26.2 feet below grade). Decomposed bedrock is encountered beneath the native overburden.

3.1.3 Decomposed Bedrock and Bedrock

Decomposed bedrock, which was observed to terminate between elevations 28.4 and 42.0 feet, is comprised of soft, gray or white, decomposed schist with mica. The observed thickness of decomposed bedrock was between 3.0 and 9.0 feet with thickness increasing from west to east. The decomposed bedrock transitions to competent rock towards the bottom of the unit. The top of rock depths are between 18 and 29 feet bgs. Shallow penetration into competent rock revealed dark gray, soft schist. As shown in the boring logs in Appendix C, rock quality and hardness increases with penetration depth.

3.2 Site Hydrogeology

Groundwater level data was collected by Hydro Tech on 2 December 2011 and is shown on Figure 4A. Synoptic water levels of existing wells were measured by Langan on 20 September 2012. A groundwater isocontour map, based on groundwater elevations collected during implementation of the Langan Supplemental RIWP, is presented as Figure 4B. The groundwater contours during both investigations show an overall trend of groundwater flow to the east toward Southern Boulevard, consistent with surficial and bedrock topography. The water level data is summarized in the following table and is also provided in Table 3. NAPL was not detected during groundwater gauging.

			2010-2011 (Hydro Tech)		2012 (Langan)	
Boring	**Ground Surface Elevation**	**Top of Casing Elevation**	**Depth to Groundwater**	**Groundwater Elevation**	**Depth to Groundwater**	**Groundwater Elevation**
BW-1	57.54	57.35	NA	NA	9.75	47.60
BW-2	60.13	59.90	NA	NA	18.14	41.76
BW-3	57.16	56.06	NA	NA	8.60	48.56
MW-1	57.20	57.88	8.79	49.09	9.54	47.66
MW-4	57.11	57.63	9.40	48.23	9.68	47.43
MW-5	57.61	57.29	9.52	47.77	9.67	47.62
MW-8	57.03	56.76	9.09	47.67	9.37	47.39
MW-9A	57.75	58.23	9.86	48.37	10.05	47.70
MW-9B	57.76	58.37	10.06	48.31	10.38	47.38
MW-10A	57.59	58.23	10.23	48.00	8.74	48.85
MW-10B			10.86	-	10.51	-
MW-14	58.54	59.35	9.26	50.09	9.80	48.74
MW-15	58.48	59.15	10.77	48.38	10.79	47.69

Notes:

1. **NA – Not gauged (wells did not yet exist)**
2. **MW-10B was not surveyed**
3. **Elevations reported in feet to the Bronx Highway Datum**
4. **Depths reported in feet as measured from the top of casing measuring point.**

3.3 Field Screening

Four field screening techniques were used to qualitatively determine the presence of CVOC impacts and DNAPL. These techniques consisted of visual assessment, olfactory screening, PID monitoring, and hydrophobic-dye testing. Visual assessment was used to detect staining or discoloration of soil cores. Olfactory screening was used to identity odors that could indicate CVOC impacts. There was no visual evidence of contamination observed; olfactory evidence was observed, noted on boring logs and quantified with the PID. The PID and hydrophobic dye field screening are further described in the following sections.

3.3.1 Photoionization Detector Screening

A MiniRAE 2000 PID was used to measure total organic vapor (TOV) concentrations emanating from extracted soil cores. The PID was equipped with a 10.6 electron Volt lamp and a correction factor of 0.66 was applied to target CVOCs. Corrected TOV concentrations are provided in the appended boring logs, Table 1, and are shown schematically on Figure 5. The purpose of the PID screening was to qualitatively determine if DNAPL was present and to quantify depth-specific TOV concentrations.

Elevated TOV concentrations were detected in borings BW-1, BW-2, BW-3, SP-2, SP-6, SP-11, SP-12, and SP-18. The highest TOV concentrations were consistently observed in the silty clay layer. PID screening did not indicate the presence of DNAPL.

3.3.2 Hydrophobic Dye Testing

A hydrophobic dye test kit, DNAPL-LENS-DETECT™, was used to detect the presence of DNAPL in extracted soil cores. DNAPL-LENS-DETECT™ contains a surfactant-impregnated, royal-blue, anthraquinone dye that changes color in the presence of DNAPL. The entire length of soil cores from BW-1, BW-2, BW-3, and GB-1 were continuously screened with DNAPL-LENS-DETECT™ according to the manufacturer's directions. Dye testing was negative and did not indicate the presence of DNAPL in the tested soil cores.

3.4 Soil Quality

According to a review of the data provided in the Phase II ESA, two soil types of concern exist at the Site: historic fill and CVOC-impacted soil (historic fill is limited to the historic fill geologic unit; CVOC-impacted soils extend into the native overburden geologic unit). One of the RI's objectives was to determine the extent of CVOC-impacted soil; limited soil quality data of historic fill was collected during the RI. During the Phase II ESA and November 2011 RI, Hydro Tech collected six and three soil samples from the historic fill unit, respectively. The remaining 14 soil samples collected during the RI were collected from the three native soil geologic units beneath the fill layer.

Tables 5a and 5b list the sample results for soil samples collected during Hydro Tech's November 2011 RI, show the comparison of soil results to the Part 375-6.8(a) Track 1 unrestricted use soil cleanup objectives (SCO) and provide the sample depth interval. Soil concentrations that exceed the SCO for samples collected during the RI are shown on Figures 6A and 6B. The following is a summary of the soil quality data organized by analytical parameter.

3.4.1 Pesticides/Herbicides/PCBs

Four samples, SP-16 (10 to 12 and 14 to 16 feet bgs), SP-17 (8 to 10 feet bgs) and SP-17 (22 to 24 feet bgs) were analyzed for pesticides, herbicides and PCBs during the Hydro Tech RI. The pesticide 4,4'-DDT was detected in samples SP-16 (10 to 12 feet bgs) and SP-17 (8 to 10 feet bgs) and alpha-Chlordane was detected in sample SP-17 (8 to 10 feet bgs). Detected concentrations of pesticides were below the Unrestricted Use SCOs. Herbicides and PCBs were not detected.

3.4.2 SVOCs

Six samples were analyzed for SVOCs by Hydro Tech: SP-14 (8 to 10 and 10 to 12 feet bgs), SP-16 (10 to 12 feet bgs and 14 to 16 feet bgs), and SP-17 (8 to 10 and 22 to 24 feet bgs). SVOCs were detected in two samples, SP-14 (8 to 10 feet bgs) and SP-17 (8 to 10 feet bgs), at concentrations below the Unrestricted Use SCOs.

3.4.3 Metals

Six samples, SP-14 (8 to 10 and 10 to 12 feet bgs), SP-16 (10 to 12 feet bgs and 14 to 16 feet bgs), and SP-17 (8 to 10 and 22 to 24 feet bgs), were analyzed by Hydro Tech for the TAL list of metals plus trivalent and hexavalent chromium. Analysis revealed five of six soil samples containing concentrations of metals above the Unrestricted Use SCOs. Metal concentrations that exceed their respective Unrestricted Use SCO include:

- Lead – 75.7 mg/kg in SP-14 (8 to 10 feet bgs) and 357 mg/kg in SP-17 (8 to 10 feet bgs) compared to the Unrestricted Use SCO of 63 mg/kg
- Copper – 54.7 mg/kg in SP-14 (10 to 12 feet bgs) and 122 mg/kg in SP-18 (8 to 10 feet bgs) compared to the Unrestricted Use SCO of 50 mg/kg
- Nickel – 33.8 mg/kg in SP-14 (10 to 12 feet bgs), 38.6 mg/kg in SP-16 (14 to 16 feet bgs), 30.7 mg/kg in SP-17 (8 to 10 feet bgs), and 31.1 mg/kg in SP-17 (22 to 24 feet bgs) compared to the Unrestricted Use SCO of 30 mg/kg
- Barium – 395 mg/kg in SP-17 (8 to 10 feet bgs) compared to the Unrestricted Use SCO of 350 mg/kg
- Zinc – 618 mg/kg in SP-17 (8 to 10 feet bgs) compared to the Unrestricted Use SCO of 109 mg/kg

3.4.4 VOCs

All seventeen samples collected as part of Hydro Tech's November 2011 RI were sampled for VOCs. As shown below, two of the 17 samples had CVOC concentrations in soil exceeding the Part 375 Unrestricted Use SCOs. The five VOCs listed below were reported at concentrations exceeding the Part 375 Unrestricted Use SCOs in soil samples (sample depths are shown in parentheses).

- Acetone – 76 µg/kg in SP-16 (14 to 16 feet bgs) and 150 µg/kg in SP-17 (8 to 10 feet bgs)
- cis-1,2-Dichloroethene – 3,700 µg/kg in SP-2 (18 to 20 feet bgs) and 40,000 µg/kg in SP-18 (14 to 16 feet bgs). From the additional groundwater investigation performed by Hydro Tech in October 2012, cis-1,2-dichloroethene exceedances were also detected at 402 µg/kg in SP-11 (6 to 8 feet bgs), 2420 µg/kg in SP-11 (16 to 18 feet bgs), and 850 µg/kg in SP-12 (14 to 16 feet bgs).
- Methylene Chloride – 100 µg/kg in SP-1 (20 to 22 feet bgs), which was negated and qualified with a "U" by the data validator due to blank contamination.
- Tetrachloroethene – 51,000 µg/kg in SP-2 (18 to 20 feet bgs) and 1,200,000 µg/kg in SP-18 (14 to 16 feet bgs)
- Trichloroethene – 12,000 µg/kg in SP-2 (18 to 20 feet bgs) and 120,000 µg/kg in SP-18 (14 to 16 feet bgs)

3.5 Groundwater Quality

Groundwater quality was evaluated separately for overburden groundwater and bedrock groundwater. A summary of groundwater sample results and groundwater concentrations that exceed the NYSDEC Technical and Operational Guidance Series (TOGS) Standards and Guidance Values for Class GA groundwater is presented on Table 7.

3.5.1 Overburden Groundwater

Hydro Tech collected groundwater samples from monitoring wells MW-1, MW-3, MW-4, MW-5, MW-8, MW-9A and B, MW-10A and B, MW-11, MW-12, MW-14, and MW-15 for analysis of VOCs and SVOCs; MW-1 and MW-3 were also analyzed for pesticides, herbicides, PCBs, and metals. Groundwater sample results were compared to NYSDEC TOGS Standards and Guidance Values and are summarized in Table 7. Figure 7 shows an interpolated contaminant concentration surface derived from groundwater quality data. The isoconcentration surfaces were linearly interpolated using AutoCAD Civil 3D.

SVOCs, pesticides, PCBs, and herbicides were not detected in any of the groundwater samples. Metals were detected in some wells, but at concentrations below NYSDEC TOGS Standards and Guidance Values.

The following VOCs were detected at concentrations exceeding NYSDEC TOGS Standards and Guidance Values.

- 1,1-Dichloroethene – ranging from 23 µg/L in MW-8 and MW-12 to 41 µg/L in MW-1;
- cis-1,2-Dichloroethene – ranging from 5.2 µg/L in MW-4 to 63,000 µg/L in MW-9A;
- Ethylbenzene – 5.7 µg/L in MW-12;
- Methylene chloride – 5.9 µg/L in MW-4 to 7.0 µg/L in MW-11;
- *o*-Xylene – 13 µg/L in MW-15
- PCE – ranging from 71 µg/L in MW-3 to 66,000 µg/L in MW-9A;
- Toluene – 6.1 µg/L in MW-12;
- TCE – ranging from 12 µg/L in MW-11 to 52,000 µg/L in MW-8;
- VC – ranging from 3.4 µg/L in MW-3 to 13,000 µg/L in MW-8; and
- Total xylenes – 31 µg/L in MW-12.

The CVOCs 1,1-dichloroethene, 1,2-dichloroethene, and vinyl chloride are daughter products resulting from the biodegradation of PCE and TCE.

3.5.2 Bedrock Groundwater

Three bedrock wells were installed on September 12 and 13, 2012, and sampled on September 20, 2012, during implementation of the Langan Supplemental RIWP. Groundwater samples were analyzed for VOCs and results were compared to NYSDEC TOGS Standards and Guidance Values (GA). The results that exceed the NYSDEC TOGS Standards and Guidance Values are summarized below.

- cis-1,2-DCE was detected in bedrock monitoring wells BW-1 through BW-3 at concentrations exceeding its GA value of 5 µg/L. cis-1,2-DCE concentrations ranged from 5.3 µg/L in BW-2 to 410 µg/L in BW-3.
- Bedrock monitoring well BW-3 also contained concentrations of chloroform (9.3 µg/L), PCE (180 µg/L), TCE (240 µg/L), and VC (2.2 µg/L) that exceed their respective GA standards.

DNAPL was not observed during bedrock well coring or well gauging and sounding. In BW-1 and BW-2, the concentrations of cis-1,2-DCE are below 1 % of DCE solubility in water. In BW-3, concentrations of chloroform, cis-1,2-DCE and PCE are below 1 % of their respective solubility in water. The TCE concentration of 240 µg/L in BW-3 groundwater is 22 % of its water solubility of 1,100 µg/L.

3.6 Soil Vapor Quality

Soil vapor points SV-1 through SV-5 were sampled on 28 November 2011 by Hydro Tech. Soil vapor analytical results were compared to NYSDOH Air Guideline Values (AGVs), NYSDOH Fuel Oil Indoor Air Upper Fence Values, USEPA 2001 Base Database: 90th Percentile Values for Indoor Air, and the HEI 2005 95th Percentile Values for Indoor Air. A summary of soil vapor analytical results is presented in Table 8. Soil vapor sample locations and results are presented in Figure 9. VOCs detected in the soil vapor samples at concentration above the specified range of background concentrations are shown in the following bullet list.

- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 2-Butanone
- Acetone
- DCE
- Dichlorodifluoromethane
- Ethylbenzene
- o-Xylene
- p- & m- Xylenes
- p-Ethyltoluene
- PCE
- Toluene
- trans-1,2-Dichloroethene
- TCE
- Trichlorofluoromethane (Freon 11)

PCE was reported at concentrations ranging from 490 to 2,800 µg/m^3 in samples collected from soil vapor points SV-1 through SV-5, exceeding its respective AGV of 100 µg/m^3. In addition, TCE was reported at concentrations ranging from 35 to 280 µg/m^3 in samples collected from soil vapor points SV-1, SV-4, and SV-5, exceeding its AGV of 5 µg/m^3.

3.7 Geochemistry

During the supplemental RI, fraction organic carbon (f_{OC}) soil samples were collected from the three saturated soil layers and water quality indicator parameters were measured before sampling groundwater in the three bedrock monitoring wells. Water quality indicator parameters were not obtained from Hydro Tech for the groundwater sampling they performed.

Analytical results for f_{OC} are provided in Table 6. The f_{OC} analysis showed the clayey silt has the highest f_{OC} at 52.7 %, followed by the decomposed schist (23.8 %), and silty sand (12.6 %).

Analysis for pH was also performed as part of the f_{OC} analysis, indicating soil pH of 8.0, 6.5, and 7.4 for the silty sand, clayey silt, and decomposed schist, respectively.

The following table summarizes the final water quality indicator parameter measurements made with a Horiba U-52 water quality probe before sampling the bedrock monitoring wells.

Well	pH	Temperature (° C)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Oxidative-Reductive Potential (mV)
BW-1	8.0	18.0	0.86	22.7	0.48	-71
BW-2	7.0	18.3	0.50	17.1	1.15	150
BW-3	7.7	17.9	0.38	28.2	0.32	-200

mS/cm = milliSiemens per centimeter
NTU = nephelometric turbidity units

4.0 ESTIMATED VOLUME AND MASS OF CVOC-IMPACTED SOIL AND GROUNDWATER

The mass and volume of CVOCs in soil and groundwater, in the dissolved and absorbed phase, were estimated using the Hydro Tech RI data. The mass and volume of CVOCs in bedrock groundwater, in the dissolved and absorbed phase, were estimated using the Langan RI data. Partition coefficients for groundwater calculations were obtained from M.D. LaGrega et al (1994), and the value of organic carbon in the soil was estimated using data collected during implementation of the Langan Supplemental RIWP.

The mass and volume of contaminants are summarized in the following tables. Groundwater-contaminant mass calculations are included in Appendix G, corresponding to the data depicted on Figure 7.

4.1 Historic Fill and CVOC-Impacted Soil Mass and Volume Calculations

To estimate the volume of historic fill and CVOC-impacted soil, the Site was horizontally divided into 100 square 10-foot cells and vertically divided into three depth intervals: zero to 8 feet bgs, 8 to 18 feet bgs, and 18 to 24 feet bgs. These cells were then plotted according to discrete soil sampling results. PID data and field observations were used to vertically and horizontally interpolate the extent of historic fill and CVOC-impacted soil between discrete sample locations.

The volume of historic fill is based on its horizontal extent throughout the Site (100 feet by 100 feet) and an average depth of 9.5 feet bgs. According to these dimensions, the approximate volume of historic fill is about 3,500 cubic yards, or approximately 5,300 tons, assuming a bulk density of 1.5 tons per cubic yard.

The interpolated extent of CVOC-impacted soil is presented on Figures 10A through 10C. The approximate maximum depth of CVOC-impacted soil extends to 24 feet bgs, based on the results of the Hydro Tech and Langan investigations. The estimated volumes of CVOC-impacted soil are listed in the following table.

Contaminant Type	Depth Interval (Feet)	Approximate Area (Square Feet)	Depth (Feet)	Volume (Cubic Yards)	Total Volume (Cubic Yards)
CVOC	0 to 8	900	8	270	1,660
	8 to 18	3,200	10	1,190	
	18 to 24	900	6	200	

4.2 CVOC-Impacted Overburden Groundwater Mass and Volume Calculations

The dissolved CVOC mass and volume in overburden groundwater were calculated using the interpolated areas depicted on Figure 7 and a depth of 15 feet, which was conservatively

assumed based on well screen intervals and thickness of the clayey silt layer. CVOC-impacted groundwater areas extending beyond the property line were not included in the mass and volume calculation. In the absence of Site-specific data, a generic porosity of 0.35 was assumed. This value is based on field soil classification by a Langan geologist and the porosity ranges reported for silt and sand by Freeze and Cherry (1979). The estimated volumes of CVOC-impacted groundwater within the total CVOC isoconcentration lines are:

- Greater than 100,000 µg/L: 10,600 gallons
- Between 10,000 and 100,000 µg/L: 167,000 gallons
- Between 100 and 10,000 µg/L: 57,000 gallons
- Between 10 and 100 µg/L: 10,000 gallons

The estimated dissolved and sorbed-phase CVOC mass within saturated soil are summarized in the following tables. The raw data and calculations used to arrive at these volumes and masses are provided in Appendix G.

CVOCs greater than 100,000 µg/L
Wells Within Plume: MW-9A

CVOC	Dissolved Phase CVOC Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	1.50	3.04	4.55
PCE	5.84	34.15	39.99
DCE	5.57	5.28	10.86
VC	0.28	---	0.28

CVOCs between 10,000 and 100,000 µg/L
Wells Within Plume: MW-1, MW-9B, MW-10B, MW-12, and MW-15

CVOC	Dissolved Phase CVOC Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	16.78	33.98	50.76
PCE	14.48	84.67	99.15
DCE	24.18	22.92	47.09
VC	0.85	---	0.85

CVOCs between 100 and 10,000 µg/L
Wells Within Plume: MW-3 and MW-10A

CVOC	Dissolved Phase CVOC Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	0.02	0.04	0.02
PCE	0.07	0.41	0.07
DCE	0.04	0.04	0.04
VC	0.00	---	0.00

Total CVOCs between 10 and 100 µg/L
Wells Within Plume: MW-4 and MW-11

CVOC	Dissolved Phase CVOC Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	4.92E-04	9.95E-04	1.49E-03
PCE	1.15E-04	6.71E-04	7.85E-04
DCE	1.03E-03	9.79E-04	2.01E-03
VC	5.73E-05	---	5.73E-05

Total

CVOC	Dissolved Phase CVOC Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	18.31	37.07	55.33
PCE	20.39	119.23	139.21
DCE	29.79	28.24	57.99
VC	1.14	---	1.14

4.3 CVOC-Impacted Bedrock Groundwater Mass and Volume Calculations

Bedrock groundwater contaminant mass and volume were calculated using the concentrations of CVOCs measured in groundwater collected from bedrock wells BW-1, BW-2, and BW-3. CVOC concentrations in the bedrock wells are depicted on Figure 8. Volumes are based on a depth of 10 feet and adjusted using a conservative bedrock porosity of 0.20, which is based on inspection of Site rock cores by a Langan geologist and professional judgment. The estimated volume of CVOC-impacted groundwater within the DCE plume (greater than 5 µg/L) is approximately 34,400 gallons. The estimated volume of groundwater within the TCE and PCE plumes is approximately 14,200 gallons and the estimated volume of groundwater within the VC plume in approximately 750 gallons. The estimated dissolved and sorbed-phase masses within the bedrock plumes are summarized in the following tables.

Bedrock Wells Plume: BW-1 and BW-3

CVOC	Dissolved Phase Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
DCE	0.06	0.06	0.11

Bedrock Wells within Plume: BW-3

CVOC	Dissolved Phase Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
TCE	0.01	0.03	0.04
PCE	0.01	0.07	0.07

Bedrock Wells within Plume: BW-3

CVOC	Dissolved Phase Mass (pounds)	Mass Sorbed (pounds)	Total (pounds)
VC	0.00	---	0.00

The concentration of vinyl chloride in BW-3 is negligible in the calculation of contaminant mass.

5.0 EXPOSURE ASSESSMENT

A qualitative human health exposure assessment was prepared using the data gathered during the RI. The exposure assessment conforms to the DER-10 paragraph 3.14(c)17 and subparagraphs and the DER-10 Appendix 3B New York State Department of Health Qualitative Human Health Exposure Assessment. To develop this exposure assessment, mixed (office/commercial) use consistent with UHP's proposed development of a four-story office building with either subgrade or sidewalk grade parking was assumed.

Although former Site use as a dry cleaner was established, the former building was destroyed by fire and was completely demolished before environmental assessments were performed. Consequently, potential routes of CVOC discharge to the environment from dry cleaning operations cannot be determined. CVOC-impacts exist primarily in the subsurface near the southeastern corner and in the right-of-way beneath the sidewalk and Southern Boulevard further to the east. According to aerial photography taken while the former building existed, these areas were covered by the building or paving. Based on this limited information, the release of dry cleaning solvents likely occurred through floor drains that discharged to the subsurface or into leaking plumbing systems. This presumed source of CVOC impacts is consistent with the former land use and the vertical and areal extent determined by the RI. In addition to CVOC impacts, historic fill contains concentrations of PAH and metals that exceed applicable SCOs.

Based on presumed source of CVOCs, transport of source material depends on groundwater flow, physical and chemical properties of the contaminants, and subsurface features. Horizontally, the easterly groundwater flow will transport dissolved-phase CVOCs off-Site with plume geometry enlarged by diffusion and dispersion. Vertically, because dry cleaning solvents are denser than water, source material will descend until retarded. The clayey silt layer identified during the RI acts as a confining layer that retards the downward migration of CVOC contamination. Although CVOC impacts were found in bedrock during the Langan supplemental RI, no indications of source material or DNAPL was observed. These conditions indicate that the confining layer contains residual source material and that vertical migration into bedrock is limited to the dissolved phase.

The closest potentially exposed receptors are the residents of the surrounding community. If construction proceeds, there is a potential exposure risk to construction workers. Future Site occupants also represent potentially exposed receptors. Contaminated media include soil, groundwater, and soil vapor. Because the Site is vacant, on-Site soil vapor exposure is not currently of concern. Off-Site soil vapor exposure is of concern but off-Site mitigation is not the obligation of the Volunteer and is being addressed by the NYSDEC. CVOC-impacted groundwater is encountered at least 9 feet bgs and CVOC-impacted soil is primarily encountered at depths from 10 feet to 22 feet bgs. As described in the following chart, direct contact with CVOC-impacted groundwater and soil are only possible during construction.

The following table summarizes the exposure assessment.

Environmental Media and Exposure Route	Human Exposure Assessment
Direct contact with surface soils (and incidental ingestion)	• Surface soils are contained by vegetative cover and are inaccessible because of a locked fence. Therefore, direct contact is minimal unless trespassing occurs. • During construction, mitigation through implementation of a health and safety plan would be necessary to protect Site workers. • To protect future building occupants, mitigation is planned through a cap or building elements.
Direct contact with subsurface soils (and incidental ingestion)	• Intrusive activities can result in direct contact with subsurface soils. This media and exposure route is of primary concern if construction activities proceed. Air monitoring, engineering controls and worker training will be necessary for construction activities. • During construction, mitigation through implementation of a health and safety plan would be necessary to protect Site workers.
Ingestion of groundwater	• Contaminated groundwater is not being used for drinking water, as the area is served and is anticipated to be served in the future by the public water supply • There are no known domestic water supply wells in the area.
Direct contact with groundwater	• Intrusive activities can result in direct contact with groundwater. This media and exposure route is of primary concern if construction activities proceed. If construction of the subsurface parking garage development proceeds, a large dewatering effort, which will expose site workers to direct contact with groundwater, will be necessary. Engineering controls and worker training will be necessary for construction activities and a pretreatment system will be required because discharge to sewer will be necessary. • During construction, mitigation through implementation of a health and safety plan would be necessary to protect Site workers.
Inhalation of air (exposures related to soil vapor intrusion)	• The Site is vacant and undeveloped so there is currently no exposure related to soil vapor. If the proposed development proceeds, vapor mitigation will be necessary. • To protect future building occupants, mitigation would be necessary in the building design.

6.0 CONCLUSIONS

Based on a review of environmental investigation data collected by Hydro Tech and by Langan, the following conclusions were developed, constituting the basis for a conceptual Site model.

6.1 Conceptual Site Model

- There are four geologic units beneath the Site: historic fill, native overburden, decomposed bedrock, and bedrock. The native overburden layer contains a clayey silt layer, which has lower permeability and higher organic content than the historic fill above and the silty sand and decomposed bedrock below.
- The Site consists of approximately 3,500 cubic yards (5,300 tons) of historic fill. The analytical data indicates that the historic fill includes metals concentrations above Unrestricted Use SCOs, rendering it regulated solid waste upon excavation. The historic fill is not fully delineated or characterized for waste disposal; however, the available data does not suggest that the historic fill would be a characteristic hazardous waste.
- The Site contains approximately 1,700 cubic yards (2,600 tons) of CVOC-impacted soil, which is primarily found near the southeast corner. Of the 1,700 cubic yards, approximately 72% is found within the 8 to 18 feet depth interval, approximately 16% in the 0 to 8 feet depth interval, and approximately 12% in the 18 to 24 feet depth interval. The concentration of CVOC impacts in the 8 to 18 feet depth interval corresponds to the clayey silt layer.
- The clayey silt layer's lower permeability and higher organic content is retarding the downward migration of CVOC impacts.
- Under a Track 2 soil remediation pursuant to 6 NYCRR Part 375-3.8(e)(2), soil cleanup objectives would not apply to soils deeper than 15 feet below grade, assuming no source material remains beneath 15 feet. Therefore, excavation to 18 feet to accommodate the bathtub development alternative would achieve Track 2 soil remediation, leaving some residual contamination (primarily groundwater and soil vapor) requiring mitigation.
- The majority of groundwater beneath the Site is contaminated with CVOCs. Within the overburden groundwater plume, CVOC concentrations range between 240 µg/L (MW-3) and 150,000 µg/L (MW-9A). Interpolation of groundwater results revealed greatest CVOC impacts in the vicinity of monitoring wells MW-9A, MW-9B and MW-8, which are screened within the overburden.
- The presence of DCE isomers and VC in groundwater indicates natural attenuation of PCE and TCE via reductive dechlorination. The mass of CVOCs in soil and groundwater

indicates that attenuation of PCE and TCE through biodegradation alone will not remediate CVOC impacts in a reasonable timeframe.

- Concentrations of CVOCs, primarily TCE, above 1% of their water solubility were detected in bedrock well BW-3 and overburden wells MW-1, MW-3, MW-8, MW-9A/B, MW-10A/10B, MW-12, and MW-15. Field screening of soil cores, well gauging with an oil-water interface probe, and sounding the well bottoms did not reveal indications of DNAPL. Based on these lines of evidence, DNAPL does not exist in the overburden or bedrock monitoring wells as a free-flowing liquid. CVOC impacts in overburden soil and groundwater samples indicate residual CVOC source material is present and bound within the clayey silt layer.
- Soil data preliminarily indicates that a contained-in demonstration could be made for Site soils so they are not treated as listed hazardous waste (notwithstanding contamination with CVOCs that cause the material to be classified as characteristic hazardous waste, pursuant to 40 CFR 261), in accordance with Technical and Administrative Guidance Memorandum (TAGM) 3028 "Contained-In" Criteria for Environmental Media. Dewatered groundwater, however, would require in situ or ex situ treatment before disposal to comply with TAGM 3028 and to not require handling and disposal as a listed hazardous waste.
- Petroleum constituents were detected in groundwater collected from one monitoring well, MW-12, above GQSs. Petroleum constituents were not detected, however, in the soil boring that preceded MW-12 installation or in other Site monitoring wells. Petroleum impacts are localized around MW-12. No further investigation is warranted.
- Soil vapor is impacted by CVOCs. Soil vapor concentrations are not a concern because the Site is vacant and covered with a permeable surface. If development proceeds, vapor mitigation will be necessary.

6.2 Remediation Concepts for Development

The following sections summarize two development scenarios and how they inform the remedial action. UHP will decide whether the proposed developments are viable and will prepare a remedial action work plan in accordance with the NYSBCP and DER-10. Remedial concepts for both development scenarios are listed below.

6.2.1 Slab-on-Grade Construction

- Excavation to approximately 5 feet below grade and off-site disposal of historic fill.
- Removal by excavation or treatment of the CVOC hot spot area (2,600 tons).

- Vapor barrier and sub-slab depressurization system or other acceptable ventilation of non-occupied levels (such as garage ventilation that meets code requirements for air exchange) beneath all occupied areas.
- After remediation, recontamination beneath the Site could result from back diffusion of CVOC impacts that exist beneath the adjacent sidewalk and roadway. Therefore, prevention of back-diffusion of CVOC-impacted groundwater from down-gradient source areas would be necessary depending on how and when off-Site contamination is addressed.
- Monitoring of groundwater as needed to confirm the absence of source material, and ongoing natural attenuation.

6.2.1.1 Open-Air Parking Lot

If the Site was developed as an open air parking lot, the same remedial concepts provided for the slab-on-grade construction generally apply with the exception of vapor mitigation and excavation depth. Vapor mitigation would not be necessary for an open-air parking lot. The excavation depth would also be shallower, presumably 2 to 3 feet below sidewalk grade to accommodate storm water collection and asphalt sub-base.

6.2.2 Deep Basement Construction

- Excavation of the site to approximately 18 feet below grade and offsite disposal of spoils.
- Dewatering and treatment of dewatered groundwater with disposal to the local sewer per New York City Department of Environmental Protection (NYCDEP) permit.
- Waterproofing and vapor proofing barrier installed below all occupied structures.
- Acceptable ventilation of non-occupied levels (such as garage ventilation that meets code requirements for air exchange) beneath all occupied areas.
- Groundwater monitoring as needed to confirm the absence of source material, and ongoing natural attenuation.

6.2.3 General Discussion of Remediation Concepts

6.2.3.1 Excavation and Capping

Waste characterization will be required prior to disposal of excavated materials. The waste characterization should separately address the historic fill and the CVOC-impacted native overburden layers. The waste characterization would include sample collection, analysis, reporting of results, and data comparisons to NYSDEC soil cleanup objectives, facility-specific acceptance requirements, and land disposal restrictions. Depending on the results of the waste characterization, multiple treatment or disposal facilities will likely be necessary to accommodate different waste streams if the contemplated excavation to 18 feet for the

bathtub development is performed. If the slab-on-grade excavation to 5 feet is performed, the waste encountered would consist of historic fill with insignificant CVOC impacts and it is possible that a single facility could be identified for disposal purposes. Contaminated soil beneath the 5-foot excavation that is considered source material would require additional hotspot excavation or in situ treatment to reduce soil concentrations to comply with Part 375-6.8(b): Restricted Use Soil Cleanup Objectives – Protection of Groundwater.

Regardless of excavation depth, documentation samples collected from the sidewalls and base of excavation would be collected in accordance with the DER-10.

The proposed development alternatives would likely cover the entire Site footprint with building elements; however, construction plans have not been finalized. Upon completion of the new construction, any exposed soil (i.e., not covered by a paved or other impermeable surface) must be covered with at least 2 feet of fill material meeting the Unrestricted Use SCOs.

6.2.3.2 Groundwater Remedial Measures

To dewater for excavation, readily available and proven remedial technologies are available to pretreat contaminated groundwater prior to off-Site disposal for the bathtub development alternative. Without the plume and contaminant mass reduction that would be achieved through dewatering, remediation scope and scale will increase under the slab-on-grade development alternative. Dewatering and excavation for the bathtub development will substantially reduce the groundwater plume size and dissolved-phase mass. Dewatering will require pretreatment and a NYCDEP groundwater discharge permit. A contained-in determination should be sought for dewatered groundwater.

Under the bathtub alternative, the remedial plan should include a contingency for supplemental groundwater remedial measures to be implemented if it is determined that dewatering has not achieved groundwater remedial objectives and that monitored natural attenuation is insufficient. Under the slab-on-grade alternative, groundwater remedial measures would be necessary. Prior to implementing remedial measures, treatability testing will be necessary to prepare a remedial design. The remedial technologies capable of mitigating the on-Site dissolved-phase CVOC impacts include:

- In situ chemical oxidation (e.g., permanganate, activated persulfate, modified Fenton's reagent)
- In situ chemical reduction (e.g., zero-valent iron)
- In situ thermal treatment (e.g., electrical resistive heating, thermal conductive heating)
- In situ stabilization of contaminated soils

6.2.3.3 Soil Vapor Remedial Measures

For the bathtub development alternative, vapor mitigation measures would be constructed as part of the foundation using a waterproofing membrane and a New York City Mechanical Code-compliant ventilation system for a subgrade parking lot.

For the slab-on-grade development scenario, vapor mitigation would similarly be accomplished through a mechanical code-compliant ventilation system for a ground-level parking enclosure, or an open-air parking level. If the ground floor contains commercial or office space with no sub-grade parking, a sub-slab depressurization system, in addition to a vapor barrier, will be necessary.

6.2.3.4 Off-Site Contamination

Remediation of off-Site CVOC impacts is being addressed by the NYSDEC. Because contamination exists in the right of way to the east and down-gradient of the Site, a hydraulic barrier may be required to mitigate recontamination of the Site from back-diffusion after remediation. A hydraulic barrier would be created by the bathtub development while it would be a necessary add on for the slab-on-grade development.

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TABLES

Table 1

Soil Sample Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Soil Boring ID	Location (see Figiure 2)	Boring Installation or Sample Date	Depth Interval (feet bgs)	PID Reading (ppm)	Analytical Methods
SP-1	Southwestern boundary	11/17/2011	8 to 10	0.1	TCL-VOC by SW846 8260B
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	0.1	
			16 to 18	0.1	
			18 to 20	0.1	
			20 to 22	0.1	
SP-2	Southeastern boundary	11/17/2011	8 to 10	0.1	TCL-VOC by SW846 8261
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	**9.3**	
			16 to 18	**25**	
			18 to 20	**223**	
			20 to 22	**5.6**	
			22 to 24	0.1	
			24 to 26	0.1	
			26 to 28	0.1	
SP-3	Central portion	11/18/2011	8 to 10	0.1	TCL-VOC by SW846 8260B
			10 to 12	0.1	
SP-5	North-central portion	11/18/2011	8 to 10	0.1	TCL-VOC by SW846 8260B
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	0.1	
			16 to 18	0.1	
SP-6	Northeastern boundary	11/17/2011	8 to 10	**70**	TCL-VOC by SW846 8260B
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	0.1	
			16 to 18	0.1	
			18 to 20	0.1	
			20 to 22	0.1	
			22 to 24	0.1	
SP-14	Northwestern boundary	11/11/2011	0 to 2	0.1	TCL-VOC by SW846 8260B TCL-SVOC by SW846 8270C TAL-Metals by SW846 6010B Mercury by SW846 7471A Cr(IV) by SW846-7196A Cr(III) by calculation
			2 to 4	0.1	
			4 to 6	0.1	
			6 to 8	0.1	
			8 to 10	0.1	
			10 to 12	0.1	
SP-15	Central portion	11/11/2011	0 to 2	0.1	TCL-VOC by SW846 8260B
			2 to 4	0.1	
			4 to 6	0.1	
			6 to 8	0.1	
			8 to 10	0.1	
			10 to 12	0.1	

Table 1

Soil Sample Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Soil Boring ID	Location (see Figiure 2)	Boring Installation or Sample Date	Depth Interval (feet bgs)	PID Reading (ppm)	Analytical Methods
SP-16	Southwestern portion	11/11/2011	0 to 2	0.1	TCL-VOC by SW846 8260B + TIC TCL-SVOC by SW846 8270C + TIC Pesticides by SW846 8081A Herbicides by SW846 8151 PCB by SW846 8082 TAL Metals by SW846 6010B Mercury by SW846 7471A Cr(IV) by SW846-7196A Cr(III) by calculation
			2 to 4	0.1	
			4 to 6	0.1	
			6 to 8	0.1	
			8 to 10	0.1	
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	0.1	
SP-17	Southeastern portion	11/11/2011	0 to 2	0.1	
			2 to 4	0.1	
			4 to 6	0.1	
			6 to 8	0.1	
			8 to 10	0.1	
			10 to 12	0.1	
			12 to 14	0.1	
			14 to 16	0.1	
			16 to 18	0.1	
			18 to 20	0.1	
			20 to 22	0.1	
			22 to 24	0.1	
SP-18	Northeastern portion	11/17/2011	0 to 2	0.1	TCL-VOC by SW846 8260B
			2 to 4	0.1	
			4 to 6	0.1	
			6 to 8	0.1	
			8 to 10	0.1	
			10 to 12	**550**	
			12 to 14	**1,350**	
			14 to 16	**1,450**	
			16 to 18	**450**	
			18 to 20	**80**	
			20 to 22	**22**	
			22 to 24	0.1	

1. Remedial investigation sample collection depth intervals are shaded
2. Soil borings SP-1 through SP-18 were installed and sampled by Hydro Tech Environmental, Corp.
3. TCL = target compound list
4. TAL = target analyte list
5. bgs = below ground surface
6. VOC = Volatile organic compound
7. SVOC = Semi-volatile organic compound
8. PCB = Polychlorinated biphenyls
9. TIC = tentatively identified compounds
10. Elevated PID concentrations above background are **bolded**.

Table 2

Groundwater Sample Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID	Installed or Sampled By	Date Sampled	Location (see Figiure 2)	Analysis
BW-1	Langan	9/20/2012	Southeastern portion	TCL-VOC by SW846 8260B
BW-2			Northeastern portion	
BW-2 (DUP)			Northeastern portion	
BW-3			Southeastern portion	
FB-092012			Not Applicable	
MW-1	Hydro Tech	12/2/2011	Southwestern portion	TCL VOC by SW846 8260B plus TIC TCL SVOC by SW846 8270C plus TIC Pesticides by SW846 8081A Herbicides by SW846 8151 PCB by SW846 8082 TAL Metals by SW846 6010B Mercury by SW846 7470A
MW-4			North-central portion	
MW-3			North-central portion	TCL-VOC by SW846 8260B TCL-SVOC by SW846 8270C
MW-5			Northeast-adjacent sidewalk	
MW-8			Southeast-adjacent sidewalk	
MW-9A			East-central boundary	
MW-9B			East-central boundary	
MW-10A			Northeast boundary	
MW-10B			Northeast boundary	
MW-11			Northeast boundary	
MW-12			Northeastern portion	
MW-14			Southwestern boundary	
MW-15			Southeastern portion	

1. VOC = Volatile organic compound
2. SVOC = Semi-volatile organic compound
3. TCL = Target compound list
4. TIC = tentatively identified compound
5. PCB = Polychlorinated biphenyls

Table 3

Groundwater Monitoring Well Construction Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Monitoring Well ID	Installation Date	Equipment Used and/or Technology	Location	Well Diameter (inches)	Total Depth (feet)	Screened Interval (feet)	Screen Length (feet)	Screen Material	Riser Interval (feet)	Riser Material	Sand Pack Interval (feet)	Bentonite Seal Interval (feet)	Depth to Water (feet)	Casing Elevation (feet)	Status
BW-1	9/12/2012	Sonic 319	BW-1	4	46	34 to 46	12	Open-hole Bedrock	0.5 to 34	Steel Casing	NA	0 to 0.5	9.75	57.35	Existing
BW-2	9/12/2012	Sonic 319	BW-2	4	41	31 to 41	10	Open-hole Bedrock	0.5 to 31	Steel Casing	NA	0 to 0.5	18.14	59.9	Existing
BW-3	9/12/2012	Sonic 319	BW-3	4	44	33 to 44	11	Open-hole Bedrock	0.5 to 33	Steel Casing	NA	0 to 0.5	8.6	56.06	Existing
MW-1	4/15/2010	Geoprobe 5410	SP-2	1	18	2 to 18	16	0.010-inch PVC	0.5 to 2	PVC	1 to 18	0 to 1	8.79	57.88	Existing
MW-2	4/15/2010	Geoprobe 5410	SP-3	1	20	2 to 20	18	0.010-inch PVC	0.5 to 2	PVC	1 to 20	0 to 1	10.77	---	Unknown***
MW-3	4/15/2010	Geoprobe 5410	SP-5	1	20	2 to 20	18	0.010-inch PVC	0.5 to 2	PVC	1 to 20	0 to 1	11.92	---	Unknown***
	November 2011	Direct Push		2			15**			PVC			10.72	---	Unknown***
MW-4	4/15/2010	Geoprobe 5410	SP-6	1	24	4 to 19	15**	0.020-inch PVC		PVC			13.16	57.63	Unknown***
	November 2011	Direct Push		2				0.010-inch PVC		PVC			9.4		Existing
MW-5	5/5/2010	Geoprobe 6620	SP-7	1	17	2 to 17	15	0.020-inch PVC	0 to 2	PVC	2 to 17	1 to 2	9.52	57.29	Existing
MW-6	5/5/2010	Geoprobe 6620	SP-8	1	17	2 to 17	15	0.020-inch PVC	0 to 2	PVC	2 to 17	1 to 2	9.1	---	Unknown***
MW-7	5/5/2010	Geoprobe 6620	SP-9	1	17	2 to 17	15	0.020-inch PVC	0 to 2	PVC	2 to 17	1 to 2	9.38	57.29	Existing
MW-8	5/5/2010	Geoprobe 6620	SP-10	1	17	2 to 17	15	0.020-inch PVC	0 to 2	PVC	2 to 17	1 to 2	9.09	56.76	Existing
MW-9	10/22/2010	Geoprobe 6620	SP-11	1	18	2 to 18	16	0.020-inch PVC	0 to 2	PVC	2 to 18	1 to 2	9.81	---	Unknown***
MW-9A	November 2011	Direct Push	MW-9A	2	13	3 to 13	10			PVC			9.86	58.23	Existing
MW-9B	November 2011	Direct Push	MW-9B	2	20	13 to 20	7			PVC			10.06	58.37	Existing
MW-10	10/22/2010	Geoprobe 6620	SP-12	1	16	2 to 16	14	0.020-inch PVC	0 to 2	PVC	2 to 16	1 to 2	9.64	---	Unknown***
MW-10A	November 2011	Direct Push	MW-10A	2	13	3 to 13	10			PVC			10.23	58.23	Existing

Table 3

Groundwater Monitoring Well Construction Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Monitoring Well ID	Installation Date	Equipment Used and/or Technology	Location	Well Diameter (inches)	Total Depth (feet)	Screened Interval (feet)	Screen Length (feet)	Screen Material	Riser Interval (feet)	Riser Material	Sand Pack Interval (feet)	Bentonite Seal Interval (feet)	Depth to Water (feet)	Casing Elevation (feet)	Status
MW-10B	November 2011	Direct Push	MW-10B	2	18	13 to 18	5			PVC			10.86		Existing
MW-11	10/22/2010	Geoprobe 6620	SP-13	1	18	2 to 18	16	0.020-inch PVC	0 to 2	PVC	2 to 18	1 to 2	10.47	---	Unknown***
	November 2011	Direct Push		2	18*	3 to 18**	15**	0.010-inch PVC		PVC			9.52		
MW-12	November 2011	Direct Push	SP-18	2	24*	5 to 20**	15**	0.010-inch PVC		PVC			10.47	---	Unknown***
MW-13	November 2011	Direct Push	SP-15	2	12*		15**	0.010-inch PVC		PVC			---	---	Unknown***
MW-14	November 2011	Direct Push	SP-1	2	22*	4 to 19**	15**	0.010-inch PVC		PVC			9.26	59.35	Existing
MW-15	November 2011	Direct Push	SP-17	2	24*	7 to 22**	15**	0.010-inch PVC		PVC			11.93	59.15	Existing

* Based off of total boring depth.
** Based off description in text stating that screen intervals were placed approximately 5 feet above groundwater table and extended 10 feet below groundwater table.
***These wells were unidentified during the Supplemental RI and their status is unknown.
1. Construction logs were not provided for monitoring wells MW-3 (November 2011), MW-4, MW-9A, MW-9B, MW-10A, MW-10B, MW-11 (November 2011), and MW-12 through MW-15. Well construction details were extracted from the Groundwater Investigation Letter Report dated April 21, 2010 and the Results of RIR and Proposed Remedial Actions letter dated December 28, 2011.
2. Shaded boxes - Information unavailable.
3. PVC = polyvinyl chloride

Table 4

Soil Vapor Sample Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Soil Vapor Point	Date Sampled	Location	Analysis
SV-1	11/28/2011	Northeastern Site boundary	VOC and via EPA Method TO-15
SV-2	11/28/2011	Southeastern Site boundary	
SV-3	11/28/2011	South-central Site boundary	
SV-4	11/28/2011	West-central Site boundary	
SV-5	11/28/2011	North-central Site boundary	

1. Soil vapor points SV-1 through SV-5 were installed and sampled by Hydro Tech Environmental, Corp.

VOC = Volatile organic compounds
EPA = Environmental Protection Agency

Table 5A

Soil Sample Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID (Depth)	NYSDEC Part 375	SP-14 8'-10'		SP-14 10'-12'		SP-15 10'-12'		SP-16 10'-12'		SP-16 14'-16'	
Sampling Date	Unrestricted Use	11/11/2011		11/11/2011		11/11/2011		11/11/2011		11/11/2011	
Dilution Factor	Soil Cleanup	1		1		1		1		1	
Unit	Objectives	mg/kg dry		mg/kg dry		mg/kg dry		mg/kg dry		mg/kg dry	
Compound	**(mg/kg)**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Volatile Organics, NYSDEC Part 375 List											
1,1,1-Trichloroethane	0.68	0.0013	U	0.0013	U	0.0013	U	0.0013	U	0.0013	U
1,1-Dichloroethane	0.27	0.00096	U	0.00093	U	0.00092	U	0.00091	U	0.00095	U
1,1-Dichloroethylene	0.33	0.0019	U	0.0018	U	0.0018	U	0.0018	U	0.0018	U
1,2,4-Trimethylbenzene	3.6	0.0041	J	0.0023	J	0.00071	U	0.0016	J	0.0076	
1,2-Dichlorobenzene	1.1	0.00082	U	0.00079	U	0.00079	U	0.00078	U	0.00082	U
1,2-Dichloroethane	0.02	0.00090	U	0.00087	U	0.00087	U	0.00086	U	0.00090	U
1,3,5-Trimethylbenzene	8.4	0.0017	J	0.00050	U	0.00049	U	0.00049	U	0.0025	J
1,3-Dichlorobenzene	2.4	0.00065	U	0.00063	U	0.00063	U	0.00062	U	0.00065	U
1,4-Dichlorobenzene	1.8	0.00095	U	0.00091	U	0.00091	U	0.00090	U	0.00094	U
1,4-Dioxane	0.1	0.044	U	0.042	U	0.042	U	0.042	U	0.044	U
2-Butanone	0.12	0.0036	U	0.0035	U	0.0034	U	0.0034	U	0.018	
Acetone	0.05	0.023		0.020		0.0046	J	0.0096	J	0.076	
Benzene	0.06	0.00067	U	0.00064	U	0.00064	U	0.00064	U	0.00066	U
Carbon tetrachloride	0.76	0.0014	U	0.0014	U	0.0014	U	0.0014	U	0.0014	U
Chlorobenzene	1.1	0.00049	U	0.00047	U	0.00047	U	0.00046	U	0.00048	U
Chloroform	0.37	0.00050	U	0.00048	U	0.00048	U	0.00048	U	0.00050	U
cis-1,2-Dichloroethylene	0.25	0.0013	U	0.0013	U	0.0013	U	0.0013	U	0.0013	U
Ethyl Benzene	1	0.0012	J	0.00047	U	0.00047	U	0.00046	U	0.0013	J
Methyl tert-butyl ether (MTBE)	0.93	0.00053	U	0.00051	U	0.00051	U	0.00050	U	0.00053	U
Methylene chloride	0.05	0.026		0.020		0.015		0.040		0.043	
n-Butylbenzene	12	0.00045	U	0.00043	U	0.00043	U	0.00042	U	0.00044	U
n-Propylbenzene	3.9	0.00081	U	0.00078	U	0.00077	U	0.00077	U	0.0012	J
o-Xylene	~	0.0023	J	0.00067	U	0.00067	U	0.00066	U	0.0028	J
p- & m- Xylenes	~	0.0052	J	0.0022	J	0.0012	J	0.0022	J	0.0071	J
sec-Butylbenzene	11	0.00072	U	0.00070	U	0.00069	U	0.00069	U	0.00072	U
tert-Butylbenzene	5.9	0.00064	U	0.00062	U	0.00061	U	0.00061	U	0.00064	U
Tetrachloroethylene	1.3	0.021		0.00070	U	0.033		0.030		0.0017	J
Toluene	0.7	0.0014	J	0.00031	U	0.00031	U	0.00030	U	0.0011	J
trans-1,2-Dichloroethylene	~	0.00090	U	0.00087	U	0.00087	U	0.00086	U	0.00090	U
Trichloroethylene	0.47	0.0011	J	0.00077	U	0.0017	J	0.0014	J	0.00079	U
Vinyl Chloride	0.02	0.0013	U	0.0013	U	0.0013	U	0.0013	U	0.0013	U
Xylenes, Total	0.26	0.0076	J	0.0022	J	0.0014	U	0.0022	J	0.0099	J
Semi-Volatiles, NYSDEC Part 375 List											
2-Methylphenol	0.33	0.0790	U	0.0763	U	NT		0.0752	U	0.0785	U
3- & 4-Methylphenols	~	0.0966	U	0.0933	U	NT		0.0920	U	0.0960	U
Acenaphthene	20	0.124	U	0.120	U	NT		0.119	U	0.124	U
Acenaphthylene	~	0.0602	U	0.0581	U	NT		0.0573	U	0.0598	U
Anthracene	100	0.124	J	0.0514	U	NT		0.0507	U	0.0529	U
Benzo(a)anthracene	1	0.167	J	0.0802	U	NT		0.0791	U	0.0826	U
Benzo(a)pyrene	1	0.0984	J	0.0541	U	NT		0.0533	U	0.0556	U
Benzo(b)fluoranthene	1	0.0817	U	0.0789	U	NT		0.0778	U	0.0812	U
Benzo(g,h,i)perylene	100	0.0646	U	0.0623	U	NT		0.0615	U	0.0642	U
Benzo(k)fluoranthene	0.8	0.0898	J	0.0803	U	NT		0.0792	U	0.0826	U
Chrysene	1	0.131	J	0.0836	U	NT		0.0824	U	0.0860	U
Dibenzo(a,h)anthracene	0.33	0.0543	U	0.0524	U	NT		0.0517	U	0.0539	U
Dibenzofuran	7	0.0693	U	0.0669	U	NT		0.0660	U	0.0689	U
Fluoranthene	100	0.359		0.120	U	NT		0.119	U	0.124	U
Fluorene	30	0.0610	J	0.0581	U	NT		0.0573	U	0.0598	U
Hexachlorobenzene	0.33	0.0350	U	0.0338	U	NT		0.0333	U	0.0348	U
Indeno(1,2,3-cd)pyrene	0.5	0.0792	U	0.0765	U	NT		0.0754	U	0.0787	U
Naphthalene	12	0.0642	U	0.0619	U	NT		0.0611	U	0.0638	U
Pentachlorophenol	0.8	0.0602	U	0.0581	U	NT		0.0573	U	0.0598	U
Phenanthrene	100	0.500		0.0765	U	NT		0.0755	U	0.0787	U
Phenol	0.33	0.0860	U	0.0830	U	NT		0.0818	U	0.0854	U
Pyrene	100	0.357		0.0744	U	NT		0.0734	U	0.0766	U
Pesticides, NYSDEC Part 375 Target List											
4,4'-DDD	0.0033	NT		NT		NT		0.000147	U	0.000147	U
4,4'-DDE	0.0033	NT		NT		NT		0.000189	U	0.000189	U
4,4'-DDT	0.0033	NT		NT		NT		0.000257	J	0.000148	U

Table 5A

Soil Sample Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID (Depth)	NYSDEC Part 375	SP-14 8'-10'		SP-14 10'-12'		SP-15 10'-12'		SP-16 10'-12'		SP-16 14'-16'	
Sampling Date	Unrestricted Use	11/11/2011		11/11/2011		11/11/2011		11/11/2011		11/11/2011	
Dilution Factor	Soil Cleanup	1		1		1		1		1	
Unit	Objectives	mg/kg dry		mg/kg dry		mg/kg dry		mg/kg dry		mg/kg dry	
Compound	**(mg/kg)**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Aldrin	0.005	NT		NT		NT		0.000211	U	0.000211	U
alpha-BHC	0.02	NT		NT		NT		0.000249	U	0.000249	U
alpha-Chlordane	0.094	NT		NT		NT		0.000186	U	0.000186	U
beta-BHC	0.036	NT		NT		NT		0.000208	U	0.000208	U
delta-BHC	0.04	NT		NT		NT		0.000180	U	0.000180	U
Dieldrin	0.005	NT		NT		NT		0.000195	U	0.000195	U
Endosulfan I	2.4	NT		NT		NT		0.000160	U	0.000160	U
Endosulfan II	2.4	NT		NT		NT		0.000202	U	0.000202	U
Endosulfan sulfate	2.4	NT		NT		NT		0.000169	U	0.000169	U
Endrin	0.014	NT		NT		NT		0.000200	U	0.000200	U
gamma-BHC (Lindane)	0.1	NT		NT		NT		0.000229	U	0.000229	U
Heptachlor	0.042	NT		NT		NT		0.000263	U	0.000263	U
Polychlorinated Biphenyls (PCB)											
Aroclor 1016	~	NT		NT		NT		0.00969	U	0.0101	U
Aroclor 1221	~	NT		NT		NT		0.00969	U	0.0101	U
Aroclor 1232	~	NT		NT		NT		0.00969	U	0.0101	U
Aroclor 1242	~	NT		NT		NT		0.00969	U	0.0101	U
Aroclor 1248	~	NT		NT		NT		0.00969	U	0.0101	U
Aroclor 1254	~	NT		NT		NT		0.00834	U	0.00871	U
Aroclor 1260	~	NT		NT		NT		0.00834	U	0.00871	U
Aroclor 1262	~	NT		NT		NT		0.00834	U	0.00871	U
Aroclor 1268	~	NT		NT		NT		0.00834	U	0.00871	U
Total PCBs	0.1	NT		NT		NT		0.00834	U	0.00871	U
Herbicides, NYSDEC Part 375 Target List											
2,4,5-TP (Silvex)	3.8	NT		NT		NT		0.0798	U	0.0832	U
Metals, Target Analyte											
Aluminum	~	15200		16900		NT		10200		16500	
Antimony	~	0.180	U	0.174	U	NT		0.172	U	0.179	U
Arsenic	13	3.41		2.67		NT		7.86		4.56	
Barium	350	142		171		NT		87.7		219	
Beryllium	7.2	0.010	U	0.010	U	NT		0.010	U	0.010	U
Cadmium	2.5	0.168	U	0.162	U	NT		0.160	U	0.166	U
Calcium	~	10600		2610		NT		3220		5680	
Chromium	~	25.2		30.4		NT		21.4		33.8	
Cobalt	~	9.67		15.9		NT		13.3		20.1	
Copper	50	29.5		54.7		NT		29.9		33.6	
Iron	~	21600	E	25800	E	NT		22800	E	33700	E
Lead	63	75.7		11.8		NT		13.5		5.58	
Magnesium	~	3760		4690		NT		3740		9300	
Manganese	1600	299		208		NT		192		378	
Nickel	30	23.5		33.8		NT		29.5		38.6	
Potassium	~	1640		4620		NT		2080		9850	
Selenium	3.9	2.02		1.85		NT		2.28		1.88	
Silver	2	0.116	U	0.112	U	NT		0.110	U	0.115	U
Sodium	~	212		162		NT		162		280	
Thallium	~	0.245	U	0.236	U	NT		0.233	U	0.243	U
Vanadium	~	34.8		47.2		NT		43.0		56.7	
Zinc	109	89.6		99.7		NT		60.6		77.1	
Mercury by 7470/7471											
Mercury	0.18	0.125	U	0.121	U	NT		0.119	U	0.124	U
Total Solids	%	%		%		%		%		%	
% Solids	~	77.6		80.4		81.0		81.5		78.1	
Chromium, Trivalent											
Chromium, Trivalent	30	25.2		30.4		NT		21.4		33.8	
Chromium, Hexavalent											
Chromium, Hexavalent	1	0.451	U	0.435	U	NT		0.429	U	0.448	U

NOTES:
Concentrations exceeding the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives are shaded
U=analyte not detected at or above the level indicated
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
NT=not tested
~=this indicates that no regulatory limit has been established for this analyte

Table 5A

Soil Sample Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID (Depth)	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (mg/kg)	SP-17 8'-10'		SP-17 22-24'	
Sampling Date		11/11/2011		11/11/2011	
Dilution Factor		1		1	
Unit		mg/kg dry		mg/kg dry	
Compound		**Result**	**Q**	**Result**	**Q**
Volatile Organics, NYSDEC Part 375 List					
1,1,1-Trichloroethane	0.68	0.0013	U	0.0012	U
1,1-Dichloroethane	0.27	0.00097	U	0.00087	U
1,1-Dichloroethylene	0.33	0.0019	U	0.0017	U
1,2,4-Trimethylbenzene	3.6	0.057		0.00067	U
1,2-Dichlorobenzene	1.1	0.00083	U	0.00074	U
1,2-Dichloroethane	0.02	0.00092	U	0.00082	U
1,3,5-Trimethylbenzene	8.4	0.022		0.00047	U
1,3-Dichlorobenzene	2.4	0.00066	U	0.00059	U
1,4-Dichlorobenzene	1.8	0.0011	J	0.00086	U
1,4-Dioxane	0.1	0.045	U	0.040	U
2-Butanone	0.12	0.039		0.0032	U
Acetone	0.05	0.15		0.028	
Benzene	0.06	0.00068	U	0.00060	U
Carbon tetrachloride	0.76	0.0015	U	0.0013	U
Chlorobenzene	1.1	0.00049	U	0.00044	U
Chloroform	0.37	0.00051	U	0.00045	U
cis-1,2-Dichloroethylene	0.25	0.0019	J	0.0012	U
Ethyl Benzene	1	0.0091		0.00044	U
Methyl tert-butyl ether (MTBE)	0.93	0.00054	U	0.00048	U
Methylene chloride	0.05	0.048		0.032	
n-Butylbenzene	12	0.077		0.00040	U
n-Propylbenzene	3.9	0.060		0.00073	U
o-Xylene	~	0.0037	J	0.00063	U
p- & m- Xylenes	~	0.0055	J	0.00069	U
sec-Butylbenzene	11	0.074		0.00065	U
tert-Butylbenzene	5.9	0.0027	J	0.00058	U
Tetrachloroethylene	1.3	0.0048	J	0.00065	U
Toluene	0.7	0.0013	J	0.00029	U
trans-1,2-Dichloroethylene	~	0.0018	J	0.00082	U
Trichloroethylene	0.47	0.0025	J	0.00072	U
Vinyl Chloride	0.02	0.0014	U	0.0012	U
Xylenes, Total	0.26	0.0092	J	0.0013	U
Semi-Volatiles, NYSDEC Part 375 List					
2-Methylphenol	0.33	0.0801	U	0.0715	U
3- & 4-Methylphenols	~	0.0979	U	0.0874	U
Acenaphthene	20	0.126	U	0.113	U
Acenaphthylene	~	0.0610	U	0.0544	U
Anthracene	100	0.0684	J	0.0482	U
Benzo(a)anthracene	1	0.247		0.0751	U
Benzo(a)pyrene	1	0.174	J	0.0506	U
Benzo(b)fluoranthene	1	0.122	J	0.0739	U
Benzo(g,h,i)perylene	100	0.0866	J	0.0584	U
Benzo(k)fluoranthene	0.8	0.183	J	0.0752	U
Chrysene	1	0.208	J	0.0783	U
Dibenzo(a,h)anthracene	0.33	0.0550	U	0.0491	U
Dibenzofuran	7	0.0703	U	0.0627	U
Fluoranthene	100	0.359		0.113	U
Fluorene	30	0.0766	J	0.0544	U
Hexachlorobenzene	0.33	0.0355	U	0.0317	U
Indeno(1,2,3-cd)pyrene	0.5	0.0879	J	0.0716	U
Naphthalene	12	0.0650	U	0.0580	U
Pentachlorophenol	0.8	0.0610	U	0.0544	U
Phenanthrene	100	0.333		0.0717	U
Phenol	0.33	0.0871	U	0.0777	U
Pyrene	100	0.343		0.0697	U
Pesticides, NYSDEC Part 375 Target List					
4,4'-DDD	0.0033	0.000147	U	0.000147	U
4,4'-DDE	0.0033	0.000189	U	0.000189	U
4,4'-DDT	0.0033	0.00202		0.000148	U

Table 5A

Soil Sample Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID (Depth)	NYSDEC Part 375	SP-17 8'-10'		SP-17 22-24'	
Sampling Date	Unrestricted Use	11/11/2011		11/11/2011	
Dilution Factor	Soil Cleanup	1		1	
Unit	Objectives	mg/kg dry		mg/kg dry	
Compound	**(mg/kg)**	**Result**	**Q**	**Result**	**Q**
Aldrin	0.005	0.000211	U	0.000211	U
alpha-BHC	0.02	0.000249	U	0.000249	U
alpha-Chlordane	0.094	0.00638		0.000186	U
beta-BHC	0.036	0.000208	U	0.000208	U
delta-BHC	0.04	0.000180	U	0.000180	U
Dieldrin	0.005	0.000195	U	0.000195	U
Endosulfan I	2.4	0.000160	U	0.000160	U
Endosulfan II	2.4	0.000202	U	0.000202	U
Endosulfan sulfate	2.4	0.000169	U	0.000169	U
Endrin	0.014	0.000200	U	0.000200	U
gamma-BHC (Lindane)	0.1	0.000229	U	0.000229	U
Heptachlor	0.042	0.000263	U	0.000263	U
Polychlorinated Biphenyls (PCB)					
Aroclor 1016	~	0.0103	U	0.00921	U
Aroclor 1221	~	0.0103	U	0.00921	U
Aroclor 1232	~	0.0103	U	0.00921	U
Aroclor 1242	~	0.0103	U	0.00921	U
Aroclor 1248	~	0.0103	U	0.00921	U
Aroclor 1254	~	0.00888	U	0.00792	U
Aroclor 1260	~	0.00888	U	0.00792	U
Aroclor 1262	~	0.00888	U	0.00792	U
Aroclor 1268	~	0.00888	U	0.00792	U
Total PCBs	0.1	0.00888	U	0.00792	U
Herbicides, NYSDEC Part 375 Target List					
2,4,5-TP (Silvex)	3.8	0.0849	U	0.0758	U
Metals, Target Analyte					
Aluminum	~	12900		11200	
Antimony	~	0.956		0.163	U
Arsenic	13	7.84		0.909	
Barium	350	395		146	
Beryllium	7.2	0.010	U	0.009	U
Cadmium	2.5	0.715		0.152	U
Calcium	~	19900		1970	
Chromium	~	28.8		20.2	
Cobalt	~	9.49		16.9	
Copper	50	122		45.1	
Iron	~	23700	E	25500	E
Lead	63	357		4.25	
Magnesium	~	3910		5950	
Manganese	1600	310		374	
Nickel	30	30.7		31.1	
Potassium	~	1760		8680	
Selenium	3.9	2.15		1.31	
Silver	2	0.118	U	0.105	U
Sodium	~	517		149	
Thallium	~	0.248	U	0.221	U
Vanadium	~	39.3		27.8	
Zinc	109	618		71.6	
Mercury by 7470/7471					
Mercury	0.18	0.127	U	0.113	U
Total Solids	%	%		%	
% Solids	~	76.6		85.8	
Chromium, Trivalent					
Chromium, Trivalent	30	28.8		20.2	
Chromium, Hexavalent					
Chromium, Hexavalent	1	0.457	U	0.408	U

Table 5B

Soil Sample Volatile Organic Compound Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID Sampling Date Dilution Factor Unit	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (mg/kg)	SP-1 20'-22' 11/17/2011 5 mg/kg dry		SP-2 18'-20' 11/17/2011 200 mg/kg dry		SP-2 26'-28' 11/17/2011 2 mg/kg dry		SP-3 10'-12' 11/18/2011 2 mg/kg dry		SP-5 16'-18' 11/18/2011 2 mg/kg dry		SP-18 8'-10' 11/17/2011 2 mg/kg dry		SP-18 14'-16' 11/17/2011 10000 mg/kg dry		SP-18 22'-23' 11/17/2011 5 mg/kg dry		SP-6 8'-10' 11/17/2011 100 mg/kg dry		SP-6 22'-23' 11/17/2011 5 mg/kg dry	
Compound		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1,2-Tetrachloroethane	~	0.0034	U	0.0087	U	0.0013	U	0.0015	U	0.0013	U	0.0013	U	0.089	U	0.0033	U	0.070	U	0.0034	U,HT-01
1,1,1-Trichloroethane	0.68	0.0061	U	0.015	U	0.0022	U	0.0026	U	0.0023	U	0.0023	U	0.16	U	0.0058	U	0.12	U	0.0060	U,HT-01
1,1,2,2-Tetrachloroethane	~	0.0036	U	0.0091	U	0.0013	U	0.0016	U	0.0014	U	0.0014	U	0.094	U	0.0035	U	0.074	U	0.0036	U,HT-01
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	~	0.0038	U	0.0096	U	0.0014	U	0.0017	U	0.0015	U	0.0015	U	0.099	U	0.0036	U	0.078	U	0.0038	U,HT-01
1,1,2-Trichloroethane	~	0.0039	U	0.0098	U	0.0014	U	0.0017	U	0.0015	U	0.0015	U	0.10	U	0.0037	U	0.079	U	0.0038	U,HT-01
1,1-Dichloroethane	0.27	0.0044	U	0.011	U	0.0016	U	0.0019	U	0.0017	U	0.0017	U	0.11	U	0.0042	U	0.089	U	0.0043	U,HT-01
1,1-Dichloroethylene	0.33	0.0085	U	0.021	U	0.0031	U	0.0037	U	0.0033	U	0.0032	U	0.22	U	0.0081	U	0.17	U	0.0084	U,HT-01
1,1-Dichloropropylene	~	0.0027	U	0.0069	U	0.0010	U	0.0012	U	0.0011	U	0.0010	U	0.071	U	0.0026	U	0.056	U	0.0027	U,HT-01
1,2,3-Trichlorobenzene	~	0.0024	U	0.0059	U	0.00087	U	0.0010	U	0.00091	U	0.00090	U	0.061	U	0.0022	U	0.048	U	0.0023	U,HT-01
1,2,3-Trichloropropane	~	0.0073	U	0.018	U	0.0027	U	0.0031	U	0.0028	U	0.0028	U	0.19	U	0.0069	U	0.15	U	0.0072	U,HT-01
1,2,4-Trichlorobenzene	~	0.0031	U	0.0077	U	0.0011	U	0.0013	U	0.0012	U	0.0012	U	0.079	U	0.0029	U	0.062	U	0.0030	U,HT-01
1,2,4-Trimethylbenzene	3.6	0.0034	U	0.15	D	0.0013	U	0.0015	U	0.0013	U	0.0013	U	0.20	J,D	0.0032	U	0.069	U	0.020	J,D,HT-01
1,2-Dibromo-3-chloropropane	~	0.0084	U	0.021	U	0.0031	U	0.0036	U	0.0032	U	0.0032	U	0.22	U	0.0080	U	0.17	U	0.0083	U,HT-01
1,2-Dibromoethane	~	0.0043	U	0.011	U	0.0016	U	0.0019	U	0.0017	U	0.0017	U	0.11	U	0.0041	U	0.088	U	0.0043	U,HT-01
1,2-Dichlorobenzene	1.1	0.0038	U	0.0095	U	0.0014	U	0.0016	U	0.0014	U	0.0014	U	0.097	U	0.0036	U	0.076	U	0.0037	U,HT-01
1,2-Dichloroethane	0.02	0.0041	U	0.010	U	0.0015	U	0.0018	U	0.0016	U	0.0016	U	0.11	U	0.0039	U	0.084	U	0.0041	U,HT-01
1,2-Dichloropropane	~	0.0014	U	0.0035	U	0.00052	U	0.00061	U	0.00054	U	0.00054	U	0.036	U	0.0013	U	0.029	U	0.0014	U,HT-01
1,3,5-Trimethylbenzene	8.4	0.0024	U	0.037	J,D	0.00087	U	0.0010	U	0.00091	U	0.00090	U	0.061	U	0.0022	U	0.048	U	0.0058	J,D,HT-01
1,3-Dichlorobenzene	2.4	0.0030	U	0.0075	U	0.0011	U	0.0013	U	0.0012	U	0.0011	U	0.078	U	0.0029	U	0.061	U	0.0030	U,HT-01
1,3-Dichloropropane	~	0.0044	U	0.011	U	0.0016	U	0.0019	U	0.0017	U	0.0017	U	0.11	U	0.0042	U	0.089	U	0.0043	U,HT-01
1,4-Dichlorobenzene	1.8	0.0043	U	0.011	U	0.0016	U	0.0019	U	0.0017	U	0.0017	U	0.11	U	0.0041	U	0.088	U	0.0043	U,HT-01
2,2-Dichloropropane	~	0.0061	U	0.015	U	0.0023	U	0.0026	U	0.0024	U	0.0023	U	0.16	U	0.0058	U	0.12	U	0.0060	U,HT-01
2-Chlorotoluene	~	0.0031	U	0.0079	U	0.0012	U	0.0013	U	0.0012	U	0.0012	U	0.081	U	0.0030	U	0.064	U	0.0031	U,HT-01
4-Chlorotoluene	~	0.0031	U	0.0079	U	0.0012	U	0.0013	U	0.0012	U	0.0012	U	0.081	U	0.0030	U	0.064	U	0.0031	U,HT-01
Benzene	0.06	0.0031	U	0.0077	U	0.0011	U	0.0013	U	0.0012	U	0.0012	U	0.079	U	0.0029	U	0.062	U	0.0030	U,HT-01
Bromobenzene	~	0.0039	U	0.0098	U	0.0014	U	0.0017	U	0.0015	U	0.0015	U	0.10	U	0.0037	U	0.079	U	0.0038	U,HT-01
Bromochloromethane	~	0.0082	U	0.021	U	0.0030	U	0.0035	U	0.0031	U	0.0031	U	0.21	U	0.0078	U	0.17	U	0.0081	U,HT-01
Bromodichloromethane	~	0.0040	U	0.010	U	0.0015	U	0.0017	U	0.0015	U	0.0015	U	0.10	U	0.0038	U	0.080	U	0.0039	U,HT-01
Bromoform	~	0.0037	U	0.0093	U	0.0014	U	0.0016	U	0.0014	U	0.0014	U	0.096	U	0.0035	U	0.075	U	0.0037	U,HT-01
Bromomethane	~	0.0079	U	0.020	U	0.0029	U	0.0034	U	0.0030	U	0.0030	U	0.20	U	0.0075	U	0.16	U	0.0078	U,HT-01
Carbon tetrachloride	0.76	0.0066	U	0.017	U	0.0025	U	0.0029	U	0.0026	U	0.0025	U	0.17	U	0.0063	U	0.13	U	0.0066	U,HT-01
Chlorobenzene	1.1	0.0022	U	0.0056	U	0.00083	U	0.00096	U	0.00086	U	0.00085	U	0.058	U	0.0021	U	0.045	U	0.0022	U,HT-01
Chloroethane	~	0.0048	U	0.012	U	0.0018	U	0.0021	U	0.0019	U	0.0019	U	0.13	U	0.0046	U	0.099	U	0.0048	U,HT-01
Chloroform	0.37	0.0023	U	0.0058	U	0.00085	U	0.00099	U	0.00088	U	0.00088	U	0.059	U	0.0022	U	0.047	U	0.0023	U,HT-01
Chloromethane	~	0.0057	U	0.014	U	0.0021	U	0.0024	U	0.0022	U	0.0022	U	0.15	U	0.0054	U	0.12	U	0.0056	U,HT-01
cis-1,2-Dichloroethylene	0.25	0.0061	U	3.7	D,HT-01	0.0023	U	0.013	D	0.0024	U	0.045	D	40	J,D	0.011	J,D	0.12	U	0.0060	U,HT-01
cis-1,3-Dichloropropylene	~	0.0022	U	0.0056	U	0.00083	U	0.00096	U	0.00086	U	0.00085	U	0.058	U	0.0021	U	0.045	U	0.0022	U,HT-01
Dibromochloromethane	~	0.0043	U	0.011	U	0.0016	U	0.0018	U	0.0016	U	0.0016	U	0.11	U	0.0041	U	0.087	U	0.0042	U,HT-01
Dibromomethane	~	0.0085	U	0.021	U	0.0031	U	0.0037	U	0.0033	U	0.0032	U	0.22	U	0.0081	U	0.17	U	0.0084	U,HT-01
Dichlorodifluoromethane	~	0.0053	U	0.013	U	0.0020	U	0.0023	U	0.0020	U	0.0020	U	0.14	U	0.0050	U	0.11	U	0.0052	U,HT-01
Ethyl Benzene	1	0.0022	U	0.056	J,D	0.00083	U	0.00096	U	0.00086	U	0.00085	U	0.058	U	0.0021	U	0.045	U	0.0022	U,HT-01
Hexachlorobutadiene	~	0.0027	U	0.0069	U	0.0010	U	0.0012	U	0.0011	U	0.0010	U	0.071	U	0.0026	U	0.056	U	0.0027	U,HT-01
Isopropylbenzene	~	0.0025	U	0.0063	U	0.00092	U	0.0011	U	0.00096	U	0.00095	U	0.064	U	0.0024	U	0.051	U	0.0025	U,HT-01
Methyl tert-butyl ether (MTBE)	0.93	0.0024	U	0.0061	U	0.00090	U	0.0010	U	0.00093	U	0.00093	U	0.063	U	0.0023	U	0.049	U	0.0024	U,HT-01
Methylene chloride	0.05	0.10	B,D	0.018	B,B-Dil	0.021	J,B,D	0.037	B,D	0.026	B,D	0.034	B,D	0.011	J,B,B-Dil	0.036	J,B,D	0.0079	J,B,B-Dil	0.041	J,B,D,HT-01
n-Butylbenzene	12	0.0020	U	0.0051	U	0.00076	U	0.00088	U	0.00078	U	0.00078	U	0.053	U	0.0019	U	0.041	U	0.0020	U,HT-01
n-Propylbenzene	3.9	0.0037	U	0.029	J,D	0.0014	U	0.0016	U	0.0014	U	0.0014	U	0.096	U	0.0035	U	0.075	U	0.0037	U,HT-01
Naphthalene	12	0.0068	J,B,D	0.0080	U	0.0012	U	0.0014	U	0.0012	U	0.0012	U	0.13	J,B,D	0.0030	U	0.065	U	0.013	J,B,D,HT-01

Table 5B

Soil Sample Volatile Organic Compound Results
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID Sampling Date Dilution Factor Unit	NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (mg/kg)	SP-1 20'-22' 11/17/2011 5 mg/kg dry		SP-2 18'-20' 11/17/2011 200 mg/kg dry		SP-2 26'-28' 11/17/2011 2 mg/kg dry		SP-3 10'-12' 11/18/2011 2 mg/kg dry		SP-5 16'-18' 11/18/2011 2 mg/kg dry		SP-18 8'-10' 11/17/2011 2 mg/kg dry		SP-18 14'-16' 11/17/2011 10000 mg/kg dry		SP-18 22'-23' 11/17/2011 5 mg/kg dry		SP-6 8'-10' 11/17/2011 100 mg/kg dry		SP-6 22'-23' 11/17/2011 5 mg/kg dry	
Compound		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
o-Xylene	~	0.0032	U	0.0080	U	0.0012	U	0.0014	U	0.0012	U	0.0012	U	0.083	U	0.0030	U	0.065	U	0.0032	U,HT-01
p- & m- Xylenes	~	0.0035	U	0.077	J,D	0.0013	U	0.0015	U	0.0013	U	0.0013	U	0.091	U	0.0033	U	0.071	U	0.0047	J,D,HT-01
p-Isopropyltoluene	~	0.0016	U	0.0040	U	0.00059	U	0.00069	U	0.00061	U	0.00061	U	0.041	U	0.0015	U	0.032	U	0.0016	U,HT-01
sec-Butylbenzene	11	0.0033	U	0.0083	U	0.0012	U	0.0014	U	0.0013	U	0.0013	U	0.086	U	0.0032	U	0.067	U	0.0033	U,HT-01
Styrene	~	0.0027	U	0.0069	U	0.0010	U	0.0012	U	0.0011	U	0.0010	U	0.071	U	0.0026	U	0.056	U	0.0027	U,HT-01
tert-Butylbenzene	5.9	0.0029	U	0.0074	U	0.0011	U	0.0013	U	0.0011	U	0.0011	U	0.076	U	0.0028	U	0.060	U	0.0029	U,HT-01
Tetrachloroethylene	1.3	0.0033	U	51	D,HT-01	0.016	D	0.099	D	0.0040	J,D	0.019	D	1200	D,HT-01	0.031	D	1.1	D	0.0069	J,D,HT-01
Toluene	0.7	0.0015	U	0.0037	U	0.00054	U	0.00063	U	0.00056	U	0.00056	U	0.038	U	0.0014	U	0.030	U	0.0014	U,HT-01
trans-1,2-Dichloroethylene	~	0.0041	U	0.017	J,D	0.0015	U	0.0018	U	0.0016	U	0.0016	U	0.11	U	0.0039	U	0.084	U	0.0041	U,HT-01
trans-1,3-Dichloropropylene	~	0.0043	U	0.011	U	0.0016	U	0.0019	U	0.0017	U	0.0017	U	0.11	U	0.0041	U	0.088	U	0.0043	U,HT-01
Trichloroethylene	0.47	0.0036	U	12	D,HT-01	0.0037	J,D	0.013	D	0.0014	U	0.0043	J,D	120	D,HT-01	0.0061	J,D	0.074	U	0.0036	U,HT-01
Trichlorofluoromethane	~	0.0058	U	0.015	U	0.0022	U	0.0025	U	0.0022	U	0.0022	U	0.15	U	0.0055	U	0.12	U	0.0057	U,HT-01
Vinyl Chloride	0.02	0.0062	U	0.016	U	0.0023	U	0.0027	U	0.0024	U	0.0024	U	0.16	U	0.0059	U	0.13	U	0.0061	U,HT-01
Xylenes, Total	0.26	0.0067	U	0.077	J,D	0.0025	U	0.0029	U	0.0026	U	0.0026	U	0.17	U	0.0064	U	0.14	U	0.0066	U,HT-01
Total Solids	%	%		%		%		%		%		%		%		%		%		%	
% Solids	~	84.7		67.3		91.4		78.5		88.1		88.7		65.4		88.9		83.3		85.7	

NOTES:
Concentrations exceeding the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives are shaded
Q is the Qualifier Column with definitions as follows:
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
D=result is from an analysis that required a dilution
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
~=this indicates that no regulatory limit has been established for this analyte
HT-01=holding time exceeded by one day

Table 6

Fraction Organic Carbon in Soil
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID	**BW-2 (20-25)**		**BW-3 (10-15)**		**BW-3 (25-27)**	
Sampling Date	9/10/2012 13:41		9/11/2012 10:00		9/11/2012 10:50	
Matrix	Silty Sand		Organic Clay		Weathered Rock	
Fraction Organic Carbon						
Fraction Inorganic/Recalcitrant Organic Carbon at 750 ^{o}C	1.88		2.84		2.06	
Fraction Organic Carbon (% dry F_{OC} at 440 ^{o}C)	12.6		52.7		23.8	
Total Solids (%)						
% Solids	89.4		70		83.8	
pH						
pH	8.01		6.52		7.36	

Table 7

Groundwater Sample Detection Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID Laboratory ID Sampling Date	NYSDEC TOGS Standards and Guidance Values - GA	**BW-1** 12I0747-01 9/20/2012	**BW-2** 12I0747-02 9/20/2012	**BW-2DUP** 12I0747-04 9/20/2012	**BW-3** 12I0747-03 9/20/2012	**FB-092012** 12I0747-05 9/20/2012	**MW-1** 11L0990-10 12/2/2011	**MW-3** 11L0190-01 12/2/2011	**MW-4** 11L0190-11 12/2/2011	**MW-5** 11L0190-02 12/2/2011	**MW-8** 11L0190-03 12/2/2011	**MW-9A** 11L0190-04 12/2/2011	**MW-9B** 11L0190-05 12/2/2011	**MW-10A** 11L0190-06 12/2/2011	**MW-10B** 11L0190-07 12/2/2011	**MW-11** 11L0190-09 12/2/2011	**MW-12** 11L0190-08 12/2/2011	**MW-14** 11L0190-15 12/2/2011	**MW-15** 11L0190-14 12/2/2011
Volatile Organics (µg/L)																			
1,1-Dichloroethylene	5	0.52 U	0.52 U	0.52 U	0.52 U	0.52 U	**41**	<1.3	<1.3	<1.3	**23**	*<66*	*<33*	<1.3	**39**	<1.3	**23**	<1.3	*<130*
Acetone	50	11	13	15	20	6.1 U	<3.1	<3.1	<3.1	<3.1	<3.1	*<160*	*<78*	7.4	<3.1	<3.1	4.9	9.6	<3.1
Chloroform	7	2.7 J	2.9 J	3 J	**9.3**	0.42 U	<0.36	<0.36	<0.36	<0.36	<0.36	*<18*	*<9.0*	<0.36	<0.36	<0.36	<0.36	<0.36	*<36*
cis-1,2-Dichloroethylene	5	**9.6**	**5.3**	**6**	**410 D**	0.43 U	<0.96	**110**	**5.2**	<0.96	**12000**	**63000**	**26000**	**48**	**18000**	**20**	**21000**	**8.0**	**22000**
Ethyl Benzene	5	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	<0.35	<0.35	<0.35	<0.35	<0.35	*<18*	*<8.8*	<0.35	<0.35	<0.35	**5.7**	<0.35	*<35*
Isopropylbenzene	5	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	<0.39	<0.39	<0.39	<0.39	<0.39	*<20*	*<9.8*	<0.39	<0.39	<0.39	1.3	<0.39	*<39*
Methylene chloride	5	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	3.6	3.7	**5.9**	3.6	3.6	3.4	3.3	3.3	3.5	**7.0**	3.8	2.7	**12**
o-Xylene	5	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	<0.50	<0.50	<0.50	<0.50	<0.50	*<25*	*<12*	<0.50	<0.50	<0.50	**13**	<0.50	*<50*
p- & m- Xylenes	5	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	<0.55	<0.55	<0.55	<0.55	<0.55	*<28*	*<14*	<0.55	<0.55	<0.55	**18**	<0.55	*<55*
Tetrachloroethylene	5	0.89 J	0.41 U	0.41 U	**180**	0.41 U	**7800**	**71**	<0.52	<0.52	**51000**	**66000**	**21000**	**220**	**8100**	2.8	**4200**	2.1	**11000**
Toluene	5	0.17 U	1.8 J	2 J	1.5 J	0.17 U	<0.23	<0.23	<0.23	<0.23	<0.23	*<12*	*<5.8*	<0.23	<0.23	<0.23	**6.1**	<0.23	*<23*
trans-1,2-Dichloroethylene	~	0.52 U	0.52 U	0.52 U	1.8 J	0.52 U	31	<0.65	<0.65	<0.65	52	190	120	<0.65	64	<0.65	82	<0.65	<65
Trichloroethylene	5	1.4 J	0.16 U	0.16 U	**240 D**	0.16 U	**12000**	**51**	<0.57	<0.57	**52000**	**17000**	**14000**	**36**	**11000**	**12**	**6400**	3.4	**17000**
Vinyl Chloride	2	0.68 U	0.68 U	0.88 J	**2.2 J**	0.68 U	**110**	**3.4**	<0.97	<0.97	**13000**	**3200**	**620**	1.4	**1300**	1.4	**900**	<0.97	**140**
Xylenes, Total	5	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	<1.0	<1.0	<1.0	<1.0	<1.0	*<52*	*<26*	<1.0	<1.0	<1.0	**31**	<1.0	*<100*
Total chlorinated volatile organic compounds	~	*14.6*	*8.2*	*10*	*843*	---	*19986*	*239.1*	*11.1*	*3.6*	*128079*	*149393*	*61743*	*308.7*	*38507*	*43.2*	*32609*	*16.2*	*50152*
Semivolatile Organic Compounds (µg/L)																			
Semivolatile Organic Compounds		NA	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (µg/L)																			
Pesticides/PCBs		NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides (µg/L)																			
Herbicides		NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TAL Metals (µg/L)																			
Aluminum	~	NA	NA	NA	NA	NA	0.171	NA	0.382	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	1000	NA	NA	NA	NA	NA	0.319	NA	0.201	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	~	NA	NA	NA	NA	NA	151	NA	67.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	~	NA	NA	NA	NA	NA	27.1	NA	6.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	35000	NA	NA	NA	NA	NA	37.6	NA	20.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	~	NA	NA	NA	NA	NA	1.72	NA	0.673	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	~	NA	NA	NA	NA	NA	0.006	NA	<0.0008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	~	NA	NA	NA	NA	NA	5.07	NA	6.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	~	NA	NA	NA	NA	NA	39	NA	36.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:
1. Monitoring wells MW-1 though MW-15 were installed and sampled by Hydro Tech Environmental Corp. Sample results for MW-1 though MW-15 were obtained from the December 28, 2011 Results of RIR and Proposed Remedial Action letter.

U = Analyte not detected at or above the level indicated.
J = Analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated.
D = Result is from an analysis that required a dilution.
µg/L ≡ parts per billion (ppb)
Bolded and shaded results indicate a detection exceeding the regulatory standard.
Italicized results indicate the result was nondetect but the reporting limits exceeds the regulatory standard.
~=this indicates that no regulatory limit has been established for this analyte
NA = Not analyzed
< or ND = Not detected

Table 8

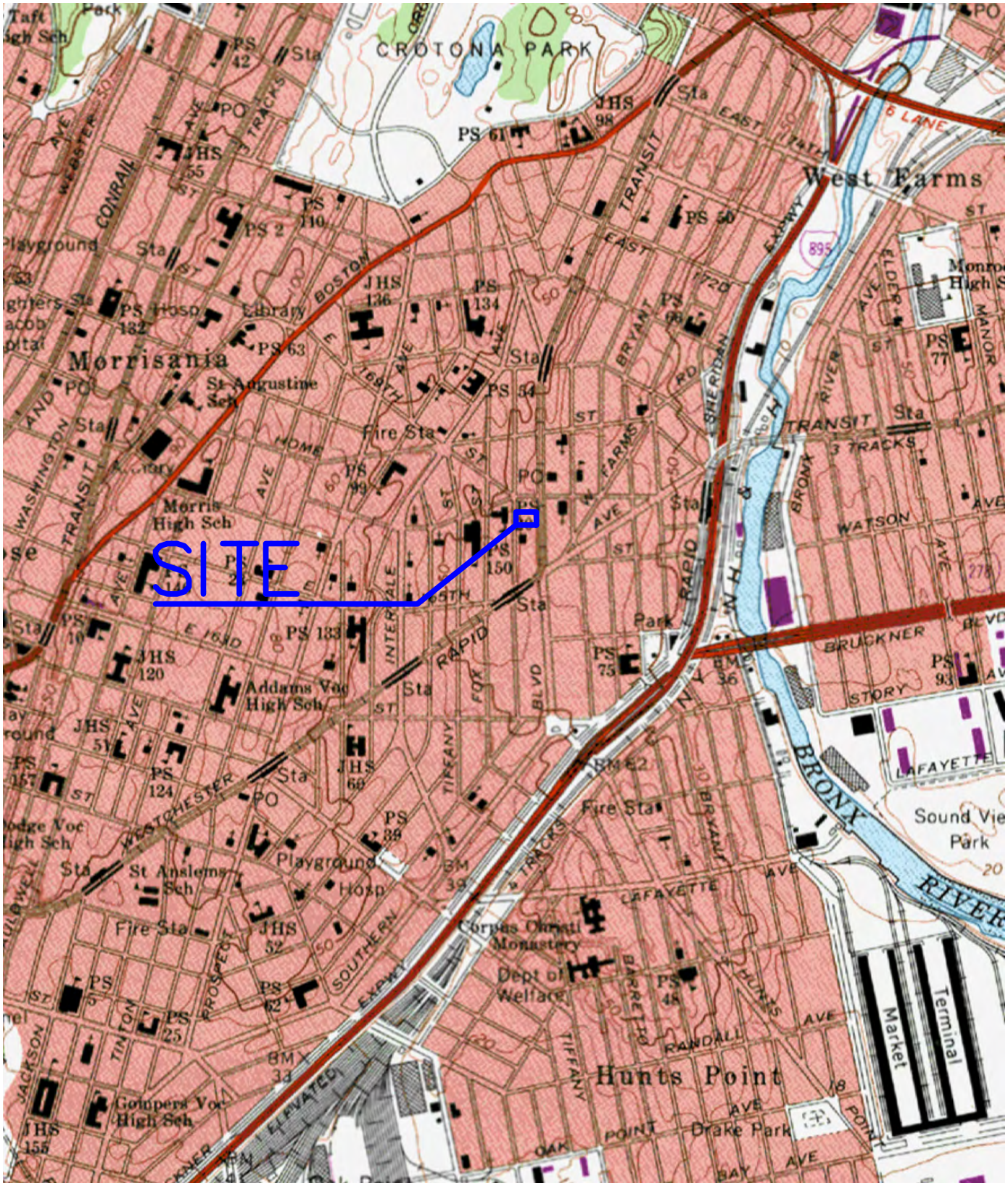
Soil Vapor Sample Detection Summary
Remedial Investigation Report
1095 Southern Boulevard
Bronx, New York
Langan Project No. 170199901

Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-1 11/28/2011	SV-2 11/28/2011	SV-3 11/28/2011	SV-4 11/28/2011	SV-5 11/28/2011
Volatile Organic Compounds (µg/m^3)										
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	<1.3	<1.3	<1.2	**140**	<1.4
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	<1.4	<1.4	<1.3	**29**	<1.5
2-Butanone	-	16	12	-	-	**72**	<2.6	<2.4	**39**	**170**
Acetone	-	115	98.9	45.8	-	**400**	**230**	**290**	**910**	**1,700**
Benzyl chloride	-	-	-	-	-	<1.4	<1.3	<1.2	<1.4	1.5
Bromodichloromethane	-	-	-	-	-	<3.3	<3.2	<3.0	<3.4	3.6
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	<1.5	<1.5	<1.3	**280**	<1.6
Dichlorodifluoromethane	-	10	16.5	-	-	<2.7	**82**	<2.5	<2.8	<3.0
Ethylbenzene	-	6.4	5.7	7.62	2.1	<1.7	<1.7	<1.6	**48**	<1.9
o-Xylene	-	7.1	7.9	7.24	2.9	<1.7	<1.7	<1.6	**62**	<1.9
p- & m- Xylenes	-	11	22.2	22.2	6.1	<3.3	<3.2	<2.9	**210**	<3.6
p-Ethyltoluene	-	-	-	-	-	<2.0	<1.9	<1.8	**110**	<2.1
Tetrachloroethylene	100	-	15.9	6.01	3.2	**2100**	**2,800**	**860**	**1500**	**490**
Toluene	-	57	43	39.8	7.9	<2.0	<2.0	<1.8	**160**	<2.2
trans-1,2-Dichloroethylene	-	-	-	-	-	<1.1	<1.0	<0.95	**43**	<1.1
Trichloroethylene	5	-	-	1.36	9.7	**52**	<1.4	<1.3	**280**	**35**
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	**340**	**120**	**190**	<0.76	<0.81

Notes:
1. Only detected compounds shown
2. Sample results were compared to the New York State Department of Health Air Guideline Values (AGV), NYSDOH 2003 Fuel Oil Indoor Air Upper Fence Values, U.S. Environmental Protection Agency (USEPA) 2001 BASE Database 90th Percentile Indoor Air, Health Effects Institute (HEI) 2005 95th Percentile Indoor Air, and ASTM E 2600-08 Appendix X7.
3. Concentrations above AGVs are bold.
4. Concentrations above the range of background levels are highlighted.

µg/m3 = micrograms per cubic meter.
- = no applicable criterion

FIGURES



LANGAN

ENGINEERING & ENVIRONMENTAL SERVICES

21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001-2727
P: 212.479.5400 F: 212.479.5444
www.langan.com

NEW JERSEY PENNSYLVANIA NEW YORK CONNECTICUT
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Project

1095 SOUTHERN BOULEVARD

BLOCK No. 2727, LOT No. 41

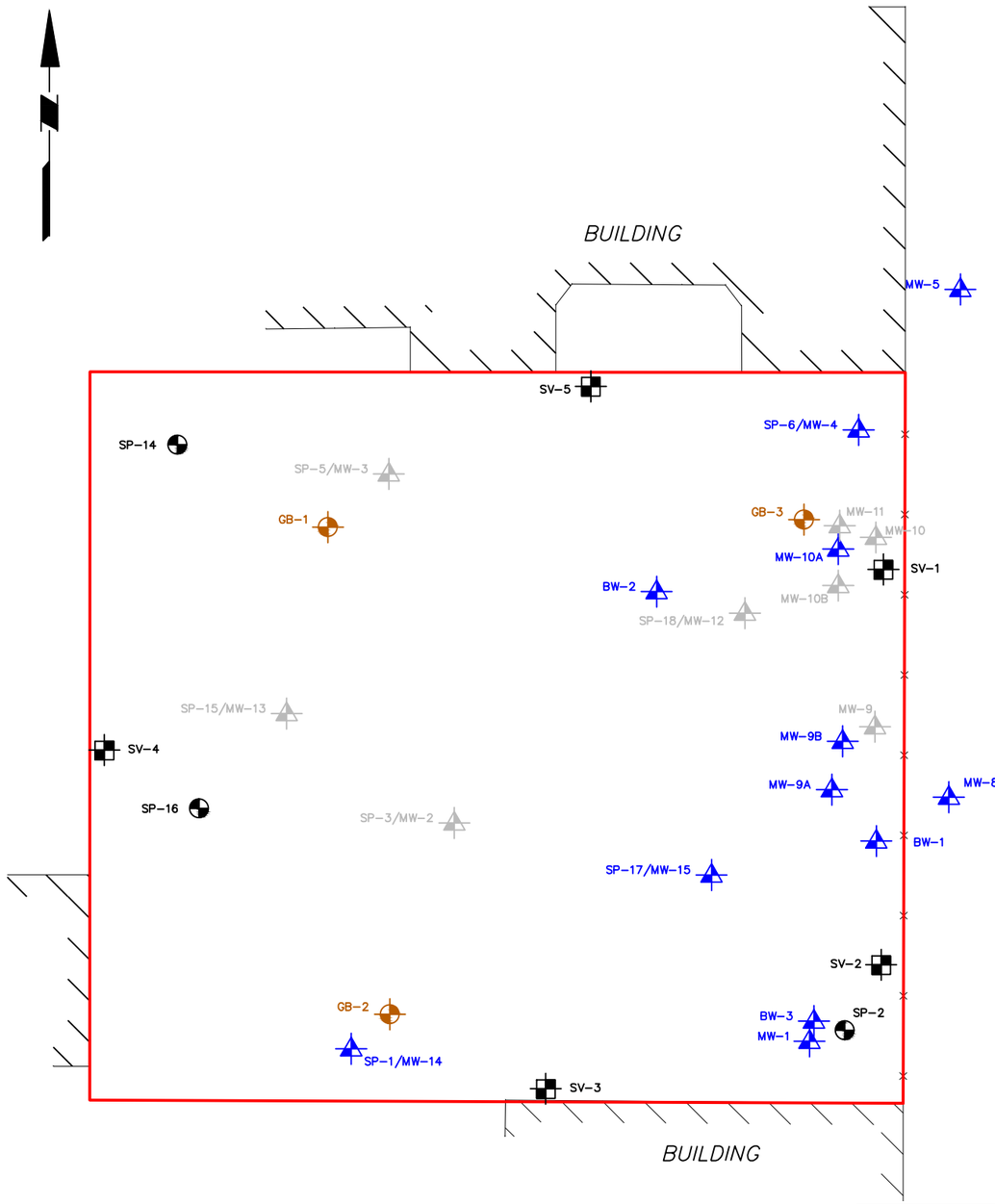
BRONX NEW YORK

Drawing Title

SITE LOCATION MAP

Project No. 170199901	Figure No. 1
Date 11/7/2012	
Scale NTS	
Drawn By AT	
Submission Date 11/7/2012	Sheet 1 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 1 - Site Location Map.dwg Date: 1/9/2013 Time: 14:55 User: atashji Style Table: Langan.stb Layout: ANSIA-BPI



LEGEND:

- PROPERTY BOUNDARY
- GB-1 GEOTECHNICAL BORING LOCATION
- BW-2 BORING/BEDROCK WELL LOCATION
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- SP-14 SOIL BORING LOCATION
- SV-5 SOIL VAPOR LOCATION
- MW-10 MONITORING WELL LOCATION (DESTROYED)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.
4. AERIAL PHOTOGRAPHS OBTAINED FROM NYCITYMAP (http://gis.nyc.gov/doitt/nycitymap/) AND GOOGLE EARTH PRO.

AERIAL PHOTOGRAPH DATED 2008
SCALE: 1:70

AERIAL PHOTOGRAPH DATED 2012
SCALE: 1:70

LANGAN
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21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001-2727
P: 212.479.5400 F: 212.479.5444
www.langan.com
NEW JERSEY PENNSYLVANIA FLORIDA VIRGINIA NEW YORK CALIFORNIA CONNECTICUT
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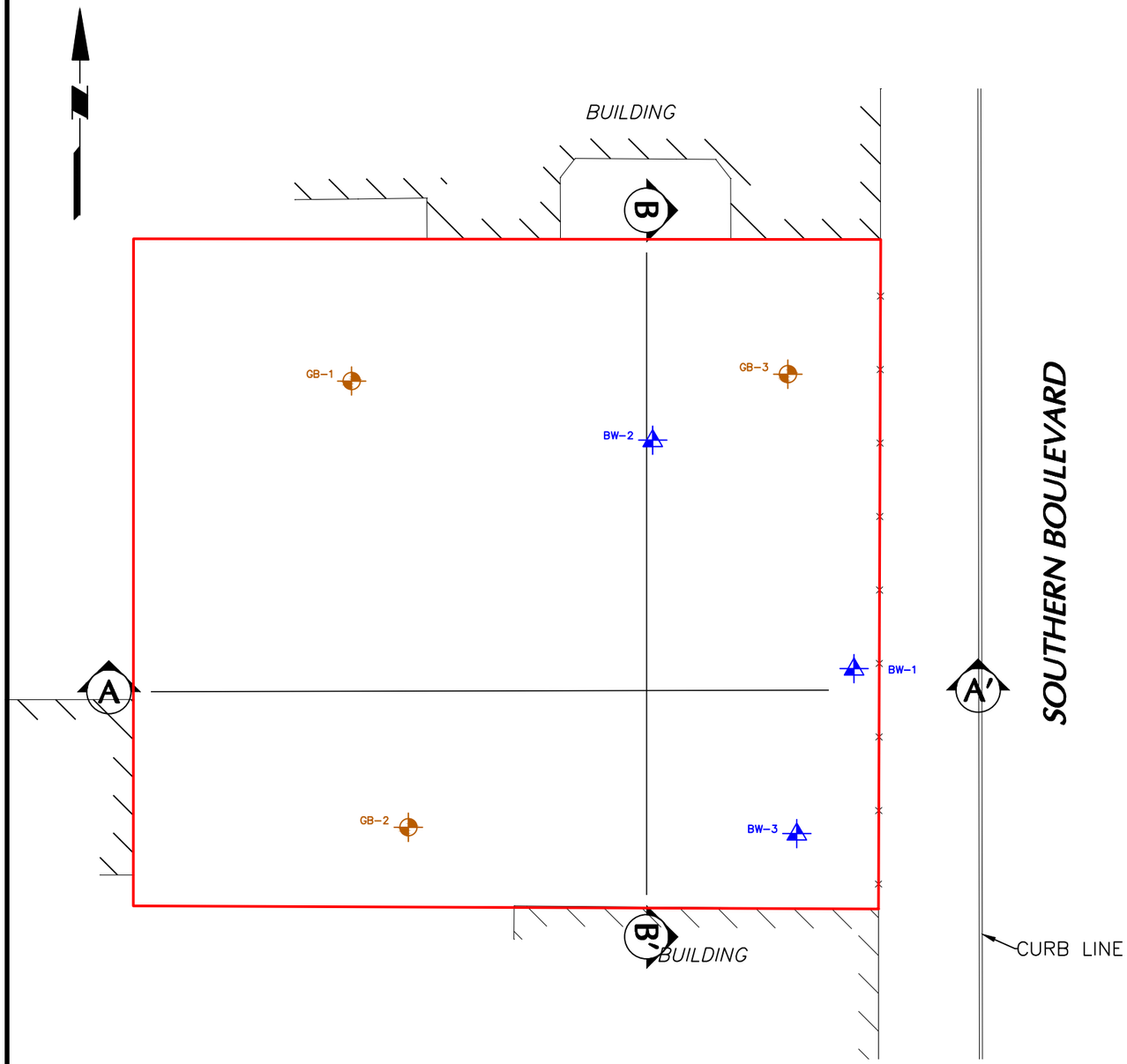
Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

Drawing Title
SAMPLE LOCATION MAP

Project No. 170199901	Figure No. 2
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 2 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 2 - Sample Location Map.dwg Date: 1/9/2013 Time: 15:05 User: atashji Style Table: Langan.stb Layout: Site Plan



LEGEND:

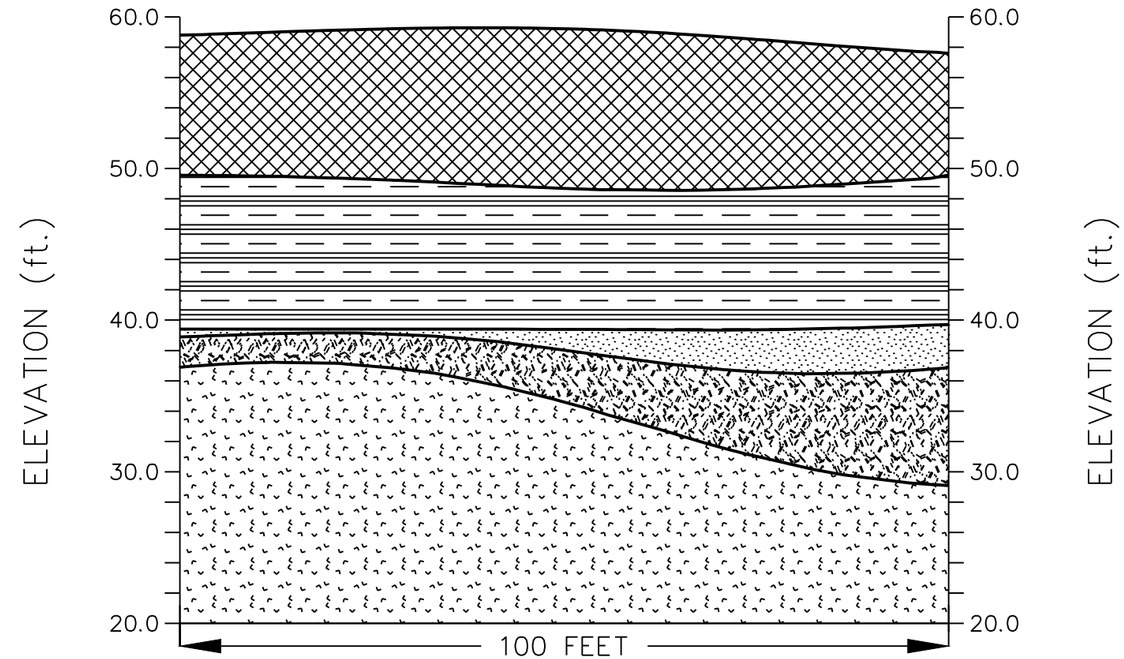
- PROPERTY BOUNDARY
- GB-1 GEOTECHNICAL BORING LOCATION
- BW-2 BORING/BEDROCK WELL LOCATION

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.

CROSS SECTION KEY:

- HISTORIC FILL
- CLAYEY SILT
- SAND
- WEATHERED BEDROCK
- BEDROCK



SECTION A-A'

20 0 5 10 20
SCALE IN FEET

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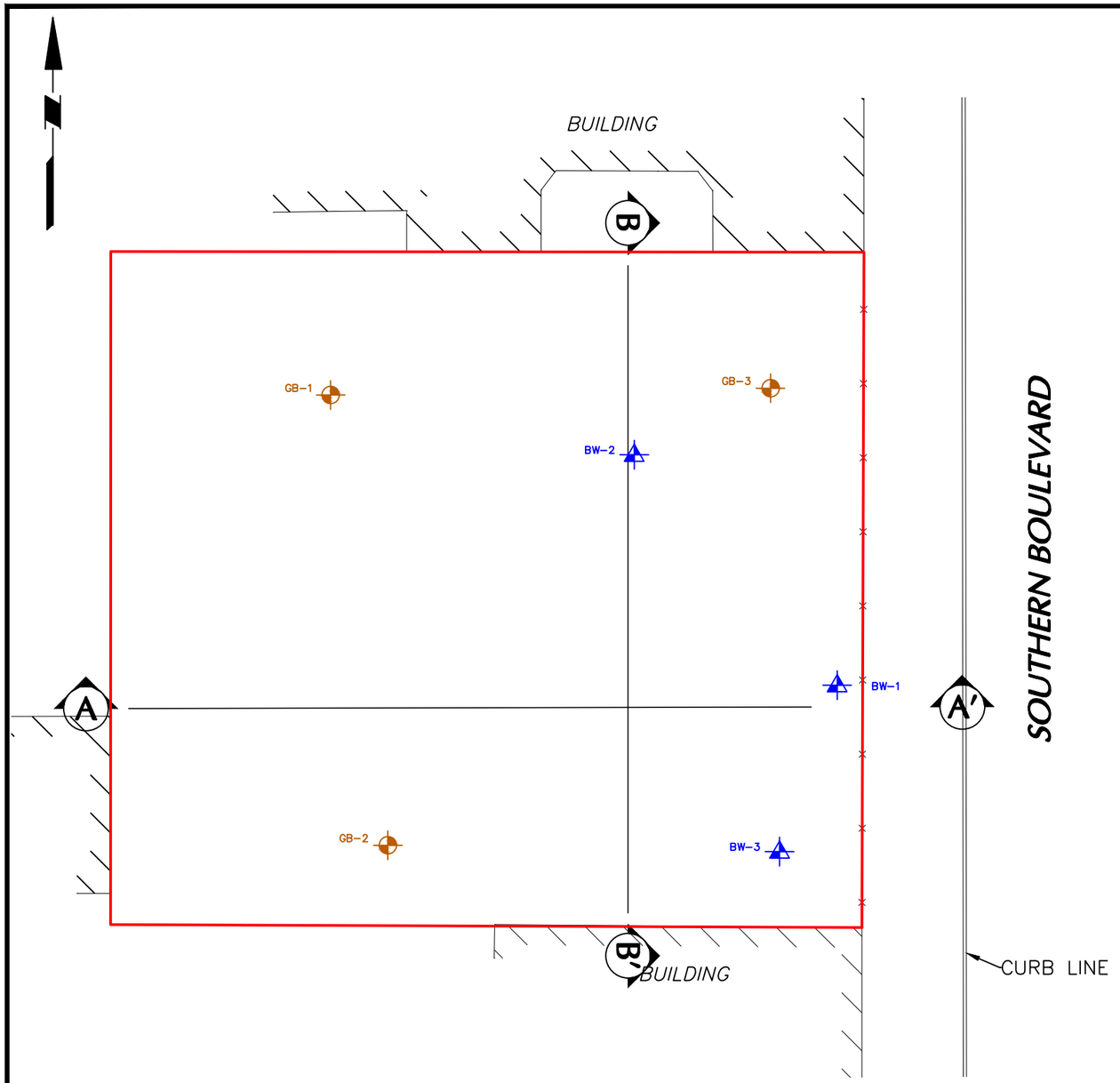
Project	1095 SOUTHERN BOULEVARD BLOCK No. 2727, LOT No. 41 BRONX NEW YORK
Drawing Title	SECTION A-A'
Project No.	170199901
Date	11/7/2012
Scale	1:20
Drawn By	AT
Submission Date	12/17/2012
Figure No.	3A
Sheet	3 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 3a-3b - Xsections.dwg Date: 1/9/2013 Time: 15:20 User: atashji Style Table: Langan.stb Layout: Section A-A



LEGEND:

- PROPERTY BOUNDARY
- GB-1 GEOTECHNICAL BORING LOCATION
- BW-2 BORING/BEDROCK WELL LOCATION

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
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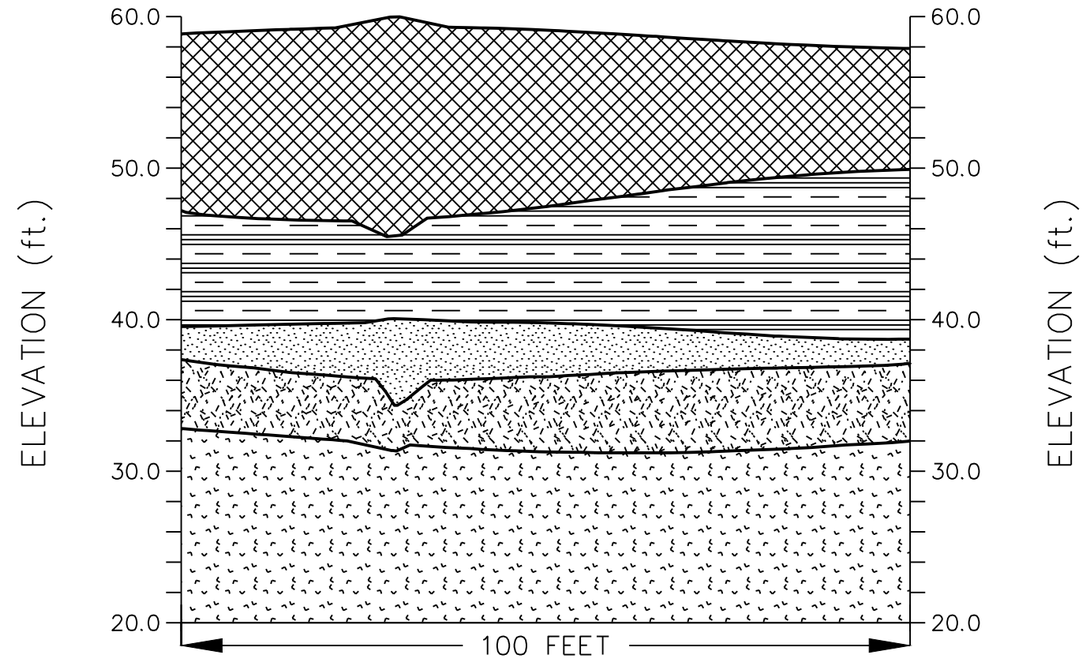
CROSS SECTION KEY:

- HISTORIC FILL
- CLAYEY SILT
- SAND
- WEATHERED BEDROCK
- BEDROCK



SECTION B-B'

20 0 5 10 20

SCALE IN FEET

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Project: 1095 SOUTHERN BOULEVARD

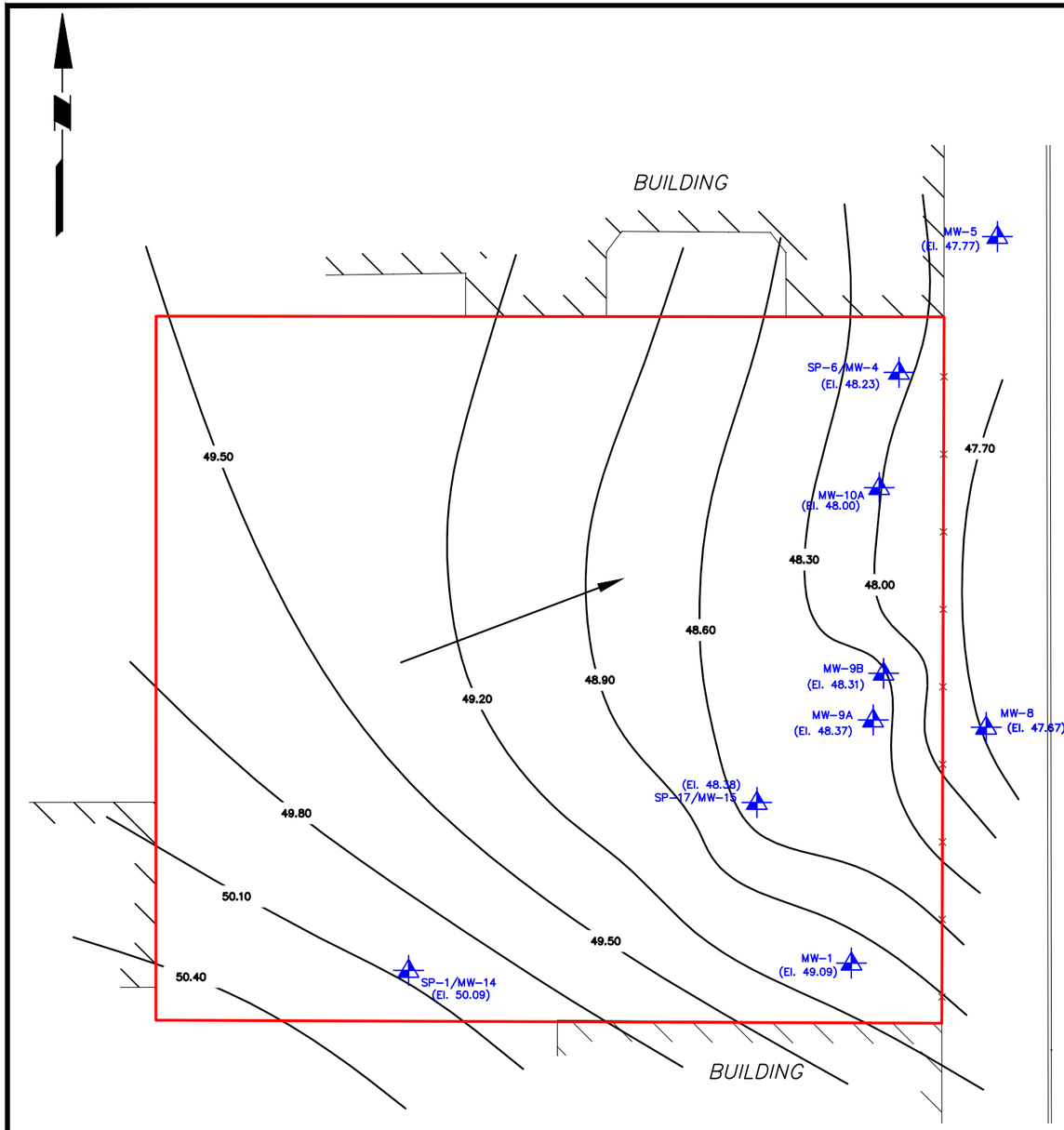
BLOCK No. 2727, LOT No. 41

BRONX NEW YORK

Drawing Title: SECTION B-B'

Project No. 170199901	Figure No. 3B
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 4 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 3a-3b - Xsections.dwg Date: 1/9/2013 Time: 15:20 User: atashji Style Table: Langan.stb Layout: Section B-B



SOUTHERN BOULEVARD

LEGEND:

- PROPERTY BOUNDARY
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- 49.80 GROUNDWATER ELEVATION CONTOUR
- PREDOMINANT GROUNDWATER FLOW DIRECTION

NOTES:

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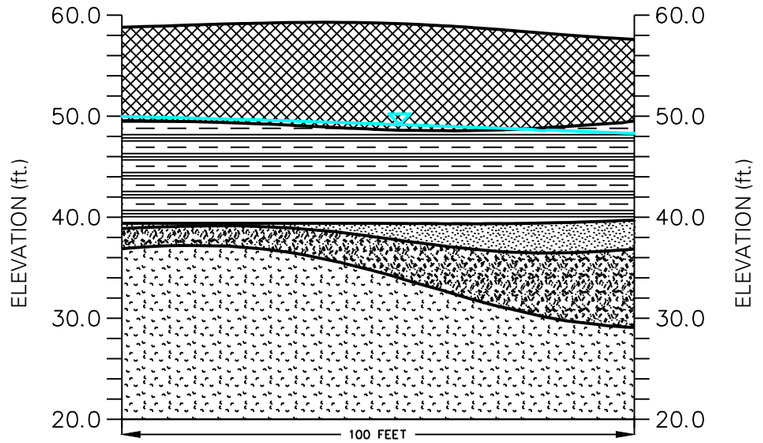
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. GROUND WATER ELEVATION CONTOURS ARE SHOWN IN 0.30 FEET INTERVALS, RELATIVE TO THE BRONX HIGHWAY DATUM.



SECTION A-A'

CROSS SECTION KEY:

- HISTORIC FILL
- CLAYEY SILT
- SAND
- WEATHERED BEDROCK
- BEDROCK
- GROUNDWATER TABLE ELEVATION

20 0 5 10 20

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Project

1095 SOUTHERN BOULEVARD

BLOCK No. 2727, LOT No. 41

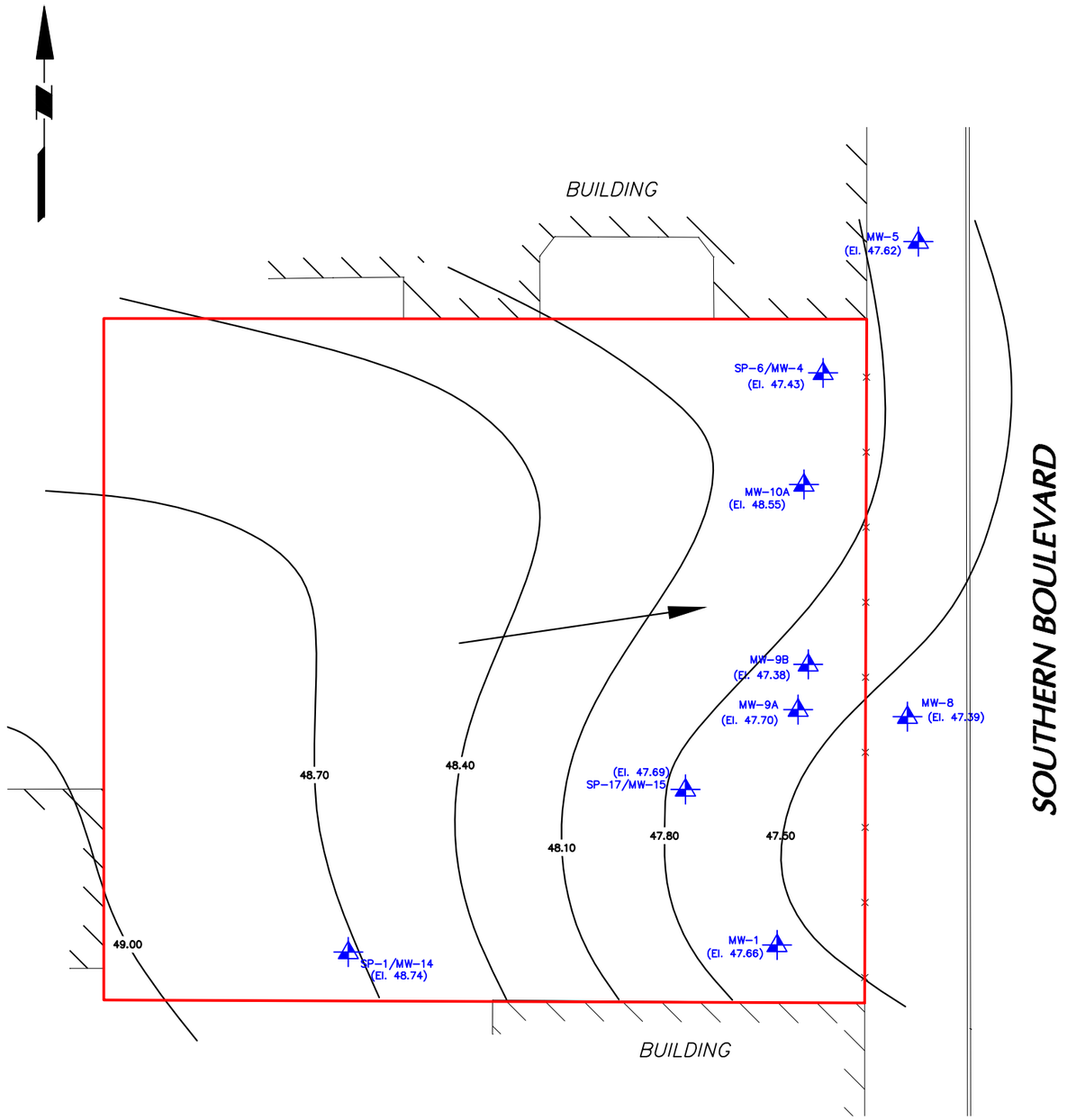
BRONX **NEW YORK**

Drawing Title

GROUNDWATER CONTOUR MAP DECEMBER 2011

Project No. 170199901	Figure No. 4A
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 5 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 4a - Groundwater Contour Map (2011).dwg Date: 1/9/2013 Time: 15:22 User: atashji Style Table: Langan.stb Layout: GW Contour 2011

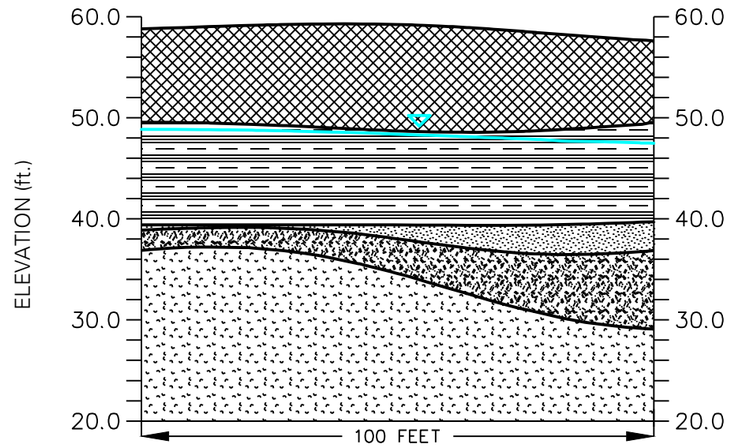


LEGEND:

- PROPERTY BOUNDARY
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- 48.10 GROUNDWATER ELEVATION CONTOUR
- PREDOMINANT GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. GROUND WATER ELEVATION CONTOURS ARE SHOWN IN 0.30 FEET INTERVALS, RELATIVE TO THE BRONX HIGHWAY DATUM.



SECTION A-A'

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1095 SOUTHERN BOULEVARD

BLOCK No. 2727, LOT No. 41

BRONX **NEW YORK**

Drawing Title

GROUNDWATER CONTOUR MAP SEPTEMBER 2012

Project No. 170199901	Figure No. 4B
Date 11/7/2012	
Scale 1: 20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 6 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 4b - Groundwater Contour Map (2012).dwg Date: 1/9/2013 Time: 15:22 User: atashji Style Table: Langan.stb Layout: GW Contour 2012

Figure 5

Soil Boring and Monitoring Well Schematic
Remedial Investigation Report
1095 Southern Boulevard
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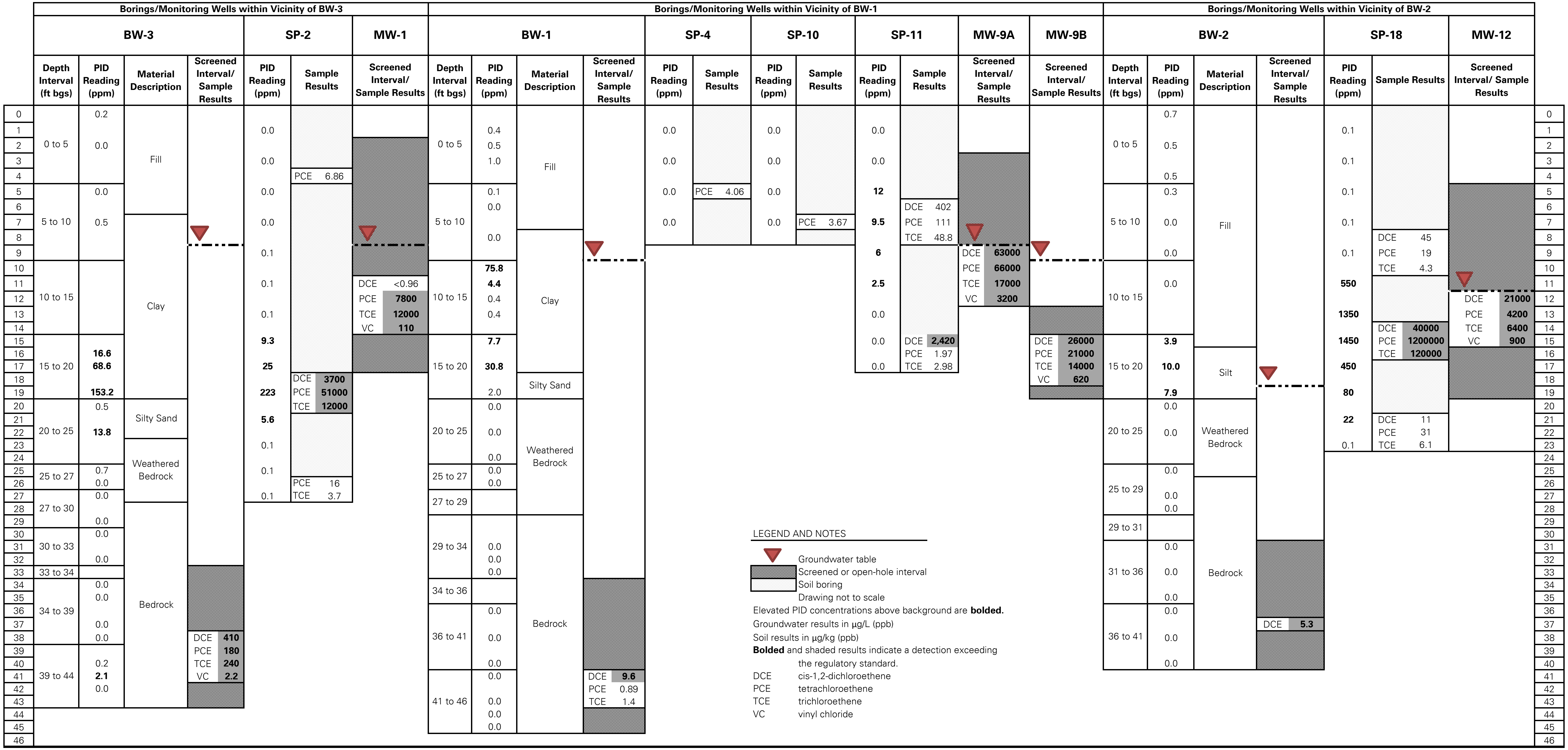
Langan Project No. 170199901



SP-5		
Sample ID	SP-5 16'-18'	
Sampling Date	11/18/2011	
VOCs (mg/kg)		
Methylene chloride	0.026	B,D
Tetrachloroethylene	0.0040	J,D

SP-18						
Sample ID	SP-18 8'-10'		SP-18 14'-16'		SP-18 22'-23'	
Sampling Date	11/17/2011		11/17/2011		11/17/2011	
VOCs (mg/kg)						
1,2,4-Trimethylbenzene	ND		0.20	J,D	ND	
cis-1,2-Dichloroethylene	0.045	D	**40**	J,D	0.011	J,D
Methylene chloride	0.034	B,D	0.011	J,B,B-Dil	0.036	J,B,D
Naphthalene	ND		0.13	J,B,D	ND	
Tetrachloroethylene	0.019	D	**1200**	D,HT-01	0.031	D
Trichloroethylene	0.0043	J,D	**120**	D,HT-01	0.0061	J,D

SP-6				
Sample ID	SP-6 8'-10'		SP-6 22'-23'	
Sampling Date	11/17/2011		11/17/2011	
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	ND		0.020	J,D,HT-01
1,3,5-Trimethylbenzene	ND		0.0058	J,D,HT-01
Methylene chloride	0.0079	J,B,B-Dil	0.041	J,B,D,HT-01
Naphthalene	ND		0.013	J,B,D,HT-01
p- & m- Xylenes	ND		0.0047	J,D,HT-01
Tetrachloroethylene	1.1	D	0.0069	J,D,HT-01

SP-14				
Sample ID (Depth)	SP-14 8'-10'		SP-14 10'-12'	
Sampling Date	11/11/2011		11/11/2011	
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	0.0041	J	0.0023	J
1,3,5-Trimethylbenzene	0.0017	J	ND	
Acetone	0.023		0.020	
Ethyl Benzene	0.0012	J	ND	
Methylene chloride	0.026		0.020	
o-Xylene	0.0023	J	ND	
p- & m- Xylenes	0.0052	J	0.0022	J
Tetrachloroethylene	0.021		ND	
Toluene	0.0014	J	ND	
Trichloroethylene	0.0011	J	ND	
Xylenes, Total	0.0076	J	0.0022	J

SP-12		
Sample ID (Depth)	SP-12 6'-8'	SP-12 14'-16'
Sampling Date	10/22/2010	10/22/2010
VOCs (mg/kg)		
1,1-Dichloroethane	ND	0.00268
1,2,4-Trimethylbenzene	ND	0.00199
Bromoform	0.00202	ND
cis-1,2-Dichloroethene	0.0382	**0.820**
Tetrachloroethylene	0.0142	ND
trans-1,2-Dichloroethene	0.0079	0.0339
Trichloroethylene	0.00743	0.00189

SP-15		
Sample ID (Depth)	SP-15 10'-12'	
Sampling Date	11/11/2011	
VOCs (mg/kg)		
Acetone	0.0046	J
Methylene chloride	0.015	
p- & m- Xylenes	0.0012	J
Tetrachloroethylene	0.033	
Trichloroethylene	0.0017	J

SP-11		
Sample ID (Depth)	SP-11 6'-8'	SP-11 16'-18'
Sampling Date	10/22/2010	10/22/2010
VOCs (mg/kg)		
1,1-Dichloroethane	ND	0.0106
1,2,4-Trimethylbenzene	0.0762	ND
1,3,5-Trimethylbenzene	0.647	ND
4-Isopropyltoluene	0.354	ND
Bromoform	ND	0.00241
cis-1,2-Dichloroethylene	**0.402**	**2.42**
Isopropylbenzene	0.035	ND
sec-Butylbenzene	0.259	ND
tert-Butylbenzene	0.453	ND
Tetrachloroethene	0.111	0.00197
trans-1,2-Dichloroethylene	0.044	0.061
Trichloroethene	0.0488	0.00298

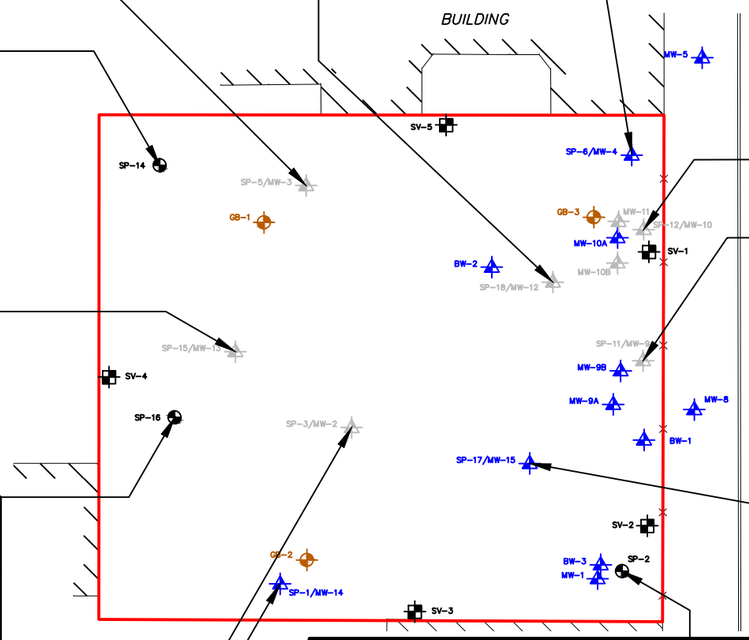
SP-16				
Sample ID (Depth)	SP-16 10'-12'		SP-16 14'-16'	
Sampling Date	11/11/2011		11/11/2011	
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	0.0016	J	0.0076	
1,3,5-Trimethylbenzene	ND		0.0025	J
2-Butanone	ND		0.018	
Acetone	0.0096	J	**0.076**	
Ethyl Benzene	ND		0.0013	J
Methylene chloride	0.040		0.043	
n-Propylbenzene	ND		0.0012	J
o-Xylene	ND		0.0028	J
p- & m- Xylenes	0.0022	J	0.0071	J
Tetrachloroethylene	0.030		0.0017	J
Toluene	ND		0.0011	J
Trichloroethylene	0.0014	J	ND	
Xylenes, Total	0.0022	J	0.0099	J

SP-17				
Sample ID (Depth)	SP-17 8'-10'		SP-17 22-24'	
Sampling Date	11/11/2011		11/11/2011	
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	0.057		ND	
1,3,5-Trimethylbenzene	0.022		ND	
1,4-Dichlorobenzene	0.0011	J	ND	
2-Butanone	0.039		ND	
Acetone	**0.15**		0.028	
cis-1,2-Dichloroethylene	0.0019	J	ND	
Ethyl Benzene	0.0091		ND	
Methylene chloride	0.048		0.032	
n-Propylbenzene	0.060		ND	
o-Xylene	0.0037	J	ND	
p- & m- Xylenes	0.0055	J	ND	
sec-Butylbenzene	0.074		ND	
tert-Butylbenzene	0.0027	J	ND	
Tetrachloroethylene	0.0048	J	ND	
Toluene	0.0013	J	ND	
trans-1,2-Dichloroethylene	0.0018	J	ND	
Trichloroethylene	0.0025	J	ND	
Xylenes, Total	0.0092	J	ND	

SP-2				
Sample ID	SP-2 18'-20'		SP-2 26'-28'	
Sampling Date	11/17/2011		11/17/2011	
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	0.15	D	ND	
1,3,5-Trimethylbenzene	0.037	J,D	ND	
cis-1,2-Dichloroethylene	**3.7**	D,HT-01	ND	
Ethyl Benzene	0.056	J,D	ND	
Methylene chloride	0.018	B,B-Dil	0.021	J,B,D
n-Propylbenzene	0.029	J,D	ND	
p- & m- Xylenes	0.077	J,D	ND	
Tetrachloroethylene	**51**	D,HT-01	0.016	D
trans-1,2-Dichloroethylene	0.017	J,D	ND	
Trichloroethylene	**12**	D,HT-01	0.0037	J,D
Xylenes, Total	0.077	J,D	ND	

SP-3		
Sample ID	SP-3 10'-12'	
Sampling Date	11/18/2011	
VOCs (mg/kg)		
cis-1,2-Dichloroethylene	0.013	D
Methylene chloride	0.037	B,D
Tetrachloroethylene	0.099	D
Trichloroethylene	0.013	D

SP-1		
Sample ID	SP-1 20'-22'	
Sampling Date	11/17/2011	
VOCs (mg/kg)		
Methylene chloride	**0.10**	B,D
Naphthalene	0.0068	J,B,D



30 0 15 30

SCALE IN FEET

LEGEND:

- PROPERTY BOUNDARY
- GB-1 GEOTECHNICAL BORING LOCATION
- BW-2 BORING/BEDROCK WELL LOCATION
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- SP-14 SOIL BORING LOCATION
- SV-5 SOIL VAPOR LOCATION
- MW-10 MONITORING WELL LOCATION (DESTROYED)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.
3. ANALYTICAL RESULTS COMPARED TO NYSDEC PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOs)
4. ONLY DETECTED COMPOUNDS ARE SHOWN.
5. COMPOUNDS DETECTED AT CONCENTRATIONS EXCEEDING THEIR RESPECTIVE SCOs ARE SHOWN IN BOLD.
6. ND=NON DETECT
7. J=ANALYE DETECTED AT OR ABOVE THE MDL (METHOD DETECTION LIMIT) BUT BELOW THE RL (REPORTING LIMIT) - DATA IS ESTIMATED.
8. D=RESULT IS FROM AN ANALYSIS THAT REQUIRED A DILUTION.
9. B=ANALYTE FOUND IN THE ANALYSIS BATCH BLANK.
10. HT-01=HOLDING TIME EXCEEDED BY ONE DAY.
11. mg/kg=MILLIGRAMS PER KILOGRAM.

NYSDEC Use Unrestricted SCOs	
VOCs (mg/kg)	
1,1-Dichloroethane	0.27
1,2,4-Trimethylbenzene	3.6
1,3,5-Trimethylbenzene	8.4
1,4-Dichlorobenzene	1.8
2-Butanone	0.12
Acetone	0.05
cis-1,2-Dichloroethylene	0.25
Ethyl Benzene	1
Methylene chloride	0.05
n-Propylbenzene	3.9
Naphthalene	12
o-Xylene	~
p- & m- Xylenes	~
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethylene	1.3
Toluene	0.7
trans-1,2-Dichloroethylene	~
Trichloroethylene	0.47
Xylenes, Total	0.26

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Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

Drawing Title
SOIL SAMPLE VOC RESULTS MAP

Project No. 170199901	Figure No. 6A
Date 11/7/2012	
Scale 1:30	
Drawn By AT	
Submission Date 12/17/2012	Sheet 8 of 15

LANGAN

LEGEND:

- PROPERTY BOUNDARY
- GB-1 GEOTECHNICAL BORING LOCATION
- BW-2 BORING/BEDROCK WELL LOCATION
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- SP-14 SOIL BORING LOCATION
- SV-5 SOIL VAPOR LOCATION
- MW-10 MONITORING WELL LOCATION (DESTROYED)

NOTES:

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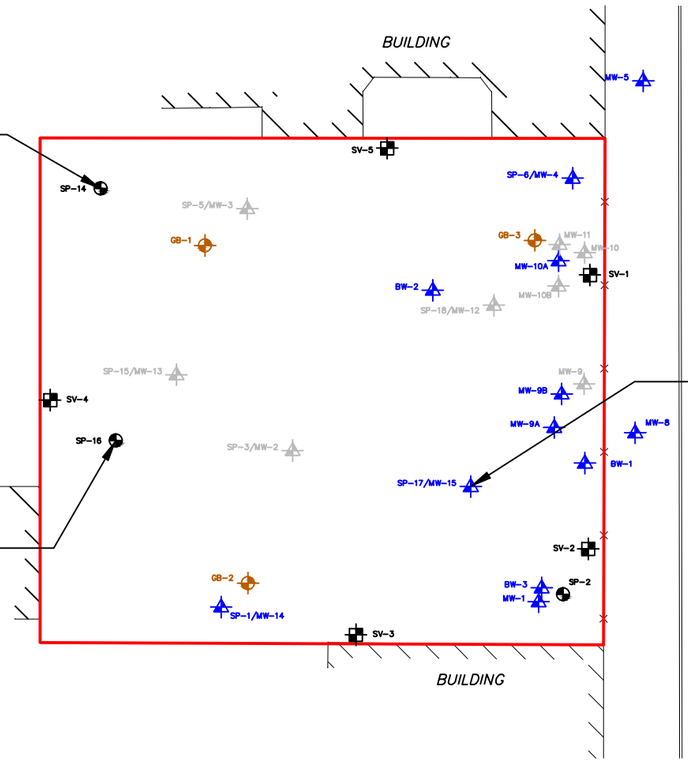
8. E=RESULT IS ESTIMATED AND CANNOT BE ACCURATELY REPORTED DUE TO LEVELS ENCOUNTERED OR INTERFERENCES.
9. mg/kg=MILLIGRAMS PER KILOGRAM.

SP-14				
Sample ID (Depth)	SP-14 8'-10'		SP-14 10'-12'	
Sampling Date	11/11/2011		11/11/2011	
SVOCs (mg/kg)				
Anthracene	0.124	J	ND	
Benzo(a)anthracene	0.167	J	ND	
Benzo(a)pyrene	0.0984	J	ND	
Benzo(k)fluoranthene	0.0898	J	ND	
Chrysene	0.131	J	ND	
Fluoranthene	0.359		ND	
Fluorene	0.0610	J	ND	
Phenanthrene	0.500		ND	
Pyrene	0.357		ND	
Metals (mg/kg)				
Aluminum	15200		16900	
Arsenic	3.41		2.67	
Barium	142		171	
Calcium	10600		2610	
Chromium, Trivalent	25.2		**30.4**	
Cobalt	9.67		15.9	
Copper	29.5		**54.7**	
Iron	21600	E	25800	E
Lead	**75.7**		11.8	
Magnesium	3760		4690	
Manganese	299		208	
Nickel	23.5		**33.8**	
Potassium	1640		4620	
Selenium	2.02		1.85	
Sodium	212		162	
Vanadium	34.8		47.2	
Zinc	89.6		99.7	

SP-16				
Sample ID (Depth)	SP-16 10'-12'		SP-16 14'-16'	
Sampling Date	11/11/2011		11/11/2011	
SVOCs (mg/kg)				
Total SVOCs	ND		ND	
Pesticides (mg/kg)				
4,4'-DDT	0.000257	J	ND	
alpha-Chlordane	ND		ND	
PCBs (mg/kg)				
Total PCBs	ND		ND	
Herbicides (mg/kg)				
2,4,5-TP (Silvex)	ND		ND	
Metals (mg/kg)				
Aluminum	10200		16500	
Arsenic	7.86		4.56	
Barium	87.7		219	
Calcium	3220		5680	
Chromium, Trivalent	21.4		**33.8**	
Cobalt	13.3		20.1	
Copper	29.9		33.6	
Iron	22800	E	33700	E
Lead	13.5		5.58	
Magnesium	3740		9300	
Manganese	192		378	
Nickel	29.5		**38.6**	
Potassium	2080		9850	
Selenium	2.28		1.88	
Sodium	162		280	
Vanadium	43.0		56.7	
Zinc	60.6		77.1	



SP-17				
Sample ID (Depth)	SP-17 8'-10'		SP-17 22-24'	
Sampling Date	11/11/2011		11/11/2011	
SVOCs (mg/kg)				
Anthracene	0.0684	J	ND	
Benzo(a)anthracene	0.247		ND	
Benzo(a)pyrene	0.174	J	ND	
Benzo(b)fluoranthene	0.122	J	ND	
Benzo(g,h,i)perylene	0.0866	J	ND	
Benzo(k)fluoranthene	0.183	J	ND	
Chrysene	0.208	J	ND	
Fluoranthene	0.359		ND	
Fluorene	0.0766	J	ND	
Indeno(1,2,3-cd)pyrene	0.0879	J	ND	
Phenanthrene	0.333		ND	
Pyrene	0.343		ND	
Pesticides (mg/kg)				
4,4'-DDT	0.00202		ND	
alpha-Chlordane	0.00638		ND	
PCBs (mg/kg)				
Total PCBs	ND		ND	
Herbicides (mg/kg)				
2,4,5-TP (Silvex)	ND		ND	
Metals (mg/kg)				
Aluminum	12900		11200	
Antimony	0.956		ND	
Arsenic	7.84		0.909	
Barium	**395**		146	
Cadmium	0.715		ND	
Calcium	19900		1970	
Chromium, Trivalent	28.8		20.2	
Cobalt	9.49		16.9	
Copper	**122**		45.1	
Iron	23700	E	25500	E
Lead	**357**		4.25	
Magnesium	3910		5950	
Manganese	310		374	
Nickel	**30.7**		**31.1**	
Potassium	1760		8680	
Selenium	2.15		1.31	
Sodium	517		149	
Vanadium	39.3		27.8	
Zinc	**618**		71.6	

NYSDEC Unrestricted Use SCOs	
SVOCs (mg/kg)	
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
Phenanthrene	100
Pyrene	100
Pesticides (mg/kg)	
4,4'-DDT	0.0033
alpha-Chlordane	0.094
PCBs (mg/kg)	
Total PCBs	0.1
Herbicides (mg/kg)	
2,4,5-TP (Silvex)	3.8
Metals (mg/kg)	
Aluminum	~
Antimony	~
Arsenic	13
Barium	350
Cadmium	2.5
Calcium	~
Chromium, Trivalent	30
Cobalt	~
Copper	50
Iron	~
Lead	63
Magnesium	~
Manganese	1600
Nickel	30
Potassium	~
Selenium	3.9
Sodium	~
Vanadium	~
Zinc	109

30 0 15 30

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Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

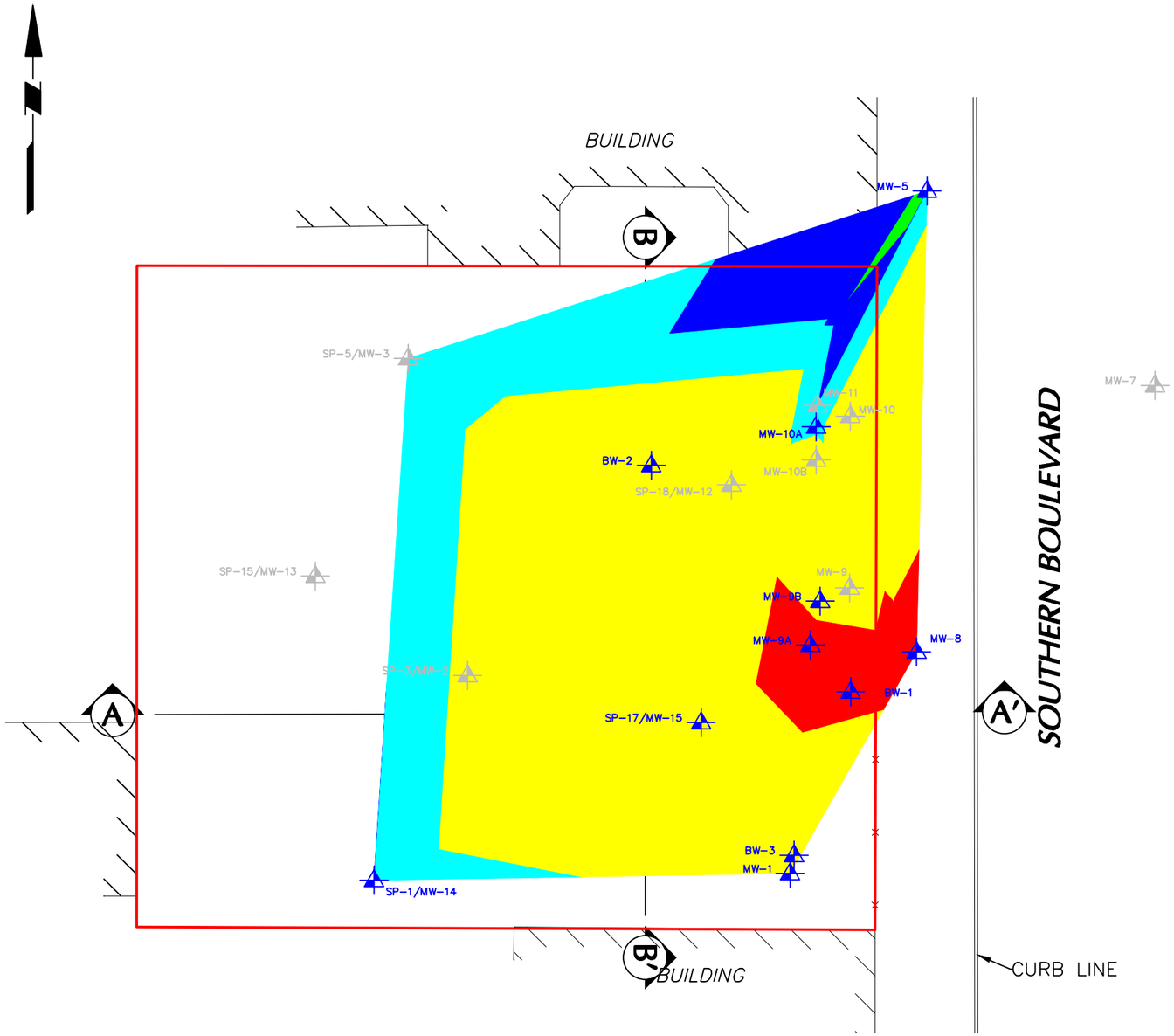
Drawing Title
SOIL SAMPLE RESULTS MAP

Project No. 170199901
Date 11/7/2012
Scale 1: 30
Drawn By AT
Submission Date 12/17/2012

Figure No. 6B

Sheet 8 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 6b - Soil Sample Tag Map.dwg Date: 1/11/2013 Time: 09:25 User: atashji Style Table: Langan.stb Layout: Site Plan



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SCALE IN FEET

LEGEND:

- PROPERTY BOUNDARY
- BW-2 BORING/BEDROCK WELL LOCATION
- MW-1 MONITORING WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- MW-10 MONITORING WELL LOCATION (DESTROYED)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.
4. TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS (CVOC) ISOCONTOURS INCLUDE GROUNDWATER DATA FROM HYDROTECH'S 2011 GROUNDWATER SAMPLING EVENT.
5. THE ISOCONCENTRATION SURFACES WERE LINEARLY AND TWO-DIMENSIONALLY INTERPOLATED FROM GROUNDWATER QUALITY DATA USING AUTOCAD CIVIL 3D.

µg/L = MICROGRAM PER LITER

CVOC KEY		
Minimum (µg/L)	Maximum (µg/L)	Color
0	10	
10	100	
100	10,000	
10,000	100,000	
100,000	200,000	

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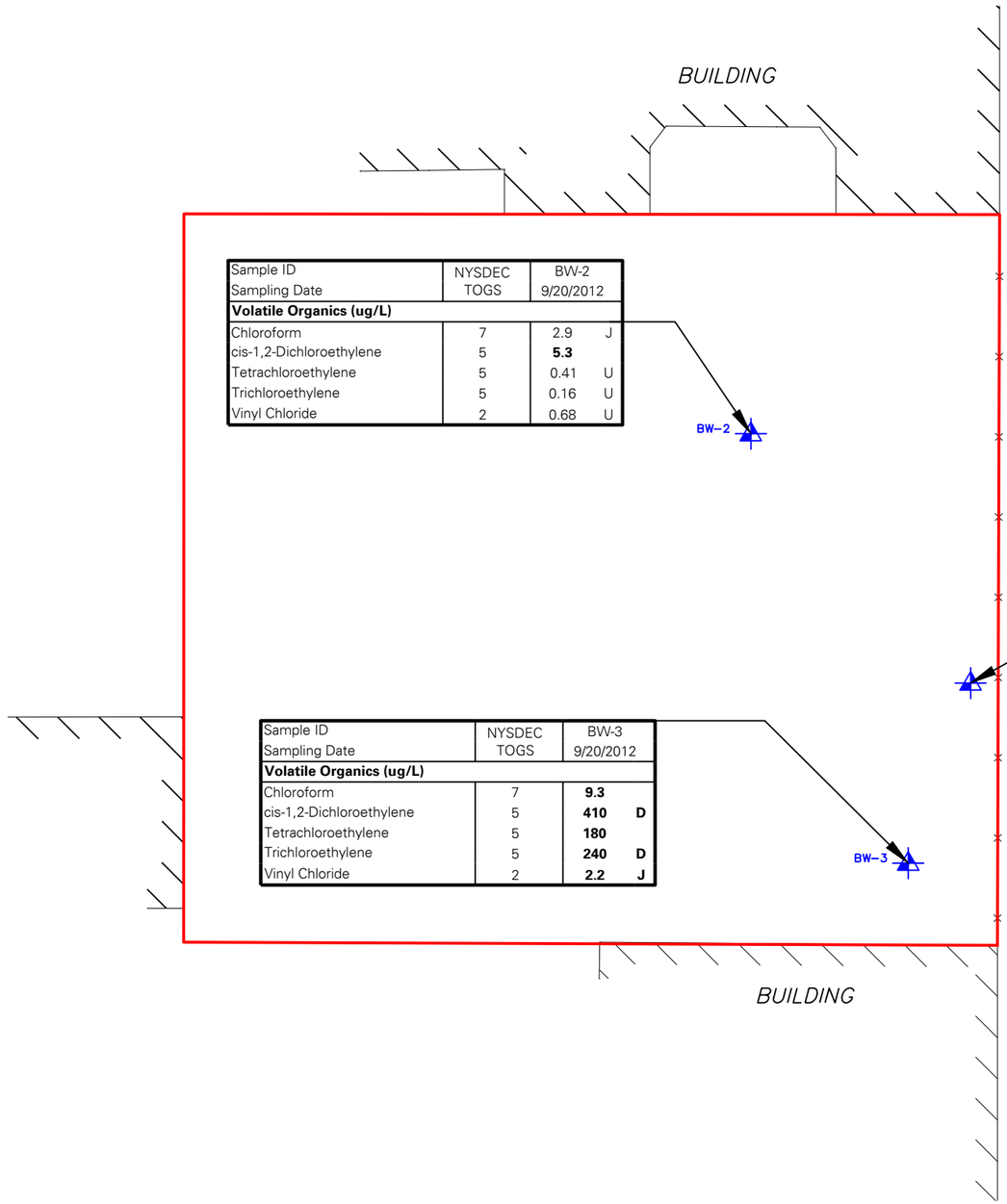
Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

Drawing Title
TOTAL CVOCs IN OVERBURDEN GROUNDWATER

Project No. 170199901	Figure No. 7
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 9 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 7 - CVOC Iso contour Map.dwg Date: 1/9/2013 Time: 15:26 User: atashji Style Table: Langan.stb Layout: Total CVOC



Sample ID Sampling Date	NYSDEC TOGS	BW-2 9/20/2012	
Volatile Organics (ug/L)			
Chloroform	7	2.9	J
cis-1,2-Dichloroethylene	5	**5.3**	
Tetrachloroethylene	5	0.41	U
Trichloroethylene	5	0.16	U
Vinyl Chloride	2	0.68	U

Sample ID Sampling Date	NYSDEC TOGS	BW-3 9/20/2012	
Volatile Organics (ug/L)			
Chloroform	7	**9.3**	
cis-1,2-Dichloroethylene	5	**410**	**D**
Tetrachloroethylene	5	**180**	
Trichloroethylene	5	**240**	**D**
Vinyl Chloride	2	**2.2**	**J**

SOUTHERN BOULEVARD

Sample ID Sampling Date	NYSDEC TOGS	BW-1 9/20/2012	
Volatile Organics (ug/L)			
Chloroform	7	2.7	J
cis-1,2-Dichloroethylene	5	**9.6**	
Tetrachloroethylene	5	0.89	J
Trichloroethylene	5	1.4	J
Vinyl Chloride	2	0.68	U

CURB LINE

LEGEND:

PROPERTY BOUNDARY

GEOTECHNICAL BORING LOCATION

BW-2 BORING/BEDROCK WELL LOCATION

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. 2010 AND NOVEMBER 2011. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED
3. BEDROCK GROUNDWATER SAMPLES ARE COMPARED TO NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TECHNICAL OPERATIONAL GUIDANCE SERIES 1.1.1 (TOGS) AMBIENT WATER QUALITY STANDARDS (AWQS) AND GUIDANCE VALUES.
4. J=ANALYTE DETECTED AT OR ABOVE THE MDL (METHOD DETECTION LIMIT) BUT BELOW THE RL (REPORTING LIMIT) - DATA IS ESTIMATED.
5. U=ANALYTE NOT DETECTED AT OR ABOVE THE LEVEL INDICATED.
6. D=RESULT IS FROM AN ANALYSIS THAT REQUIRED A DILUTION.
7. ug/L = MICROGRAM PER LITER

20 0 5 10 20

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Project

1095 SOUTHERN BOULEVARD

BLOCK No. 2727, LOT No. 41

BRONX **NEW YORK**

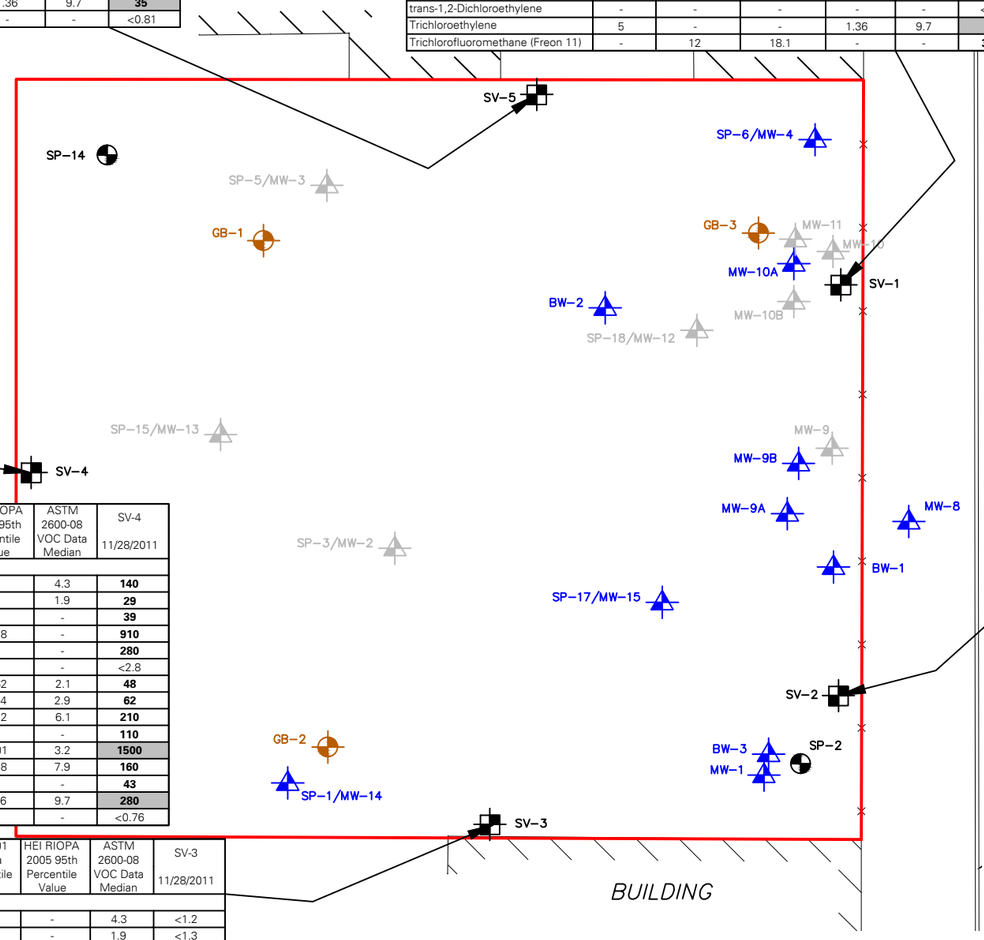
Drawing Title

BEDROCK GROUNDWATER RESULTS MAP

Project No. 170199901	Figure No. 8
Date 11/9/2012	
Scale 1: 20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 10 of 15

Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-5 11/28/2011
Volatile Organic Compounds (µg/m3)						
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	<1.4
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	<1.5
2-Butanone	-	16	12	-	-	**170**
Acetone	-	115	98.9	45.8	-	**1,700**
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	<1.6
Dichlorodifluoromethane	-	10	16.5	-	-	<3.0
Ethylbenzene	-	6.4	5.7	7.62	2.1	<1.9
o-Xylene	-	7.1	7.9	7.24	2.9	<1.9
p- & m- Xylenes	-	11	22.2	22.2	6.1	<3.6
p-Ethyltoluene	-	-	-	-	-	<2.1
Tetrachloroethylene	100	-	15.9	6.01	3.2	**490**
Toluene	-	57	43	39.8	7.9	<2.2
trans-1,2-Dichloroethylene	-	-	-	-	-	<1.1
Trichloroethylene	5	-	-	1.36	9.7	**35**
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	<0.81

Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-1 11/28/2011
Volatile Organic Compounds (µg/m3)						
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	<1.3
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	<1.4
2-Butanone	-	16	12	-	-	**72**
Acetone	-	115	98.9	45.8	-	**400**
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	<1.5
Dichlorodifluoromethane	-	10	16.5	-	-	<2.7
Ethylbenzene	-	6.4	5.7	7.62	2.1	<1.7
o-Xylene	-	7.1	7.9	7.24	2.9	<1.7
p- & m- Xylenes	-	11	22.2	22.2	6.1	<3.3
p-Ethyltoluene	-	-	-	-	-	<2.0
Tetrachloroethylene	100	-	15.9	6.01	3.2	**2100**
Toluene	-	57	43	39.8	7.9	<2.0
trans-1,2-Dichloroethylene	-	-	-	-	-	<1.1
Trichloroethylene	5	-	-	1.36	9.7	**52**
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	**340**



Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-4 11/28/2011
Volatile Organic Compounds (µg/m3)						
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	**140**
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	**29**
2-Butanone	-	16	12	-	-	**39**
Acetone	-	115	98.9	45.8	-	**910**
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	**280**
Dichlorodifluoromethane	-	10	16.5	-	-	<2.8
Ethylbenzene	-	6.4	5.7	7.62	2.1	**48**
o-Xylene	-	7.1	7.9	7.24	2.9	**62**
p- & m- Xylenes	-	11	22.2	22.2	6.1	**210**
p-Ethyltoluene	-	-	-	-	-	**110**
Tetrachloroethylene	100	-	15.9	6.01	3.2	**1500**
Toluene	-	57	43	39.8	7.9	**160**
trans-1,2-Dichloroethylene	-	-	-	-	-	**43**
Trichloroethylene	5	-	-	1.36	9.7	**280**
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	<0.76

Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-3 11/28/2011
Volatile Organic Compounds (µg/m3)						
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	<1.2
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	<1.3
2-Butanone	-	16	12	-	-	<2.4
Acetone	-	115	98.9	45.8	-	**290**
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	<1.3
Dichlorodifluoromethane	-	10	16.5	-	-	<2.5
Ethylbenzene	-	6.4	5.7	7.62	2.1	<1.6
o-Xylene	-	7.1	7.9	7.24	2.9	<1.6
p- & m- Xylenes	-	11	22.2	22.2	6.1	<2.9
p-Ethyltoluene	-	-	-	-	-	<1.8
Tetrachloroethylene	100	-	15.9	6.01	3.2	**860**
Toluene	-	57	43	39.8	7.9	<1.8
trans-1,2-Dichloroethylene	-	-	-	-	-	<0.95
Trichloroethylene	5	-	-	1.36	9.7	<1.3
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	**190**

Sample ID Sampling Date	NYSDOH AGV (1)	2003 NYSDOH Fuel Oil Upper Fence Limit	USEPA 2001 BASE Data 90th Percentile Value	HEI RIOPA 2005 95th Percentile Value	ASTM 2600-08 VOC Data Median	SV-2 11/28/2011
Volatile Organic Compounds (µg/m3)						
1,2,4-Trimethylbenzene	-	9.8	9.5	-	4.3	<1.3
1,3,5-Trimethylbenzene	-	3.9	3.7	-	1.9	<1.4
2-Butanone	-	16	12	-	-	<2.6
Acetone	-	115	98.9	45.8	-	**230**
cis-1,2-Dichloroethylene	-	<0.25	<1.9	-	-	<1.5
Dichlorodifluoromethane	-	10	16.5	-	-	**82**
Ethylbenzene	-	6.4	5.7	7.62	2.1	<1.7
o-Xylene	-	7.1	7.9	7.24	2.9	<1.7
p- & m- Xylenes	-	11	22.2	22.2	6.1	<3.2
p-Ethyltoluene	-	-	-	-	-	<1.9
Tetrachloroethylene	100	-	15.9	6.01	3.2	**2,800**
Toluene	-	57	43	39.8	7.9	<2.0
trans-1,2-Dichloroethylene	-	-	-	-	-	<1.0
Trichloroethylene	5	-	-	1.36	9.7	<1.4
Trichlorofluoromethane (Freon 11)	-	12	18.1	-	-	**120**

LEGEND:

- PROPERTY BOUNDARY
- GB–1 GEOTECHNICAL BORING LOCATION
- BW–2 BORING/BEDROCK WELL LOCATION
- MW–1 MONITORING WELL LOCATION
- SP–1/MW–14 SOIL BORING/MONITORING WELL LOCATION
- SP–14 SOIL BORING LOCATION
- SV–5 SOIL VAPOR LOCATION
- MW–10 MONITORING WELL LOCATION (DESTROYED)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.
4. ANALYTICAL RESULTS COMPARED TO NYSDOH AGV's, 2003 NYSDOH FUEL OIL UPPER FENCE LIMIT, USEPA 2001 BASE DATA 90TH PERCENTILE VALUE, HEI RIOPA 2005 95TH PERCENTILE VALUE, AND ASTM 2600-08 VOC DATA MEDIAN.
5. ONLY DETECTED COMPOUNDS ARE SHOWN.
6. COMPOUNDS EXCEEDING NYSDOH AGV's ARE SHOWN IN BOLD.
7. - = COMPOUND IS NOT REGULATED UNDER THE RESPECTIVE CRITERIA.
8. ug/m3 = MICROGRAMS PER CUBIC METER

20 0 5 10 20

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Project

1095 SOUTHERN BOULEVARD

BLOCK No. 2727, LOT No. 41

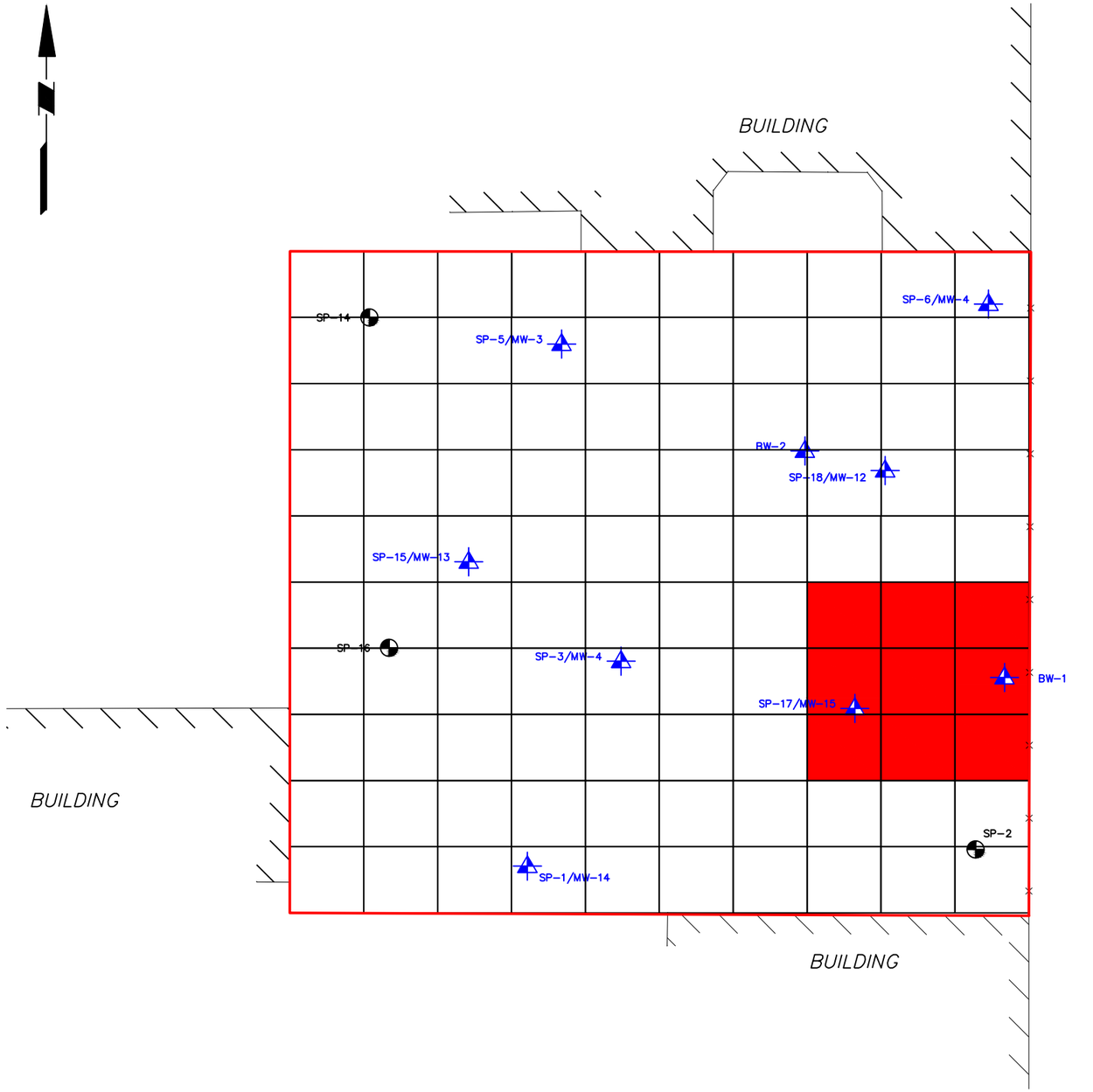
BRONX NEW YORK

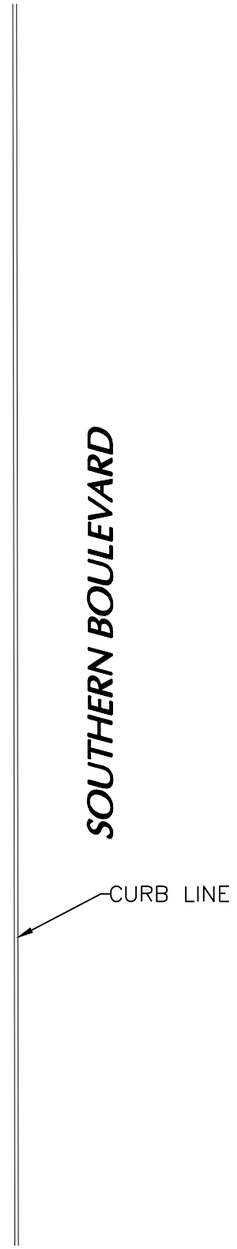
Drawing Title

SOIL VAPOR SAMPLE RESULTS MAP

Project No. 170199901	Figure No. 9
Date 11/7/2012	
Scale 1: 20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 11 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 9 - Soil Vapor Map.dwg Date: 1/9/2013 Time: 15:05 User: atashji Style Table: Langan.stb Layout: Site Plan





LEGEND:

- PROPERTY BOUNDARY
- BW-2 — BORING/BEDROCK WELL LOCATION
- P-1/MW-14 — SOIL BORING/MONITORING WELL LOCATION
- SP-14 — SOIL BORING LOCATION
- CVOC-CONTAMINATED MATERIAL. (DIMENSIONS ARE APPROXIMATELY 10 FEET BY 10 FEET)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.

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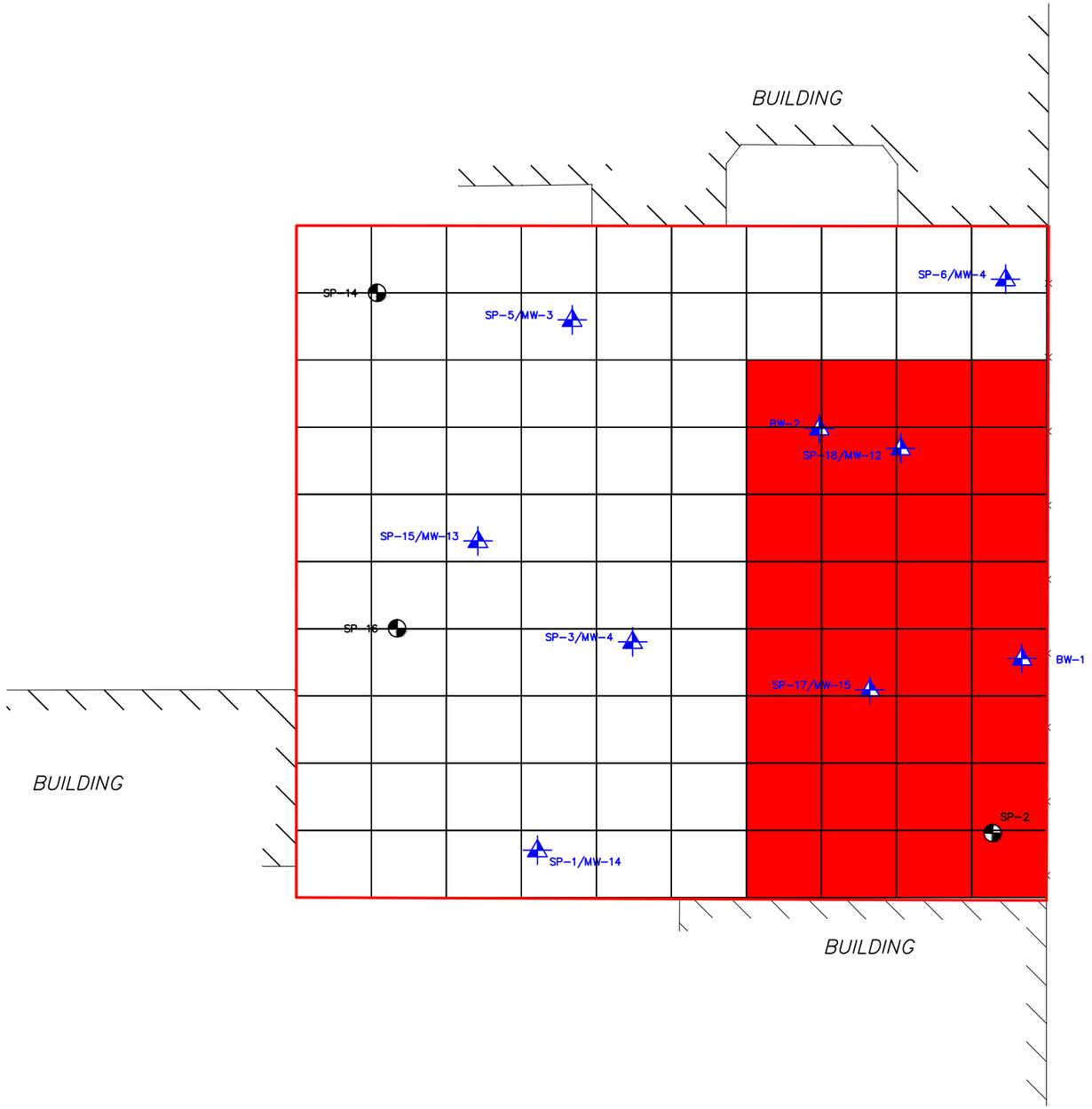
Drawing Title
CVOC SOIL CONTAMINATION 0 TO 8 FT BGS

Project No. 170199901	Figure No. 10A
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 12 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 10a - Soil Excavation.dwg Date: 1/9/2013 Time: 15:30 User: atashji Style Table: Langan.stb Layout: Site Plan

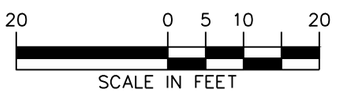


LEGEND:

- PROPERTY BOUNDARY
- BW-2 BORING/BEDROCK WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- SP-14 SOIL BORING LOCATION
- CVOC-CONTAMINATED MATERIAL. (DIMENSIONS ARE APPROXIMATELY 10 FEET BY 10 FEET)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
3. BEDROCK WELLS AND GEOTECHNICAL BORINGS WERE INSTALLED DURING LANGAN'S REMEDIAL INVESTIGATION IN SEPTEMBER 2012.



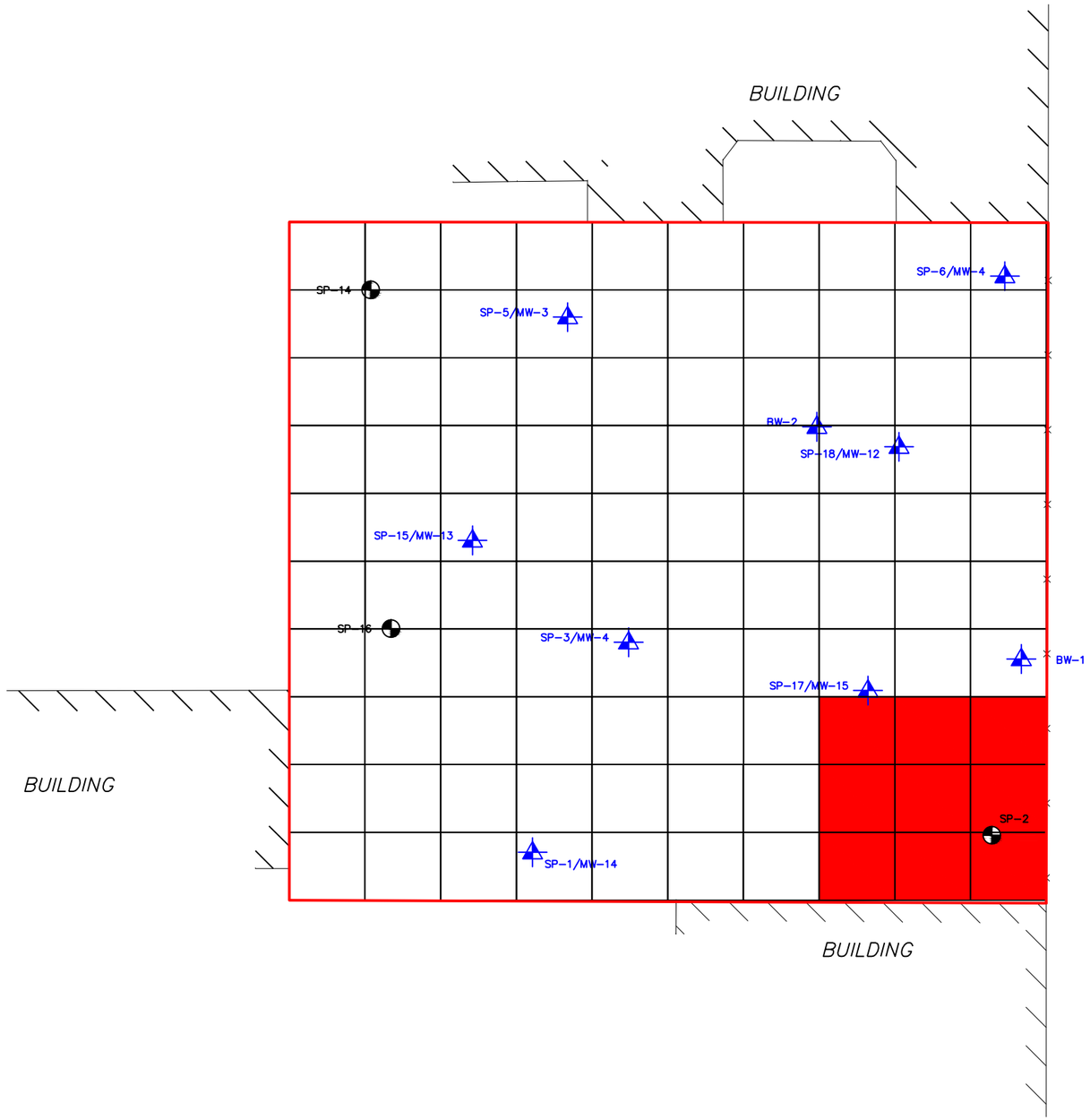
LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, NY 10001-2727
P: 212.479.5400 F: 212.479.5444
www.langan.com
NEW JERSEY PENNSYLVANIA NEW YORK CONNECTICUT
FLORIDA VIRGINIA CALIFORNIA
ABU DHABI DUBAI ATHENS DOHA ISTANBUL

Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

Drawing Title
CVOC SOIL CONTAMINATION 8 TO 18 FT BGS

Project No. 170199901	Figure No. 10B
Date 11/7/2012	
Scale 1:20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 13 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 10B - Soil Excavation.dwg Date: 1/9/2013 Time: 15:30 User: atashji Style Table: Langan.stb Layout: Site Plan



SOUTHERN BOULEVARD

CURB LINE

LEGEND:

- PROPERTY BOUNDARY
- BW-2 BORING/BEDROCK WELL LOCATION
- SP-1/MW-14 SOIL BORING/MONITORING WELL LOCATION
- SP-14 SOIL BORING LOCATION
- CVOC-CONTAMINATED MATERIAL. (DIMENSIONS ARE APPROXIMATELY 10 FEET BY 10 FEET)

NOTES:

1. BASE MAP IS TAKEN FROM LANGAN SURVEY TITLED "MONITORING WELL AND BORING LOCATION 1095 SOUTHERN BOULEVARD", DATED 10 OCTOBER 2012.
2. SOIL BORINGS, MONITORING WELLS AND SOIL VAPOR POINTS WERE INSTALLED BY HYDROTECH ENVIRONMENTAL CORP. BETWEEN APRIL 2010 AND NOVEMBER 2011.
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20 0 5 10 20
SCALE IN FEET

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New York, NY 10001-2727
P: 212.479.5400 F: 212.479.5444
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FLORIDA VIRGINIA CALIFORNIA
ABU DHABI DUBAI ATHENS DOHA ISTANBUL

Project
1095 SOUTHERN BOULEVARD
BLOCK No. 2727, LOT No. 41
BRONX NEW YORK

Drawing Title
CVOC SOIL CONTAMINATION 18 TO 24 FT BGS

Project No. 170199901	Figure No. 10C
Date 11/7/2012	
Scale 1: 20	
Drawn By AT	
Submission Date 12/17/2012	Sheet 14 of 15

Filename: \\langan.com\data\NY\data9\170199901\Cadd Data - 170199901\2D-DesignFiles\Environmental\RIR Figures\Figure 10C - Soil Excavation.dwg Date: 1/9/2013 Time: 15:31 User: atashji Style Table: Langan.stb Layout: Site Plan