

**FORMER TIFFANY'S STUDIO SITE  
(PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK**

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**Site Management Plan**

**NYSDEC Order on Consent Number: R2-0789-12-08  
Site Number: 241140**

**Prepared for:**

New York City School Construction Authority  
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**Revisions to Final Approved Site Management Plan:**

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

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**SEPTEMBER 2015**

## CERTIFICATIONS

I JENNIFER DIPILATO certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



BY: \_\_\_\_\_

DATE: \_\_\_\_\_

9/4/2015



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# **SITE MANAGEMENT PLAN**

## **1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM**

### **1.1 INTRODUCTION**

This document is required as an element of the remedial program at the Former Tiffany's Studio Site (Proposed Public School 315Q) (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Order on Consent Index # R2-0789-12-08, Site # 241140, which was executed on October 15, 2012.

#### **1.1.1 General**

The New York City School Construction Authority (NYCSCA) entered into an Order on Consent with the NYSDEC to remediate a 1.25-acre property located in Corona, Queens, New York. This Order on Consent required the Remedial Party, the NYCSCA, to investigate and remediate contaminated media at the Site. A figure showing the Site location and boundaries is provided in Figure 1. The boundaries of the Site are more fully described in the metes and bounds Site description that is part of the Environmental Easement, which is included as Appendix A.

After completion of the remedial work described in the Interim Remedial Measure (IRM) Work Plan, some contamination was left in the subsurface at this Site, which is hereafter referred to as "remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.



This SMP was prepared by TRC Engineers, Inc., on behalf of the NYCSCA, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the Site.

### **1.1.2 Purpose**

The Site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Queens County Clerk, will require compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on Site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of mitigation system; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports (PRRs); and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a



Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for the mitigation systems selected for the Site; and (4) Inspections, Reporting, and Certification.

This plan also includes a description of PRRs for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the Order on Consent (Index # R2-0789-12-08; Site # 241140) for the Site, and thereby subject to applicable penalties.

### **1.1.3 Revisions**

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

## **1.2 SITE BACKGROUND**

### **1.2.1 Site Location and Description**

The Site is located in the County of Queens, Corona, New York and is identified as Block 1613 and Lot 17 on the New York City Tax Map. The Site is an approximately 1.25-acre area bounded by 43rd Avenue to the north, 44th Avenue to the south, 97th Place to the east, and a commercial office building and a vacant commercial building to

the west (see Figure 2). The boundaries of the Site are more fully described in Appendix A – Environmental Easement with Metes and Bounds.

### **1.2.2 Site History**

The Site is an approximately 55,000-square-foot lot. Prior to construction of the current school building, the Site was improved with four contiguous, two- and three-story commercial buildings. The buildings occupied a footprint of approximately 44,000 square feet with a concrete-paved courtyard and parking area in the central portion of the Site, and a pedestrian walkway that extended from the southwestern portion of the Site to a gated entrance on 44<sup>th</sup> Avenue. The Site has been occupied by manufacturing facilities including metal working/foundry, wood working, and/or garment manufacturing facilities since at least 1902. Additionally, the Site formerly contained a glass manufacturer, Tiffany’s Studios, which is the origin of the project name (“Former Tiffany’s Studio Site”). Surrounding properties are primarily characterized by residential and commercial buildings.

The property was purchased by the NYCSCA in May 2012. In August 2012 the NYCSCA awarded a contract to demolish the existing structures and construct a new school building, which consists of a five-story school building with a basement and a courtyard.

### **1.2.3 Geologic Conditions**

Information regarding topography, geology, site soils, and hydrology was obtained from Site investigation activities and is summarized below.

#### Topography

The topography of the Site area slopes downwards towards the southwest and adjacent lands slope south-southeast towards Meadow Lake. According to the USGS 7.5-Minute Jamaica, N.Y. Quadrangle Map dated 1967 and revised in 1994 (refer to Figure 1), the elevation of the Site is approximately 50 feet above mean sea level (amsl).

Based on a review of the USGS map and Site observations, the eastern and western portions of the Site slope downward towards the south and southwest, respectively. The approximate elevation difference between the southwestern and northeastern portions of the Site is 15 feet.

### Geology

Soil and bedrock stratigraphy throughout Queens typically consists of a layer of historic fill above glacial till, decomposed unconsolidated bedrock, and bedrock. Based on a review of the Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York and Parts of Bergen and Hudson Counties New Jersey, by Charles A. Baskerville, dated 1994 (Baskerville Map), the bedrock below the unconsolidated material is of the Cambrian-Ordovician Hartland formation, which consists of inter-bedded mica schist, gneiss, and amphibolite. According to the Baskerville Map, depth to bedrock at the Site is estimated to be approximately 150 feet bgs. Bedrock was not encountered during the Site investigations.

### Soils

Site investigations included the advancement of 57 soil borings to a maximum depth of 58 feet bgs. Fill material was observed throughout the Site between surface grade and depths of approximately 20 feet. The historic fill generally consisted of brown fine- to medium-grained sand with gravel, silt, and clay. Native soil below the historic fill generally consisted of brown fine- to coarse-grained sand with silt, clay, and gravel. Geologic cross-sections are provided as Figures 3 and 4.

### Hydrogeology

The nearest surface water body is Meadow Lake, which is approximately 5,600 feet southeast of the Site. In December 2012, groundwater was measured at depths ranging from approximately 15 feet bgs at TRC-GW11 to 36 feet bgs at TRC-GW7. The range of groundwater depths reflects the approximately 15 foot variation in ground surface elevation between the northeastern and southwestern portions of the Site. Based

on calculated groundwater surface elevations, groundwater beneath the Site flows towards the southeast in the unconfined sand, water table aquifer. Groundwater elevation and flow direction may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or dewatering operations. Groundwater surface elevation measurements and inferred groundwater surface elevation contours generated from the groundwater surface elevation measurements collected on December 17, 2012 are shown in Figure 5.

### **1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS**

In 2010 and 2011 the NYCSCA completed due diligence investigations prior to purchasing the property. The due diligence investigations consisted of:

- Geophysical surveys,
- The advancement of 26 soil borings and the collection of 36 soil samples for laboratory analyses,
- The installation of 10 temporary monitoring wells and the collection of 10 groundwater samples for laboratory analyses, and
- The collection of 7 soil vapor samples for laboratory analysis.

The results of the investigations revealed:

- A 7,500-gallon UST containing residual petroleum and VOCs was present on-Site,
- The subsurface investigation found solvents (PCE and TCE) in soil vapor at concentrations above the NYSDOH Air Guideline Values (AGV)<sup>1</sup>,

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<sup>1</sup> It should be noted that there are no promulgated NYSDEC, NYSDOH or USEPA regulatory standards or guideline values for soil vapor. Concentrations of VOCs detected in soil vapor were compared to indoor air background levels and AGVs as a conservative evaluation measure.

- SVOCs and metals were detected in soil above cleanup levels (including two areas with hazardous concentrations of lead), and,
- Metals and VOCs were detected in groundwater at concentrations above comparison criteria.

Following the initial due diligence work, Supplemental Site Investigations were performed at the Site based on the prior due diligence activities to characterize the nature and extent of contamination at the Site. The Supplemental Site Investigations consisted of the advancement of soil borings, installation of groundwater monitoring wells, and collection and laboratory analysis of soil and groundwater samples. As noted above, soil vapor sampling was completed during the initial Site investigation. The results of the Remedial Investigation (RI) are described in detail in the Supplemental Site Investigation Reports dated May 16, 2012 and January 25, 2013. Below is a summary of Site conditions identified duringin the Supplemental Site Investigations.

### Soil

ite Representative compounds were detected in soil immediately above the groundwater table and/or in saturated soil on the western portion of the Site (refer to Figure 6). Tetrachloroethylene (PCE) was detected in one saturated soil sample collected from the southwestern portion of the Site. No petroleum- or chlorinated solvent- related volatile organic compounds (VOCs) were detected in unsaturated soil beneath the Site at concentrations exceeding the Unrestricted Use Soil Cleanup Objectives (SCOs) or the NYSDEC Commissioner Policy 51 Soil Cleanup Guidance (CP-51) Table 3 listed Soil Cleanup Levels (SCLs). Fill material exhibiting Toxicity Characteristic Leaching Procedures (TCLP) lead concentrations above the regulatory limit was identified in samples collected from two borings. Additionally, TCLP lead was detected at a concentration above the regulatory limit in one waste characterization composite sample collected prior to the start of excavation activities (refer to Figure 7).



### Site-Related Groundwater

Groundwater at the Site is impacted by chlorinated solvent- and petroleum-related VOCs (refer to Figure 8). The source(s) of the groundwater contamination has not been positively determined; however, the results of the Supplemental Site Investigation confirmed the results of previous investigations and indicated evidence of an off-site source migrating onto the Site. Additionally, there were no VOCs detected at concentrations above Unrestricted Use SCOs or CP-51 SCLs in unsaturated soil at the Site. Petroleum-related VOCs were not detected above NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) (TOGS) Ambient Water Quality Standards and Guidance Values (Class GA Values) in groundwater samples collected from downgradient wells (on the sidewalks adjacent to the Site). Chlorinated solvent-related VOCs were detected in groundwater collected from only one of four downgradient monitoring wells, indicating that significant off-Site migration of chlorinated solvent-related VOCs is not occurring (refer to Figure 8). Additionally, several metals were detected in filtered groundwater samples. The detected metals concentrations can be attributed to the characteristics of Site soil or to regional conditions.

### Site-Related Soil Vapor Intrusion

Soil vapor sampling performed as part of initial due diligence investigations identified the presence of PCE, methylene chloride, and trichloroethene (TCE) in soil vapor at concentrations above the New York State Department of Health (NYSDOH) AGVs<sup>2</sup>. Twelve other VOCs were also detected at concentrations above the anticipated regulatory database background levels in one or more of the soil vapor samples. Since

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<sup>2</sup> It should be noted that there are no promulgated NYSDEC, NYSDOH or USEPA regulatory standards or guideline values for soil vapor. Concentrations of VOCs detected in soil vapor were compared to indoor air background levels and AGVs as a conservative evaluation measure.

there were no VOC concentrations detected above Unrestricted Use SCOs in unsaturated soil samples and upgradient monitoring wells contained chlorinated solvent and/or petroleum-related VOCs above the Class GA Values, the VOCs in soil vapor are presumed to originate from an off-site source migrating onto the Site. Figure 9 presents the soil vapor concentrations which exceed AGVs or background levels.

#### Underground Storage Tank

A 7,500-gallon underground storage tank (UST) containing liquids and approximately 6 inches of sludge was identified in the courtyard. Laboratory analysis of the sludge indicated that it is comprised of No. 2 fuel oil and crude oil, and contained PCE, which may be associated with historic tank cleaning. Field investigations and post-excavation analytical sample results did not indicate a release from the UST.

#### **1.4 SUMMARY OF REMEDIAL ACTIONS**

The Site was remediated in general accordance with the NYSDEC-approved Interim Remedial Measure Work Plan dated April 2014.

The following is a summary of the Remedial Actions performed at the Site:

1. The 7,500-gallon UST, the UST access vault, and associated piping were closed and removed in accordance with applicable Federal, State, and local regulations. The liquids and sludge in the bottom of the UST contained an elevated PCE concentration during the RI sampling; therefore, this material was classified as hazardous waste for disposal;
2. Groundwater monitoring wells located within the Site boundary, but not within the building footprint, were decommissioned (abandoned-in-place) in accordance with NYSDEC requirements during the demolition work;
3. The soil between grade and approximately 20 feet bgs in three areas of the Site (in the vicinity of two historic borings, and in one area (Grid F2) where a waste characterization sample was collected that exhibited lead

concentrations at or above the TCLP regulatory limit) was excavated and removed from the Site in accordance with applicable Federal, State, and local hazardous waste regulations (refer to Figure 10 which shows the extent of remedial excavation);

4. Post-excavation end-point samples were collected from the hazardous waste and UST excavations to document post-IRM soil conditions;
5. All material removed from the Site related to soil remediation was disposed of off-Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
6. Construction, operation and maintenance of a gas vapor barrier and an active sub-slab depressurization system (SSDS) for the new school building;
7. Construction and maintenance of a soil cover system consisting of concrete pavement, concrete building slabs, and a minimum of 2 feet of environmentally clean fill meeting the requirements of 6 NYCRR Part 375-6 Unrestricted Use SCOs in landscaped areas to prevent human exposure to contaminated soil/fill remaining at the Site. Note that the contemplated use of the Site allows for cover material to meet Restricted Residential Use SCOs; however, the NYCSCA's standard specifications for cover material require the use of the more stringent Unrestricted Use SCOs;
8. Import of materials used for backfill and cover complied with: (1) NYSDEC requirements, (2) all Federal, State and local rules and regulations for handling and transport of material, and (3) the NYCSCA's specifications;
9. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the site;
10. Collection and analysis of groundwater samples from wells located along the Site perimeter to document post-IRM groundwater conditions;

11. Collection and analysis of soil vapor samples from temporary soil vapor probes located along the Site perimeter to document post-IRM soil vapor conditions; and,
12. Development and implementation of a Site Management Plan for long term management of remaining contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.

Remedial activities, with the exception of additional groundwater sampling required by the IRM, were completed at the Site by August 2015, prior to the opening day of the school year.

#### **1.4.1 Removal of Contaminated Materials from the Site**

Remedial excavation was performed in areas containing lead exceeding its toxicity characteristic for hazardous waste and in the area of the 7,500-gallon UST. A summary of the remedial excavation activities is presented below. The extent of remedial excavation is shown on Figure 10.

##### **Remedial Excavation – Hazardous Lead Areas**

The remedial excavation at areas containing hazardous lead was conducted between April and July 2013. Excavation was performed in three areas: “C2” (which was centered around historic boring SB-15), “E2” (which was centered around historic boring SB-6) and “F2” (which was discovered as a result of waste characterization sampling conducted prior to excavation). Approximately 2,265 cubic yards of hazardous soil from these three areas were loaded onto trucks for transport off-Site to Clean Earth of North Jersey in South Kearny, New Jersey for treatment and disposal. The remedial excavations included post-remediation soil sampling for laboratory analysis (described in Section 1.4.2, below).

## Underground Storage Tank Removal

One 7,500-gallon UST was removed from the Site on April 1, 2013 in accordance with applicable local, State, and Federal regulations, as well as standard industry practices. Prior to UST removal, contents of the UST and fill lines had been removed via a vacuum truck and the interior of the UST/fill line had been cleaned. Approximately 2,542 gallons of hazardous waste liquid were removed from the tank and transported to Tradebe Treatment and Recycling Northeast in Meriden, Connecticut for disposal as hazardous liquid waste. In addition, acetone, benzene and tetrachloroethene (PCE) hazardous waste (i.e., sludge and disposable tank cleaning pads) were placed in two 55-gallon drums and transported to Triumvirate Environmental (NYC), LLC for disposal as solid hazardous waste. Upon removal, the UST was found to be intact, in good condition, and free of pitting and perforations. The steel was disposed of at an off-site recycling facility. There was no evidence of soil contamination identified following removal of the UST. A figure showing areas where excavation was performed is shown in Figure 10. The remedial excavation included post-remediation soil sampling for laboratory analysis (described in Section 1.4.2, below).

### 1.4.2 Remaining Contamination

Post-excavation soil samples were collected following the excavation of the 7,500-gallon UST (for analysis of TCL VOCs and SVOCs) and following excavation of soils containing hazardous lead (for analysis of TCLP lead). Tables 1 through 3 summarize results of post-excavation samples collected following the completion of remedial excavation.

The results of the post-excavation soil samples collected for analysis of TCLP lead were below the RCRA regulatory limit (refer to Figure 11).

The results of analyses of the post-excavation samples collected from the UST excavation were below the Unrestricted Use SCOs and SCLs, with the exception of six SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,



benzo(k)fluoranthene, chrysene, and indeno (1,2,3-CD) pyrene) detected at concentrations above the Unrestricted Use SCOs and CP-51 Soil Cleanup Levels in one soil sample (“East Side Composite”). The presence of these SVOCs was attributed to the characteristics of historic fill since there was no evidence of petroleum impacts in soil following UST removal. Refer to Tables 2 and 3 and Figure 11 for the results of UST post-excavation sampling and the locations of the samples.

The excavations (for the lead contaminated soil and the UST) were not backfilled since the entire Site was excavated in support of construction. A figure showing the final Site development elevation (for construction of the school building) is provided as Figure 15.

Although the remedial actions completed under the IRM Work Plan successfully achieved the remedial objectives, some soil, groundwater, and soil vapor with residual contamination remain beneath the Site after completion of the remedial actions. As a result, a number of engineering controls and institutional controls are required to protect human health and the environment, as anticipated in the IRM Work Plan. These ECs/ICs are described in Section 2.0. Long-term management of ECs/ICs and of residual contamination will be performed under this SMP.

## **2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN**

### **2.1 INTRODUCTION**

#### **2.1.1 General**

Since remaining contaminated groundwater, soil and soil vapor exist beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

#### **2.1.2 Purpose**

This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan (Appendix B) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

## 2.2 ENGINEERING CONTROLS

### 2.2.1 Engineering Control Systems

#### 2.2.1.1 Site Cover System

Exposure to remaining contamination in soil/fill at the Site is prevented by a Site cover system placed over the Site. This cover system is comprised of a minimum of 24 inches of clean soil, asphalt pavement, concrete-covered sidewalks or concrete building slabs. Note that approximately 85% of the Site cover system is comprised of the concrete building slab. The elements of the cover system are illustrated on As-Built Drawings presented on Figure 14.

The Excavation Work Plan that appears in Appendix B outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 3 of this SMP.

#### 2.2.1.2 Gas Vapor Barrier

The occupied school building is constructed with a gas vapor barrier below the concrete floor slabs, below grade walls and bottom slabs and walls of pits and sumps with continuous waterstops within required construction joints. The gas vapor barrier consists of a 60-mil Liquid Boot membrane. The gas vapor barrier has been installed in the school building to prevent the diffusion of gas and vapors into the building.

#### 2.2.1.3 Sub-Slab Depressurization System

The occupied school building is constructed with an active SSDS below the gas vapor barrier, which is designed and installed to minimize the potential for vapor intrusion. The principal components of the SSDS include:

- Seven suction pits beneath the floor slab;

- Pipe running horizontally beneath the slab from each suction pit to two common headers;
- Vertical risers, at least 6 inches in diameter, from each of the common headers discharging above the building roof;
- Exterior suction fans;
- Monitoring points at selected locations throughout the building, installed through the lowest level floor slab; and,
- A warning device (alarm) when the vacuum drops below a set point.

The layout and installed components of the SSDS are presented in Appendix G. The operations, maintenance, and monitoring (“OM&M”) requirements for the SSDS consists of initial start-up testing, routine maintenance and monitoring activities, and non-routine maintenance activities. Procedures for operating and maintaining SSDS are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

Operation of the active SSDS and maintenance of the gas vapor barrier will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSDS may be submitted by the property owner (NYCSCA) based on confirmatory data that justify such request.

#### 2.2.1.4 Long-Term Groundwater Monitoring

Groundwater monitoring activities, to document post-excavation groundwater conditions, will be performed in accordance with the IRM Work Plan. Post-excavation groundwater samples will be collected from perimeter wells after completion of IRMs. Three sampling events will be conducted on a quarterly basis. Groundwater Monitoring Program activities are outlined in Section 3.3.

## 2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

### 2.2.2.1 Site Cover System

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

### 2.2.2.2 Gas Vapor Barrier

Based on observations during periodic inspections, the gas vapor barrier is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity. Maintenance of the gas vapor barrier will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the vapor intrusion mitigation is no longer required, a proposal to discontinue the maintenance of the gas vapor barrier will be submitted by the property owner to the NYSDEC and NYSDOH.

### 2.2.2.3 Sub-Slab Depressurization System (SSDS)

The active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSDS is no longer required, a proposal to discontinue the SSDS will be submitted by the property owner to the NYSDEC and NYSDOH.

## 2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the Order on Consent to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface

contamination; and, (3) limit the use and development of the site to restricted residential, commercial or industrial uses only. Adherence to these Institutional Controls on the Site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP; and,
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The site has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted residential, commercial or industrial use provided that the long-term Engineering and Institutional Controls included in this SMP are employed;
- The property may not be used for a higher level of use, such as unrestricted or residential use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- The use of the groundwater underlying the property is prohibited without treatment rendering it safe for intended use;
- Vegetable gardens and farming on the property are prohibited; and,
- The Site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

### **2.3.1 Excavation Work Plan**

The Site will be remediated for restricted residential use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as Appendix B to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site. A sample HASP outline and CAMP are attached as Appendix C to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section B-1 of the EWP. Any intrusive construction work will be performed in compliance with the

EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The Site owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

## **2.4 INSPECTIONS AND NOTIFICATIONS**

### **2.4.1 Inspections**

Inspections of all Engineering Controls installed at the Site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive Site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted in accordance with Section 4.0 of this SMP.

#### **2.4.2 Notifications**

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the Order on Consent, 6 NYCRR Part 375, and/or Environmental Conservation Law.
- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundation, structures or engineering control that reduces or has the potential to reduce the effectiveness of an Engineering Control and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Order on Consent and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing.

## **2.5 CONTINGENCY PLAN**

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

### **2.5.1 Emergency Telephone Numbers**

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to the Remedial Engineer, Jennifer DiPilato, P.E. of TRC Engineers, Inc. These emergency contact lists must be maintained in an easily accessible location at the Site.

**Table 4: Emergency Contact Numbers**

AGENCY OR CONTACT	PHONE NUMBER
Medical, Fire, and Police	911
One Call Center	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

**Table 5: Other Contact Numbers**

AGENCY OR CONTACT	PHONE NUMBER
Property Owner: New York City School Construction Authority, Anna Ciecierska	(718) 752-5028
Primary Remedial Consultant: TRC Engineers, Inc., Jenna Raup	(212) 221-7822 Cell: (518) 275-5005
Remedial Engineer: TRC Engineers, Inc., Jennifer DiPilato, P.E.	(212) 221-7822 Cell: (914) 806-5719
NYSDEC Project Manager: Hasan Ahmed	(718) 482-6405

\* Note: Contact numbers subject to change and should be updated as necessary



### **2.5.2 Map and Directions to Nearest Health Facility**

Site Location: 43-18 97<sup>th</sup> Place, Corona, New York 11368

Nearest Hospital Name: Elmhurst Hospital Center,

Hospital Location: 79-01 Broadway, Elmhurst, NY 11373

Hospital Telephone: (718) 334-4000

Directions to the Hospital:

1. Head west on 43rd Ave toward Junction Blvd
2. Continue onto Whitney Ave
3. Turn right onto Broadway
4. Destination will be on the right

Total Distance: 1.2 miles

Total Estimated Time: 5 minutes





list is found at the beginning of this Contingency Plan (Table 4). The list will also posted prominently at the site and made readily available to all personnel at all times.

## 3.0 SITE MONITORING PLAN

### 3.1 INTRODUCTION

#### 3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site, the soil cover system, and all affected Site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

#### 3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater);
  - Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
  - Assessing achievement of the remedial performance criteria;
  - Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
  - Preparing the necessary reports for the various monitoring activities.
- To adequately address these issues, this Monitoring Plan provides information on:
- Sampling locations, protocol, and frequency;
  - Information on all designed monitoring systems (e.g., well logs);
  - Analytical sampling program requirements;
  - Reporting requirements;

- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Monitoring of post-excavation conditions included four (4) quarterly groundwater sampling events per the IRM Work Plan. The first groundwater sampling event was conducted in February 2015. Samples were collected from five perimeter monitoring wells (TRC-GW1, TRC-GW2, TRC-GW3, TRC-GW11, and TRC-GW13). Results of this sampling event are reported in the FER as outlined in the IRM Work Plan. Several monitoring wells were destroyed after the first sampling event (February 2015) due to construction activities. Monitoring wells will be reinstalled and three (3) subsequent sampling events will take place on a quarterly basis. Monitoring programs are summarized in Table 6 and outlined in detail in Sections 3.2 and 3.3 below.

**Table 6: Monitoring/Inspection Schedule**

<b>Monitoring Program</b>	<b>Frequency*</b>	<b>Matrix</b>	<b>Analysis</b>
Site Cover System Inspection	Annually	NA	NA
Groundwater	Three (3) sampling events (anticipated to be quarterly)	Groundwater	Volatile Organic Compounds, Semivolatile Organic Compounds and Metals

\* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

### **3.2 COVER SYSTEM MONITORING**

The Site cover system consisting of asphalt or concrete pavement, concrete building slabs, or 2 feet of environmentally clean fill material meeting the requirements of 6 NYCRR Part 375-6 will be inspected on an annual basis.

### 3.3 MEDIA MONITORING PROGRAM

#### 3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed as specified in Table 6 above. The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the Site. The network of off-Site wells has been designed to evaluate the overall impact of remediation on groundwater conditions at the Site and to determine the effectiveness of the remedy in achieving groundwater quality standards.

The following monitoring wells are included as part of the groundwater monitoring program for the Site.

<b>Long-Term Monitoring Wells at Former Tiffany’s Studio Site (Proposed Public School 315Q)</b>			
<b>Monitoring Well ID</b>	<b>Well Depth (feet bgs)</b>	<b>Depth to Groundwater (feet bgs)</b>	<b>Screen Length (feet bgs)</b>
TRC-GW1	42	25.07	22.00 to 42.00
TRC-GW2	46	31.44	26.00 to 46.00
TRC-GW3	34	22	19.00 to 34.00
TRC-SB29/GW11	28	15.22	11.00 to 28.00
TRC-GW13	39	25	24.00 to 39.00

The layout of the wells is shown on Figure 5. Monitoring well construction logs are included in Appendix D. Results of the first post-remediation groundwater sampling event showing the long-term monitoring wells are provided on Figure 12.

The sampling frequency may be modified with the approval of NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Details describing groundwater monitoring well purging, sampling, and deliverables for the groundwater monitoring program are provided in the QAPP (refer to Appendix E).

#### 3.3.1.1 Sampling Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log presented in Appendix F. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

#### 3.3.1.2 Monitoring Well Repairs, Replacement And Decommissioning

If biofouling or silt accumulation occurs in the off-Site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

### **3.4 SITE-WIDE INSPECTION**

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections will also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these

inspections, an inspection form will be completed (Appendix H). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that Site records are up to date.

### **3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL**

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Site (Appendix E). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures;

- All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
- The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method;
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules; and
- Corrective Action Measures.

### **3.6 MONITORING REPORTING REQUIREMENTS**

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-Site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the PRR, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the PRR. A brief letter report will also be prepared subsequent to each groundwater sampling event. The PRR report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;



- Description of the activities performed;
- Type of samples collected (e.g., groundwater);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC.

A summary of the monitoring program deliverables are summarized in Table 7 below.

**Table 7: Schedule of Monitoring/Inspection Reports**

Task	Reporting Frequency*	Quarterly Reporting Requirement	Annual Reporting Requirement (PRR)
Groundwater Monitoring	Quarterly (for the first year)	X	X
Site-Wide Inspection (including Site Cover System)	Annually		X
* The frequency of events will be conducted as specified until otherwise approved by NYSDEC			

## **4.0 OPERATION AND MAINTENANCE PLAN**

### **4.1 INTRODUCTION**

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mitigation systems selected for the Site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS and monitor and maintain the gas vapor barrier;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Site conditions or the manner in which the SSDS is operated and maintained or the gas vapor barrier is monitored and maintained.

Information on non-mechanical Engineering Controls (i.e. Site cover system) is provided in Section 2 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

### **4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE**

A gas vapor barrier and active SSDS have been installed to prevent VOCs in soil gas from entering the building. As-built drawings for the completed building's gas vapor barrier and SSDS are included in Appendix G. The SSDS is fully operational and certified in the Final Engineering Report (FER).

#### 4.2.1 Scope

The gas vapor barrier is comprised of a 60-mil Liquid Boot membrane system as manufactured by Cetco and has been applied beneath the slabs, below grade walls and bottom slabs and walls of pits and sumps. Note that the fluid applied gas vapor barrier was installed to work in tandem with the SSDS to prevent soil vapor from entering the building. The gas vapor barrier was installed and inspected in accordance with NYCSCA and manufacturer requirements.

The principal components of the SSDS for the Site building consist of:

- Seven suction pits beneath the floor slab;
- Pipe running horizontally beneath the slab from each suction pit to two common headers;
- Two vertical risers of at least 6 inches in diameter from each common header discharging above the building roof;
- Two exterior suction fans;
- Monitoring points at selected locations throughout the building floor slabs; and,
- A warning device (alarm) when the vacuum drops below a set point.

The requirements for the SSDS consist of initial start-up testing, routine maintenance, monitoring activities, and non-routine maintenance activities. Each is described in the following subsections.

#### 4.2.2 SSDS Start-Up and Testing

This subsection outlines the procedures for confirming the effectiveness and proper installation of the SSDS prior to building occupancy, and complies with the post mitigation/confirmation testing requirements of NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006. The following actions were performed following start-up of the SSDS:

1. Vacuum of the sub-slab area relative to indoor air was measured at each monitoring point utilizing an appropriate hand-held instrument. A negative differential pressure was confirmed between the indoor and the sub-slab vapor spaces.
2. The operation of the warning device for low or no vacuum was confirmed.

The system testing described above will be conducted if, in the course of the SSDS lifetime, significant changes are made to the system, and the system must be restarted. The school's Building Management System (BMS) will be programmed to monitor the status of the SSDS on a continuous basis. In the interim, alarm indication stations (AIS) monitor the SSDS pressure switches installed in SSDS riser piping. In the event of alarm activation at the BMS, the school custodian will be notified via email. If unacknowledged for more than 10 minutes, an email will be sent to the Regional Facilities Manager (Deputy Director of Facilities) and the Borough Maintenance Planner simultaneously. Subsequent to the initial start-up testing, annual inspection and monitoring of the SSDS will be performed, as described below.

#### **4.2.3 System Operation: Routine Operation Procedures**

Routine maintenance and inspection will be conducted to ensure that the SSDS is operating properly and will continue in accordance with the schedule contained in this SMP.

The following tasks will be performed by the Custodial Engineer (unless noted otherwise) on the first week of each month and after a severe condition (e.g., major erosion, flooding, power outage, etc.).

- Inspect the roof top piping, suction fans, and accessories for evidence of damage. In the event of a change from previous conditions, log the information in the logbook and monthly inspection form and immediately request an inspection from New York City Department of Education

Environmental Health and Safety Division (DOE EHS). The DOE EHS's report will include a drawing with the locations and type of damage.

- In the event that a fan component fails, the component will be replaced by DOE EHS. DOE EHS will make appropriate arrangements in advance with suppliers to provide SSDS replacement parts within 12 hours notice. In the event that a fan unit fails, the fan unit will be replaced by DOE EHS. A spare fan will be available on-Site for immediate replacement in case of fan failure.
- Identify any maintenance or repair activity that could affect the lowest level slabs, subgrade walls, SSDS piping, or rooftop components.
- Log the information in the logbook and monthly inspection form.

The annual inspection performed by the DOE EHS's independent Professional Engineer will consist of, at a minimum, an inspection of the school grounds, lowest level floor slabs, monitoring points, exhaust fan(s) (including presence of spare fan), and fan exhaust stack(s). Appendix H contains a routine maintenance SSDS checklist.

#### **4.2.4 System Operation: Routine Equipment Maintenance**

The SSDS fans require routine and preventative maintenance for efficient operation. This maintenance shall be performed by qualified building personnel (i.e., the Custodial Engineer) semi-annually and as required. Appendix H contains a routine maintenance SSDS checklists. Appendix I contains a manual for the SSDS suction fans.

#### **4.2.5 System Operation: Non-Routine Equipment Maintenance**

Non-routine maintenance would typically occur when the warning device indicates that the system is not working properly, or the system becomes damaged. The scope of non-routine maintenance will vary depending upon the situation and the severity of the condition. A severe condition is defined as a condition where the system cannot be repaired by the Custodial Engineer and will then be reported to DOE EHS.

If an emergency occurs, such as a natural disaster or an unforeseen failure of the ECs, which results in a severe condition, an inspection of the Site will be conducted by

DOE EHS immediately following the event and reported to NYSDEC by noon the following day. If a severe condition is observed during a monthly inspection, DOE EHS will notify NYSDEC within 48 hours of the inspection.

#### **4.2.6 Gas Vapor Barrier Repair**

The gas vapor barrier, located below the concrete floor slabs and behind foundation walls, will not be accessible under normal conditions. The gas vapor barrier will be accessible if construction activities at the facility require cutting/excavation through the floor slab and or concrete foundation walls, or excavation at the exterior of the building adjacent to the foundation. In the event any work is planned as described above, repair of the gas vapor barrier shall be in accordance with the details included in Appendix I and must be performed by a installer licensed by the gas vapor barrier manufacturer and supervised by an independent Professional Engineer identified by DOE EHS.

### **4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING**

Performance monitoring is required to verify functionality and system effectiveness. The monitoring schedule, general equipment monitoring and the system monitoring devices and alarms are specified in the following subsections.

#### **4.3.1 Monitoring Schedule**

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the gas vapor barrier or SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the gas vapor barrier and SSDS are specified later in this Plan.

### **4.3.2 General Equipment Monitoring**

A visual inspection of the complete system will be conducted during the monitoring event. A complete list of components to be checked is provided in the Inspection Checklist, presented in Appendix H. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SSDS restarted.

### **4.3.3 System Monitoring Devices and Alarms**

The SSDS has a warning device to indicate that the system is not operating properly. In the event that the warning device is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the SSDS restarted. Operational problems will be noted in the subsequent PRR.

## **4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS**

Maintenance reports and any other information generated during regular operations at the Site will be kept on-file on-Site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the PRR, as specified in the Section 5 of this SMP.

### **4.4.1 Routine Maintenance Reports**

Checklists or forms (see Appendix H) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;

- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

#### **4.4.2 Non-Routine Maintenance Reports**

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

## **5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS**

### **5.1 SITE INSPECTIONS**

#### **5.1.1 Inspection Frequency**

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a Site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

#### **5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports**

All inspections and monitoring events will be recorded on the appropriate forms for their respective system which are contained in Appendices H. Additionally, a general Site Management Periodic Review Report Certification Form will be completed during the Site-wide inspection. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format in the PRR.

#### **5.1.3 Evaluation of Records and Reporting**

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,

- The Site remedy continues to be protective of public health and the environment and is performing as designed in the IRM Work Plan and FER.

## 5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare the following certification:

*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

- *The annual inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the Site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*

- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

*I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner’s Designated Site Representative] for the Site.*

The signed certification will be included in the PRR described below.

*For each institutional control identified for the Site, I certify that all of the following statements are true:*

- *The institutional control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the Site is compliant with the environmental easement.*
- *The information presented in this report is accurate and complete.*
- *I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of*

*[business address], am certifying as [Owner or Owner's Designated Site Representative] for the Site; and,*

- *No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-Site contamination are no longer valid.*

*Every 5 years the following certification will be added:*

- *The assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the PRR described below.

### **5.3 PERIODIC REVIEW REPORT**

A PRR will be submitted to the Department every year, beginning 15 months after the Release and Covenant Not to Sue is issued. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in Appendix A (Environmental Easement with Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;
- Results of the required annual Site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the Site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater), which include a listing of all compounds

analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;

- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific IRM Work Plan, ROD or Decision Document;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
  - The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems; and
  - Comments, conclusions, and recommendations based on data evaluation.

The PRR will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the Site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

#### **5.4 CORRECTIVE MEASURES PLAN**

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

# **TABLES**

Table 1  
Former Tiffany's Studio Site (Proposed Public School 315Q)  
96-18 43rd Avenue, Queens, New York  
Summary of Results of Analysis of Post-Excavation Soil Samples for TCLP Lead

SAMPLE LOCATION ID		E2 HOT SPOT - BOTTOM	E2 HOT SPOT - SOUTHWEST SIDEWALL	E2 HOT SPOT - NORTHWEST SIDEWALL	E2 HOT SPOT - NORTHEAST SIDEWALL	E2 HOT SPOT - SOUTHEAST SIDEWALL
SAMPLE NAME		WALL 2 PS315 EP Bottom 43012	WALL 2 PS315 EP 43013	WALL 1 PS315 EP 43013	WALL 5 PS315 EP 43013	WALL 3 PS315 EP 43013
LAB SAMPLE ID		1305003-1	1305003-2	1305003-3	1305003-4	1305003-5
DATE SAMPLE COLLECTED		4/30/2013	4/30/2013	4/30/2013	4/30/2013	4/30/2013
MATRIX		Soil	Soil	Soil	Soil	Soil
Analyte	EPA Hazardous Waste Limits (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)
Lead	5	ND	ND	ND	ND	ND
SAMPLE LOCATION ID		F2 HOT SPOT - WEST SIDEWALL	F2 HOT SPOT - WEST SIDEWALL	F2 HOT SPOT - SOUTH SIDEWALL	F2 HOT SPOT - BOTTOM (NORTH)	F2 HOT SPOT - BOTTOM (CENTER)
SAMPLE NAME		F2 15-20 PS315 WALL 1	F2 15-20 PS315 WALL 1	F2 15-20 PS315 WALL 2	F2 15-20 PS315 BOTTOM	F2 15-20 PS315 BOTTOM
LAB SAMPLE ID		1307136-1	1307136-2	1307136-3	1307136-4	1307136-5
DATE SAMPLE COLLECTED		7/11/2013	7/11/2013	7/11/2013	7/11/2013	7/11/2013
MATRIX		Soil	Soil	Soil	Soil	Soil
Analyte	EPA Hazardous Waste Limits (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)
Lead	5	0.042	0.024	0.046	0.045	0.024
SAMPLE LOCATION ID		F2 HOT SPOT - BOTTOM (SOUTH)	HOT SPOT C2 - NORTHWEST SIDEWALL	HOT SPOT C2 - NORTHWEST SIDEWALL	HOT SPOT C2 - SOUTHWEST SIDEWALL	HOT SPOT C2 - SOUTHWEST SIDEWALL
SAMPLE NAME		F2 15-20 PS315 BOTTOM	PS315 ES WALL 1 C2 (0-20)	PS315 ES WALL 1 C2 (0-20)	PS315 ES WALL 2 C2 (0-20)	PS315 ES WALL 2 C2 (0-20)
LAB SAMPLE ID		1307136-6	1305018-1	1305018-2	1305018-3	1305018-4
DATE SAMPLE COLLECTED		7/11/2013	5/1/2013	5/1/2013	5/1/2013	5/1/2013
MATRIX		Soil	Soil	Soil	Soil	Soil
Analyte	EPA Hazardous Waste Limits (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)
Lead	5	0.037	0.046	0.075	0.064	0.044
SAMPLE LOCATION ID		HOT SPOT C2 - SOUTHEAST SIDEWALL	HOT SPOT C2 - SOUTHEAST SIDEWALL	HOT SPOT C2 - NORTHEAST SIDEWALL	HOT SPOT C2 - NORTHEAST SIDEWALL	HOT SPOT C2 - BOTTOM
SAMPLE NAME		PS315 ES WALL 3 C2 (0-20)	PS315 ES WALL 3 C2 (0-20)	PS315 ES WALL 4 C2 (0-20)	PS315 ES WALL 4 C2 (0-20)	PS315 ES BOTTOM C2 (0-20)
LAB SAMPLE ID		1305018-5	1305018-6	1305018-7	1305018-8	1305018-9
DATE SAMPLE COLLECTED		5/1/2013	5/1/2013	5/1/2013	5/1/2013	5/1/2013
MATRIX		Soil	Soil	Soil	Soil	Soil
Analyte	EPA Hazardous Waste Limits (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)	Result (mg/L)
Lead	5	0.051	0.110	0.049	ND	ND

Notes:  
mg/L - Milligrams per liter  
ND - Non Detect

Table 2  
 Former Tiffany's Studio Site (Proposed Public School 315Q)  
 96-18 43rd Avenue, Queens, New York  
 Summary of Results of Analysis of Post-Excavation Soil Samples for Volatile Organic Compounds

SAMPLE NAME		Northside VOC		Southside VOC		East Side VOC		West Wall VOC		Bottom VOC		
LAB SAMPLE ID		1304148-4		1304148-7		1304148-10		1304148-13		1304148-16		
DATE SAMPLE COLLECTED		4/11/2013		4/11/2013		4/11/2013		4/11/2013		4/11/2013		
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO (mg/kg)	CP-51 SCL (mg/kg)	Result (mg/kg)									
Acetone	0.05	-	0.00770	U	0.00736	U	0.00857	U	0.00817	U	0.00770	U
Carbon Tetrachloride	0.76	-	0.00206	U	0.00197	U	0.00230	U	0.00219	U	0.00206	U
Chloroform	0.37	-	0.00230	U	0.00220	U	0.00257	U	0.00244	U	0.00230	U
Benzene	0.06	0.06	0.00213	U	0.00204	U	0.00237	U	0.00226	U	0.00213	U
1,1,1-Trichloroethane	0.68	-	0.00207	U	0.00198	U	0.00231	U	0.00220	U	0.00207	U
Bromomethane	-	-	0.00229	U	0.00219	U	0.00255	U	0.00243	U	0.00229	U
Chloromethane	-	-	0.00170	U	0.00162	U	0.00189	U	0.00180	U	0.00170	U
Dibromomethane	-	-	0.00182	U	0.00174	U	0.00203	U	0.00194	U	0.00182	U
Bromochloromethane	-	-	0.00226	U	0.00216	U	0.00251	U	0.00240	U	0.00226	U
Chloroethane	-	-	0.00228	U	0.00218	U	0.00254	U	0.00242	U	0.00228	U
Vinyl Chloride	0.02	-	0.00251	U	0.00240	U	0.00279	U	0.00266	U	0.00251	U
Methylene Chloride	0.05	-	0.01450	B	0.01150	B	0.00229	U	0.00227	U	0.00214	U
Carbon disulfide	-	-	0.00149	U	0.00143	U	0.00166	U	0.00159	U	0.00149	U
Bromoform	-	-	0.00104	U	0.00099	U	0.00116	U	0.00110	U	0.00104	U
Bromodichloromethane	-	-	0.00141	U	0.00135	U	0.00157	U	0.00150	U	0.00141	U
1,1-Dichloroethane	0.27	-	0.00182	U	0.00174	U	0.00203	U	0.00194	U	0.00182	U
1,1-Dichloroethene	0.33	-	0.00215	U	0.00206	U	0.00240	U	0.00229	U	0.00215	U
Tertiary butyl alcohol	-	-	0.01720	U	0.01650	U	0.01920	U	0.01830	U	0.01720	U
Trichlorofluoromethane	-	-	0.00218	U	0.00208	U	0.00243	U	0.00231	U	0.00218	U
Dichlorodifluoromethane	-	-	0.00119	U	0.00113	U	0.00132	U	0.00126	U	0.00119	U
1,1,1,2-Trichlorotrifluoroethane	-	-	0.00196	U	0.00187	U	0.00218	U	0.00208	U	0.00196	U
1,2-Dichloropropane	-	-	0.00230	U	0.00220	U	0.00257	U	0.00244	U	0.00230	U
Methyl Ethyl Ketone (2-Butanone)	0.12	-	0.00414	U	0.00396	U	0.00461	U	0.00439	U	0.00414	U
1,1,2-Trichloroethane	0.47	-	0.00218	U	0.00208	U	0.00243	U	0.00231	U	0.00218	U
Trichloroethene	-	-	0.00198	U	0.00190	U	0.00221	U	0.00211	U	0.00198	U
1,1,2,2-Tetrachloroethane	-	-	0.00227	U	0.00217	U	0.00253	U	0.00241	U	0.00227	U
1,2,3-Trichlorobenzene	-	-	0.00201	U	0.00192	U	0.00224	U	0.00213	U	0.00201	U
Hexachlorobutadiene	-	-	0.00205	U	0.00196	U	0.00229	U	0.00218	U	0.00205	U
Naphthalene	-	12	0.00158	U	0.00152	U	0.00177	U	0.00168	U	0.00158	U
o-xylene	0.26 [1]	0.26 [1]	0.00250	U	0.00239	U	0.00278	U	0.00265	U	0.00250	U
2-Chlorotoluene	-	-	0.00263	U	0.00252	U	0.00283	U	0.00280	U	0.00263	U
1,2-Dichlorobenzene	1.1	-	0.00237	U	0.00227	U	0.00264	U	0.00252	U	0.00237	U
1,2,4-Trimethylbenzene	3.6	3.6	0.00249	U	0.00238	U	0.00277	U	0.00264	U	0.00249	U
1,2,4,5-Tetramethylbenzene	-	-	0.00180	U	0.00172	U	0.00201	U	0.00191	U	0.00180	U
1,2-Dibromo-3-chloropropane	-	-	0.00115	U	0.00110	U	0.00128	U	0.00122	U	0.00115	U
1,2,3-Trichloropropane	-	-	0.00205	U	0.00196	U	0.00229	U	0.00218	U	0.00205	U
tert-Butylbenzene	5.9	5.9	0.00237	U	0.00227	U	0.00264	U	0.00252	U	0.00237	U
Isopropylbenzene	-	2.3	0.00242	U	0.00231	U	0.00269	U	0.00257	U	0.00242	U
4-Isopropyltoluene	-	10	0.00245	U	0.00234	U	0.00273	U	0.00260	U	0.00245	U
Ethylbenzene	1	1	0.00202	U	0.00193	U	0.00225	U	0.00214	U	0.00202	U
Styrene	-	-	0.00206	U	0.00197	U	0.00230	U	0.00219	U	0.00206	U
n-Propylbenzene	3.9	3.9	0.00222	U	0.00213	U	0.00248	U	0.00236	U	0.00222	U
n-Butylbenzene	12	12	0.00245	U	0.00234	U	0.00273	U	0.00260	U	0.00245	U
p-Diethylbenzene	-	-	0.00226	U	0.00216	U	0.00251	U	0.00240	U	0.00226	U
4-Chlorotoluene	-	-	0.00236	U	0.00226	U	0.00263	U	0.00250	U	0.00236	U
1,4-Dichlorobenzene	1.8	-	0.00242	U	0.00231	U	0.00269	U	0.00257	U	0.00242	U
1,2-Dibromoethane	-	-	0.00213	U	0.00204	U	0.00237	U	0.00226	U	0.00213	U
1,2-Dichloroethane	0.02	-	0.00229	U	0.00219	U	0.00255	U	0.00243	U	0.00229	U
Acrylonitrile	-	-	0.00443	U	0.00424	U	0.00494	U	0.00471	U	0.00443	U
4-Methyl-2-pentanone	-	-	0.00554	U	0.00530	U	0.00617	U	0.00588	U	0.00554	U
m,p-xylene	0.26 [1]	0.26 [1]	0.00477	U	0.00456	U	0.00531	U	0.00506	U	0.00477	U
1,3,5-Trimethylbenzene	8.4	8.4	0.00246	U	0.00235	U	0.00274	U	0.00261	U	0.00246	U
Bromobenzene	-	-	0.00247	U	0.00237	U	0.00276	U	0.00263	U	0.00247	U
Toluene	0.7	0.7	0.00217	U	0.00207	U	0.00241	U	0.00230	U	0.00217	U
Chlorobenzene	1.1	-	0.00244	U	0.00233	U	0.00272	U	0.00259	U	0.00244	U
Chloroethylvinylether	-	-	0.00328	U	0.00314	U	0.00366	U	0.00348	U	0.00328	U
1,2,4-Trichlorobenzene	-	-	0.00212	U	0.00203	U	0.00236	U	0.00225	U	0.00212	U
Dibromochloromethane	-	-	0.00136	U	0.00130	U	0.00151	U	0.00144	U	0.00136	U
Tetrachloroethene	1.3	-	0.00571	U	0.00533	U	0.00418	J	0.00259	U	0.00244	U
sec-Butylbenzene	11	11	0.00249	U	0.00238	U	0.00277	U	0.00264	U	0.00249	U
1,3-Dichloropropane	-	-	0.00250	U	0.00239	U	0.00278	U	0.00265	U	0.00250	U
c-1,2-Dichloroethene	0.25	-	0.00211	U	0.00202	U	0.00235	U	0.00224	U	0.00211	U
t-1,2-Dichloroethene	0.19	-	0.00207	U	0.00198	U	0.00231	U	0.00220	U	0.00207	U
1,3-Dichlorobenzene	2.4	-	0.00231	U	0.00221	U	0.00258	U	0.00246	U	0.00231	U
1,1-Dichloropropene	-	-	0.00200	U	0.00191	U	0.00222	U	0.00212	U	0.00200	U
2,2-Dichloropropane	-	-	0.00197	U	0.00189	U	0.00220	U	0.00209	U	0.00197	U
2-Hexanone	-	-	0.00366	U	0.00350	U	0.00408	U	0.00388	U	0.00366	U
p-Ethyltoluene	-	-	0.00244	U	0.00233	U	0.00272	U	0.00259	U	0.00244	U
1,1,1,2-Tetrachloroethane	-	-	0.00212	U	0.00203	U	0.00236	U	0.00225	U	0.00212	U
TAME	-	-	0.00201	U	0.00192	U	0.00224	U	0.00213	U	0.00201	U
Methyl t-butyl ether	0.93	-	0.00196	U	0.00187	U	0.00218	U	0.00208	U	0.00196	U
c-1,3-Dichloropropene	-	-	0.00221	U	0.00211	U	0.00246	U	0.00235	U	0.00221	U
t-1,3-Dichloropropene	-	-	0.00165	U	0.00158	U	0.00184	U	0.00175	U	0.00165	U

**Notes:**  
 mg/kg - milligrams per kilogram  
 - No criterion  
 U - Not detected  
 B - This analyte is also found in the associated method blank sample  
 J - Estimated Value  
 SCO - Soil Cleanup Objective  
 SCL - Soil Cleanup Level  
 [1] - There is no SCO for m/p xylene or o-xylene. The SCO for total xylenes is 0.26 mg/kg.

Table 3  
 Former Tiffany's Studio Site (Proposed Public School 315Q)  
 96-18 43rd Avenue, Queens, New York  
 Summary of Results of Analysis of Post-Excavation Soil Samples for Semivolatile Organic Compounds

SAMPLE NAME			Northside Composite		Southside Composite		East Side Composite		West Wall Composite		Bottom Composite	
LAB SAMPLE ID			1304148-6		1304148-9		1304148-12		1304148-15		1304148-18	
DATE SAMPLE COLLECTED			4/11/2013		4/11/2013		4/11/2013		4/11/2013		4/11/2013	
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO (mg/kg)	CP-51 SCL (mg/kg)	Result (mg/kg)		Result (mg/kg)		Result (mg/kg)		Result (mg/kg)		Result (mg/kg)	
1,2,4-Trichlorobenzene	-	-	0.0418	U	0.0414	U	0.0442	U	0.0433	U	0.0437	U
1,2-Dichlorobenzene	1.1	-	0.0339	U	0.0335	U	0.0358	U	0.0321	U	0.0354	U
1,2-Diphenylhydrazine	-	-	0.0383	U	0.0379	U	0.0405	U	0.0397	U	0.0400	U
1,3-Dichlorobenzene	2.4	-	0.0342	U	0.0338	U	0.0361	U	0.0354	U	0.0357	U
1,4-Dichlorobenzene	1.8	-	0.0304	U	0.0301	U	0.0321	U	0.0315	U	0.0317	U
2,3,4,6-Tetrachlorophenol	-	-	0.0384	U	0.0380	U	0.0406	U	0.0398	U	0.0402	U
2,4,5-Trichlorophenol	-	-	0.0160	U	0.0158	U	0.0169	U	0.0166	U	0.0167	U
2,4,6-Trichlorophenol	-	-	0.0316	U	0.0313	U	0.0334	U	0.0328	U	0.0331	U
2,4-Dichlorophenol	-	-	0.0320	U	0.0316	U	0.0338	U	0.0331	U	0.0334	U
2,4-Dimethylphenol	-	-	0.0343	U	0.0339	U	0.0362	U	0.0355	U	0.0358	U
2,4-Dinitrophenol	-	-	1.0600	U	1.0500	U	1.1200	U	1.1000	U	1.1100	U
2,4-Dinitrotoluene	-	-	0.0345	U	0.0341	U	0.0365	U	0.0357	U	0.0361	U
2,6-Dinitrotoluene	-	-	0.0309	U	0.0306	U	0.0327	U	0.0320	U	0.0323	U
2-Chloronaphthalene	-	-	0.0313	U	0.0310	U	0.0331	U	0.0325	U	0.0327	U
2-Chlorophenol	-	-	0.0402	U	0.0398	U	0.0425	U	0.0417	U	0.0420	U
2-Methylnaphthalene	-	-	0.0330	U	0.0327	U	0.0349	U	0.0342	U	0.0345	U
2-Methylphenol	0.33	-	0.0306	U	0.0303	U	0.0323	U	0.0317	U	0.0320	U
2-Nitroaniline	-	-	0.0139	U	0.0137	U	0.0147	U	0.0144	U	0.0145	U
2-Nitrophenol	-	-	0.0140	U	0.0138	U	0.0148	U	0.0145	U	0.0146	U
3- & 4-Methylphenols	-	-	0.0348	U	0.0345	U	0.0368	U	0.0361	U	0.0364	U
3,3'-Dichlorobenzidine	-	-	0.0671	U	0.0664	U	0.0709	U	0.0695	U	0.0701	U
3-Nitroaniline	-	-	0.0514	U	0.0509	U	0.0544	U	0.0533	U	0.0538	U
4,6-Dinitro-2-methylphenol	-	-	0.0842	U	0.0834	U	0.0890	U	0.0873	U	0.0881	U
4-Bromophenyl phenyl ether	-	-	0.0304	U	0.0301	U	0.0321	U	0.0315	U	0.0317	U
4-Chloro-3-methylphenol	-	-	0.0305	U	0.0302	U	0.0322	U	0.0316	U	0.0319	U
4-Chloroaniline	-	-	0.0457	U	0.0452	U	0.0483	U	0.0474	U	0.0478	U
4-Chlorophenyl phenyl ether	-	-	0.0225	U	0.0223	U	0.0238	U	0.0234	U	0.0236	U
4-Nitroaniline	-	-	0.0405	U	0.0401	U	0.0428	U	0.0420	U	0.0424	U
4-Nitrophenol	-	-	0.0402	U	0.0398	U	0.0425	U	0.0417	U	0.0420	U
Acenaphthene	20	20	0.0272	U	0.0269	U	0.0287	U	0.0282	U	0.0284	U
Acenaphthylene	100	100	0.0309	U	0.0306	U	0.0327	U	0.0320	U	0.0323	U
Aniline	-	-	0.0341	U	0.0337	U	0.0360	U	0.0353	U	0.0356	U
Anthracene	100	100	0.0377	U	0.0373	U	0.0398	U	0.0390	U	0.0394	U
Benidine	-	-	0.8970	U	0.8880	U	0.9490	U	0.9300	U	0.9380	U
Benzo(a)anthracene	1	1	0.0502	U	0.0496	U	2.4800	U	0.0520	U	0.0524	U
Benzo(a)pyrene	1	1	0.0478	U	0.0473	U	1.7000	U	0.0496	U	0.1980	J
Benzo(b)fluoranthene	1	1	0.0462	U	0.0458	U	1.7300	U	0.0479	U	0.2060	J
Benzo(g,h,i)perylene	100	100	0.0340	U	0.0336	U	0.9270	U	0.0352	U	0.1020	J
Benzo(k)fluoranthene	0.8	0.8	0.0713	U	0.0706	U	1.5300	U	0.0739	U	0.0746	U
Benzoic acid	-	-	12.2000	U	12.0000	U	12.9000	U	12.6000	U	12.7000	U
Benzyl alcohol	-	-	0.0286	U	0.0283	U	0.0302	U	0.0296	U	0.0299	U
Benzyl butyl phthalate	-	-	0.0544	U	0.0538	U	0.0575	U	0.0564	U	0.0569	U
Carbazole	-	-	0.0610	U	0.0603	U	0.0644	U	0.0632	U	0.0637	U
Chrysene	1	1	0.0472	U	0.0467	U	2.9300	U	0.0489	U	0.0493	U
Cresols	0.33	-	0.0654	U	0.0648	U	0.0691	U	0.0678	U	0.0684	U
Di-n-butyl phthalate	-	-	0.0467	U	0.0462	U	0.0493	U	0.0484	U	0.0488	U
Di-n-octyl phthalate	-	-	0.0416	U	0.0412	U	0.0440	U	0.0431	U	0.0435	U
Dibenzo(a,h)anthracene	0.33	0.33	0.0389	U	0.0385	U	0.3060	J	0.0404	U	0.0407	U
Dibenzofuran	7	-	0.0271	U	0.0268	U	0.0286	U	0.0281	U	0.0283	U
Diethyl phthalate	-	-	0.0449	U	0.0444	U	0.0474	U	0.0465	U	0.0469	U
Dimethyl phthalate	-	-	0.0362	U	0.0358	U	0.0383	U	0.0375	U	0.0378	U
Fluoranthene	100	100	0.0478	U	0.0473	U	3.7300	U	0.0496	U	0.3520	J
Fluorene	30	-	0.0311	U	0.0308	U	0.0329	U	0.0322	U	0.0325	U
Hexachlorobenzene	0.33	-	0.0372	U	0.0369	U	0.0394	U	0.0386	U	0.0389	U
Hexachlorobutadiene	-	-	0.0366	U	0.0362	U	0.0387	U	0.0379	U	0.0383	U
Hexachlorocyclopentadiene	-	-	0.0111	U	0.0110	U	0.0117	U	0.0115	U	0.0116	U
Hexachloroethane	-	-	0.0380	U	0.0376	U	0.0402	U	0.0394	U	0.0397	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.0375	U	0.0371	U	0.8450	U	0.0388	U	0.0907	J
Isophorone	-	-	0.0306	U	0.0303	U	0.0323	U	0.0317	U	0.0320	U
N-nitroso-di-n-propylamine	-	-	0.0423	U	0.0419	U	0.0447	U	0.0439	U	0.0442	U
N-Nitrosodimethylamine	-	-	0.0760	U	0.0752	U	0.0803	U	0.0787	U	0.0794	U
N-Nitrosodiphenylamine	-	-	0.0460	U	0.0455	U	0.0487	U	0.0477	U	0.0481	U
Naphthalene	12	12	0.0449	U	0.0444	U	0.0474	U	0.0465	U	0.0469	U
Nitrobenzene	-	-	0.0287	U	0.0284	U	0.0303	U	0.0297	U	0.0300	U
Pentachlorophenol	0.8	-	0.2900	U	0.2870	U	0.3060	U	0.3000	U	0.3030	U
Phenanthrene	100	100	0.0441	U	0.0437	U	4.7900	U	0.0457	U	0.0461	U
Phenol	0.33	-	0.0388	U	0.0384	U	0.0411	U	0.0402	U	0.0406	U
Pyrene	100	100	0.0440	U	0.0436	U	6.1900	U	0.0456	U	0.0460	U
Pyridine	-	-	0.0363	U	0.0359	U	0.0384	U	0.0376	U	0.0379	U
Bis(2-chloroethoxy)methane	-	-	0.0382	U	0.0378	U	0.0404	U	0.0396	U	0.0399	U
Bis(2-chloroethyl)ether	-	-	0.0329	U	0.0326	U	0.0348	U	0.0341	U	0.0344	U
Bis(2-chloroisopropyl)ether	-	-	0.0401	U	0.0397	U	0.0424	U	0.0416	U	0.0419	U
Bis(2-ethylhexyl)phthalate	-	-	0.0576	U	0.0570	U	0.0609	U	0.0596	U	0.0602	U

Notes:  
 mg/kg - milligrams per kilogram  
 - No criterion  
 U - Not detected  
 J - Estimated Value  
 SCO - Soil Cleanup Objective  
 SCL - Soil Cleanup Level

Table 8  
Former Tiffany's Studio Site (Proposed Public School 315Q)  
96-18 43rd Avenue, Queens, New York  
Criteria for Imported Soil

CLASSIFICATION	IMPORT CRITERIA (See Notes)
<b>SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) (mg/kg)</b>	
2,4,5-Trichlorophenol	0.1
2,4-Dichlorophenol	0.40
2,4-Dinitrophenol	0.2
2,6-Dinitrotoluene	1.0
2-Chlorophenol	100
2-Methylnaphthalene	0.41
2-Nitroaniline	0.4
2-Nitrophenol	0.3
3-Nitroaniline	0.5
4-Chloroaniline	0.22
4-Methyl-2-pentanone	1.0
4-Nitrophenol	0.1
Acenaphthene	20
Acenaphthylene	100
Aniline	0.33
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
Benzoic Acid	2.7
Bis(2-ethylhexyl)phthalate	50
Butylbenzyl-phthalate	100
Chloroethane	1.9
Chrysene	1
Dibenz(a,h)anthracene	0.33
Diethylphthalate	7.1
Dimethylphthalate	27
Di-n-butylphthalate	8.1
Di-n-octylphthalate	100
Fluoranthene	100
Fluorene	30
Hexachlorobenzene	0.41
Indeno(1,2,3-cd)pyrene	0.5
Isophorone	4.4
m-Cresol (3-Methylphenol)	0.33
Naphthalene	12
Nitrobenzene	0.17
o-Cresol (2-Methylphenol)	0.33
p-Cresol (4-Methylphenol)	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

**Notes:**

mg/kg - Milligrams per kilogram  
Imported material for the composite cover or backfill will meet the requirements of 6 NYCRR Part 375-6 Unrestricted Use SCOs. Additionally, the NYCSCA's specifications require that backfill for use below cover material will meet the following requirements:

- No detectable concentrations of VOCs;
- No other organic compounds or inorganic analytes at concentrations above the DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 5, "Allowable Constituent Levels for Imported Fill or Soil" Restricted Residential Use; and
- No other organic compounds or inorganic analytes at concentrations above the lower of the NYSDEC CP-51: Soil Cleanup Guidance Residential Use and Protection of Groundwater Supplemental Soil Cleanup Objectives.

Table 8  
Former Tiffany's Studio Site (Proposed Public School 315Q)  
96-18 43rd Avenue, Queens, New York  
Criteria for Imported Soil

CLASSIFICATION	IMPORT CRITERIA (See Notes)
<b>VOLATILE ORGANIC COMPOUNDS (VOCs) (mg/kg)</b>	
1,1,1-Trichloroethane	0.68
1,1,2,2-Tetrachloroethane	0.6
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2,3-Trichloropropane	0.34
1,2,4-Trichlorobenzene	3.4
1,2,4-Trimethylbenzene	3.6
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,3,5-Trimethylbenzene	8.4
1,3-Dichlorobenzene	2.4
1,3-Dichloropropane	0.3
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
2,6-Dinitrotoluene	0.17
4-Methyl-2-Pentanone	1.0
Acetone	0.05
Benzene	0.06
Carbon Disulfide	2.7
Carbon Tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
cis-1,2-Dichloroethene	0.25
Ethylbenzene	1
Freon 113 (1,1,2-TFE)	6
Hexachlorobenzene	0.33
Isopropylbenzene	2.3
Methyl ethyl ketone (2-Butanone)	0.12
Methyl tert-butyl ether (MTBE)	0.93
Methylene chloride	0.05
n-Butylbenzene	12
n-Propylbenzene	3.9
p-Isopropyltoluene	10
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
trans-1,2-Dichloroethene	0.19
Trichloroethene	0.47
Vinyl Chloride	0.02
Xylene (mixed)	0.26

**Notes:**

mg/kg - Milligrams per kilogram

Imported material for the composite cover or backfill will meet the requirements of 6 NYCRR Part 375-6 Unrestricted Use SCOs. Additionally, the NYCSCA's specifications require that backfill for use below cover material will meet the following requirements:

- No detectable concentrations of VOCs;
- No other organic compounds or inorganic analytes at concentrations above the DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 5, "Allowable Constituent Levels for Imported Fill or Soil" Restricted Residential Use; and
- No other organic compounds or inorganic analytes at concentrations above the lower of the NYSDEC CP-51: Soil Cleanup Guidance Residential Use and Protection of Groundwater Supplemental Soil Cleanup Objectives.

Table 8  
Former Tiffany's Studio Site (Proposed Public School 315Q)  
96-18 43rd Avenue, Queens, New York  
Criteria for Imported Soil

CLASSIFICATION	IMPORT CRITERIA (See Notes)
<b>Polychlorinated Biphenyls (PCBs)/PESTICIDES (mg/kg)</b>	
2,4,5-T	1.9
2,4,5-TP Acid (SILVEX)	3.8
2,4-D (2,4-Dichloro-phenoxyacetic acid)	0.5
4,4'-DDD	0.0033
4,4'-DDE	0.0033
4,4'-DDT	0.0033
Aldrin	0.005
alpha-BHC	0.02
alpha-Chlordane	0.094
beta-BHC	0.036
delta-BHC	0.04
Dibenzofuran	6.2
Dieldrin	0.005
Endosulfan I <sup>1</sup>	2.4
Endosulfan II <sup>1</sup>	2.4
Endosulfan sulfate <sup>1</sup>	2.4
Endrin	0.014
gamma-BHC (Lindane)	0.1
gamma-Chlordane	0.54
Heptachlor	0.042
Heptachlor epoxide	0.02
Methoxychlor	100
Parathion	1.2
Polychlorinated Biphenyls (PCBs)	0.1
<b>METALS AND CYANIDE (mg/kg)</b>	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, hexavalent	1
Chromium, trivalent	30
Cobalt	30
Copper	50
Cyanide (total)	27
Iron	2,000
Lead	63
Manganese	1,600
Mercury (total)	0.18
Nickel	30
Selenium	3.9
Silver	2
Vanadium	100
Zinc	109

**Notes:**

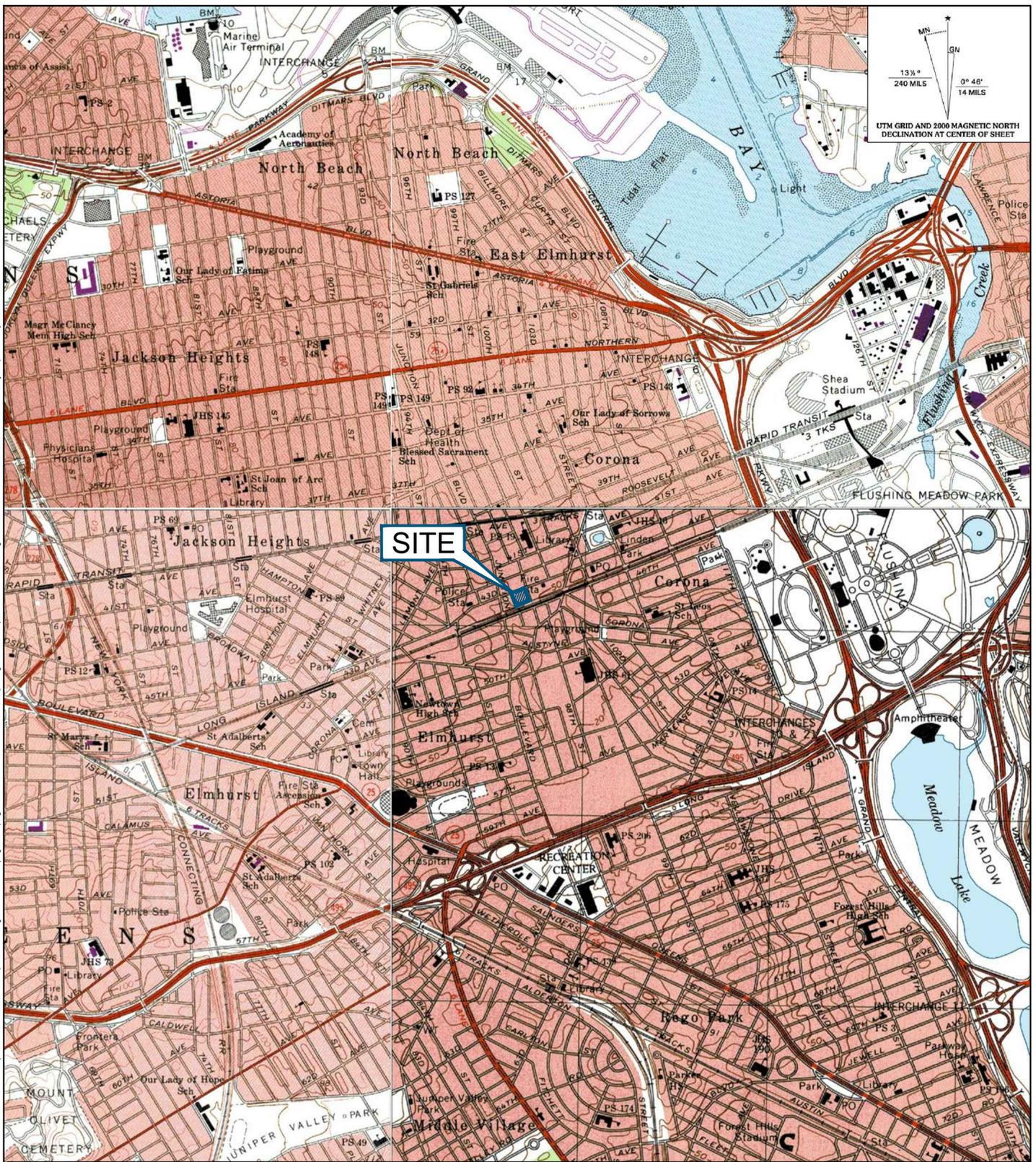
mg/kg - Milligrams per kilogram

Imported material for the composite material for the cover or backfill will meet the requirements of 6 NYCRR Part 375-6 Unrestricted Use SCOs. Additionally, the NYCSCA's specifications require that backfill for use below cover material will meet the following requirements:

- No detectable concentrations of VOCs;
- No other organic compounds or inorganic analytes at concentrations above the DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 5, "Allowable Constituent Levels for Imported Fill or Soil" Restricted Residential Use; and
- No other organic compounds or inorganic analytes at concentrations above the lower of the NYSDEC CP-51: Soil Cleanup Guidance Residential Use and Protection of Groundwater Supplemental Soil Cleanup Objectives.

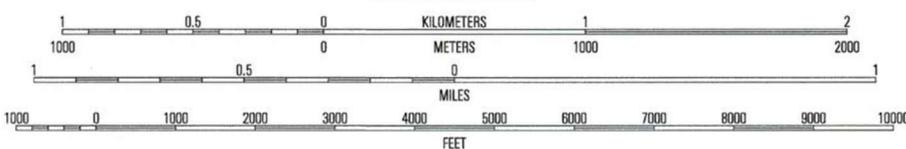
# FIGURES

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UTM GRID AND 2006 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET  
 13 1/2° 240 MILS  
 0° 46' 14 MILS

SCALE 1:24 000



JAMAICA, NY  
 1994  
 NIMA 6265 III NE-SERIES V821

MAP OBTAINED THROUGH USE OF MAPTECH TERRAIN NAVIGATOR PRO SOFTWARE.



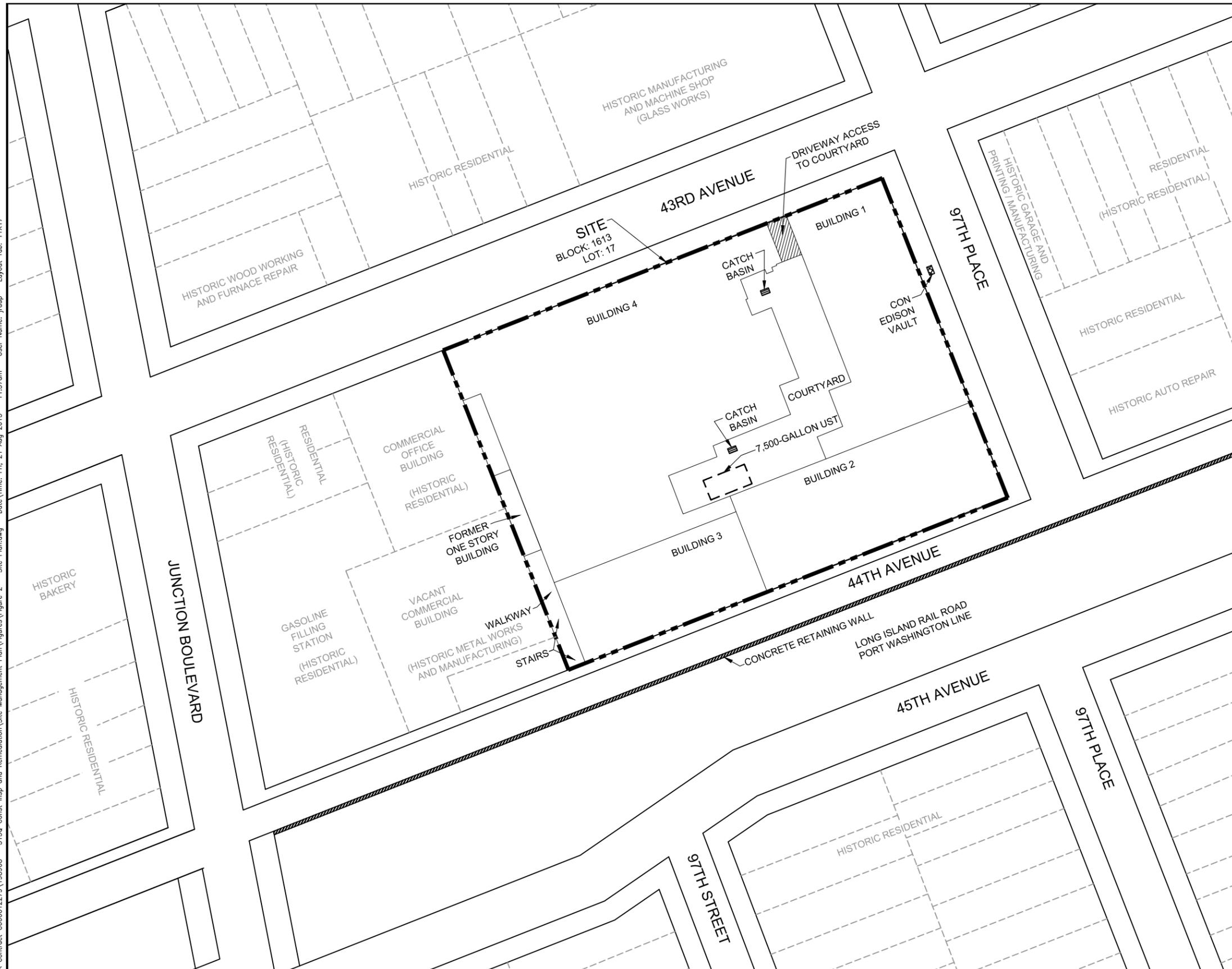
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 CHECKED BY: RW  
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 SCALE: AS SHOWN  
 PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY  
 SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
 PROPOSED PS 315Q - 96-18 43RD AVENUE  
 QUEENS, NEW YORK 11368**

DRAWING TITLE:  
**SITE LOCATION MAP**

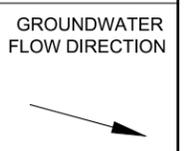
FIGURE  
**1**

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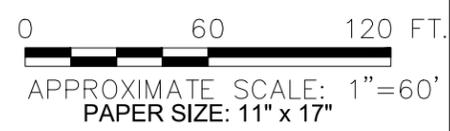


- LEGEND:**
- SITE BOUNDARY
  - BUILDING FOOTPRINT
  - LOT BOUNDARY

**NOTE:**  
 BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).



NO.	DESCRIPTION	BY	DATE



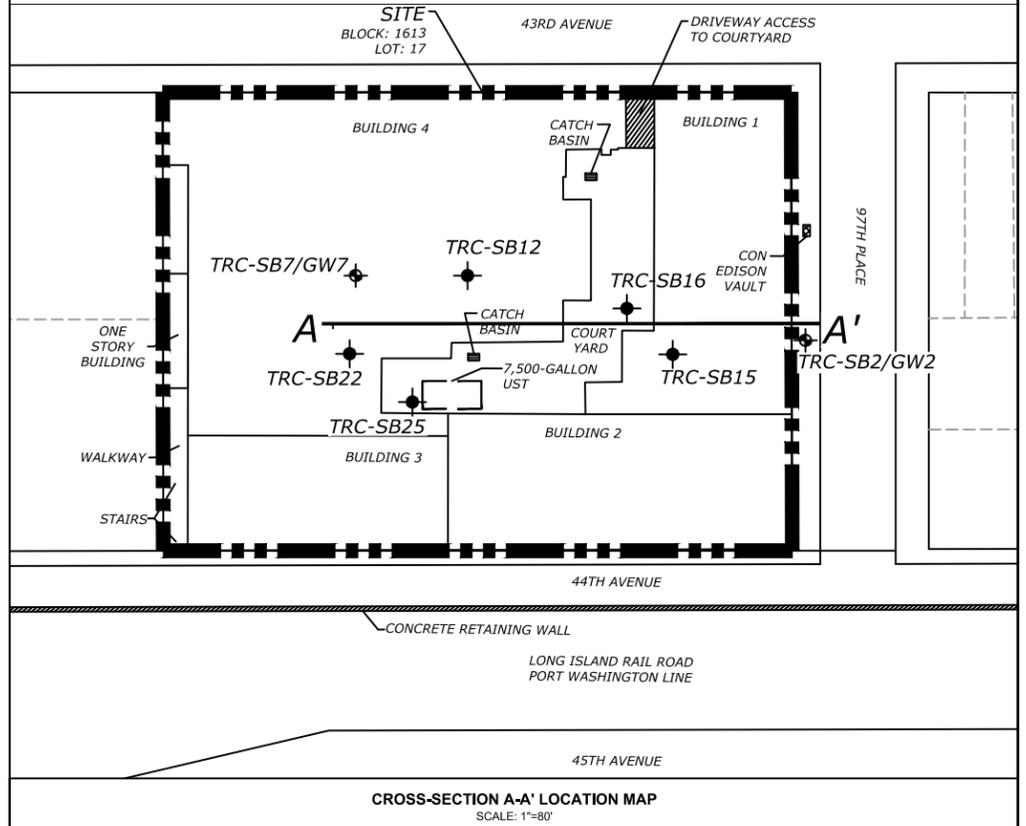
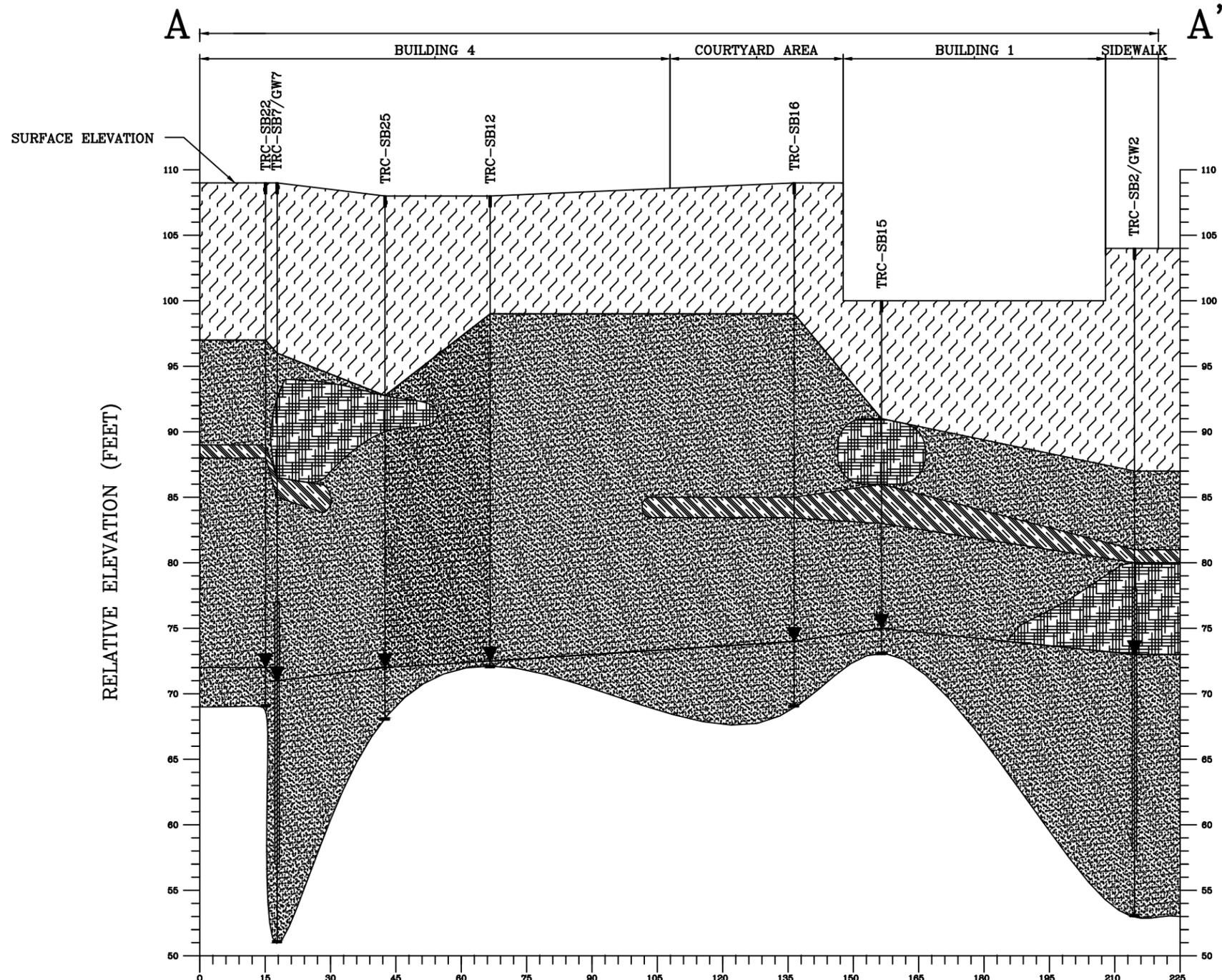
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 NEW YORK, NEW YORK 10018  
 212-221-7822

DESIGNED BY: LM
DRAWN BY: HD
CHECKED BY: RW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: <b>NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY</b> SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17 PROPOSED PS 315Q - 96-18 43RD AVENUE QUEENS, NEW YORK 11368
DRAWING TITLE: SITE PLAN

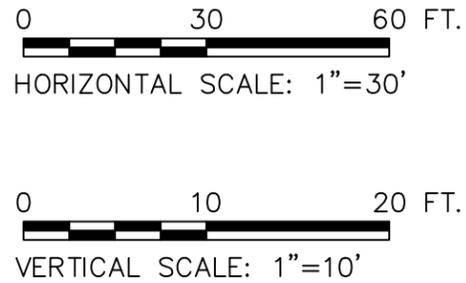
**FIGURE 2**

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**LEGEND:**

	FILL		WELL SCREEN
	SAND		WATER TABLE
	SILTY SAND		
	CLAYEY SILT		
	END OF BORING (BOTTOM)		



- NOTES:**
1. LOCATIONS AND GROUND SURFACE ELEVATIONS OF TRC POINTS OF INVESTIGATION SURVEYED BY PERFECT POINT LAND SURVEYING ON APRIL 2, 2012. AN ARBITRARY DATUM (GROUND SURFACE NEAR THE SOUTHEAST CORNER OF THE SITE BUILDING) OF 100 FEET WAS USED TO GENERATE THE CROSS-SECTION.
  2. GEOLOGIC DESCRIPTIONS AND DEPTH AND EXTENT OF LAYERS REPRESENT INTERPRETATION AND EXTRAPOLATION OF FIELD DATA AND ARE APPROXIMATE.

NO.	DESCRIPTION	BY	DATE

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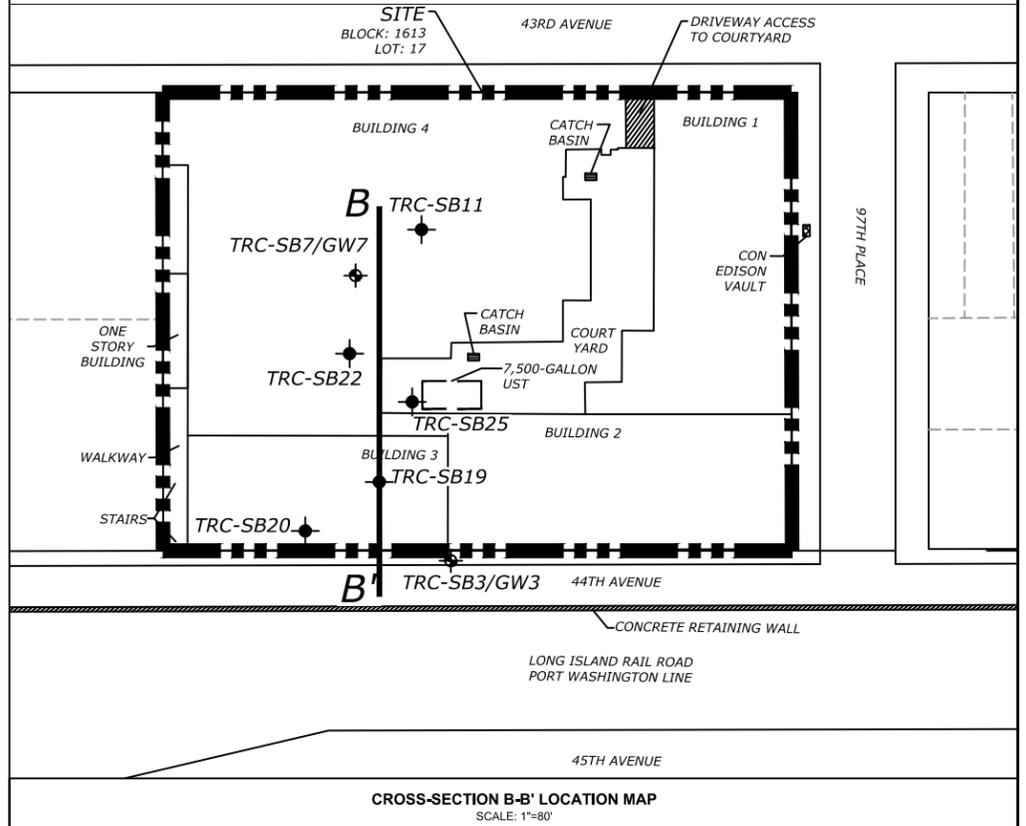
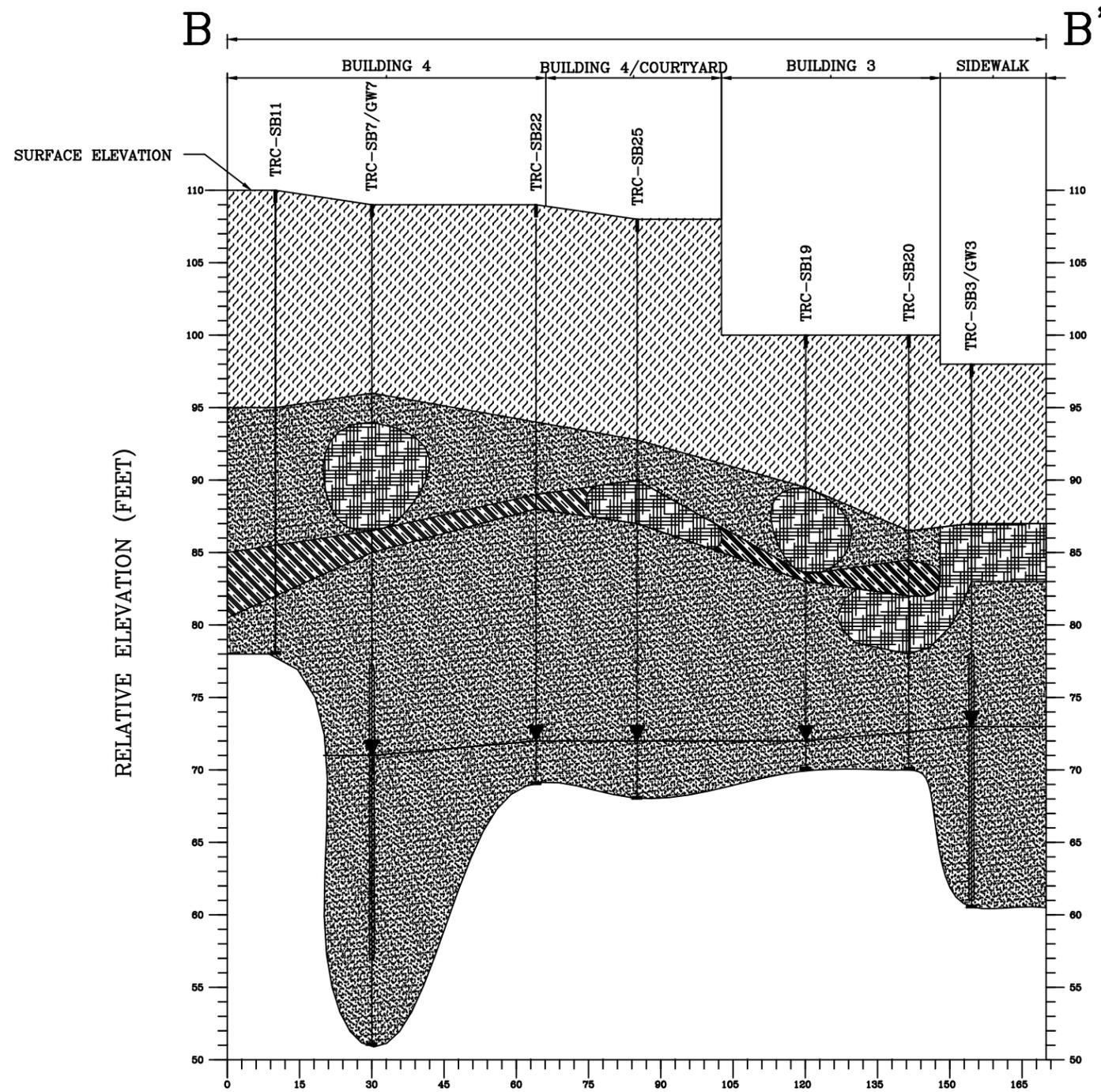


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SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: <b>NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY</b> <b>SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17</b> <b>PROPOSED PS 315Q - 96-18 43RD AVENUE</b> <b>QUEENS, NEW YORK 11368</b>
DRAWING TITLE: GEOLOGIC CROSS-SECTION A-A'

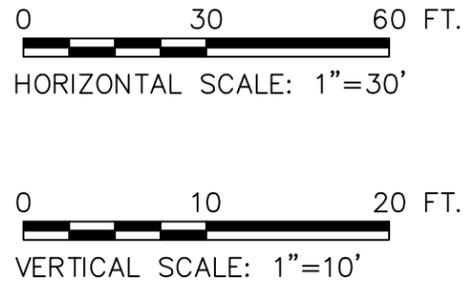
**FIGURE 3**

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**LEGEND:**

	FILL		WELL SCREEN
	SAND		WATER TABLE
	SILTY SAND		
	CLAYEY SILT		
	END OF BORING (BOTTOM)		



- NOTES:**
1. LOCATIONS AND GROUND SURFACE ELEVATIONS OF TRC POINTS OF INVESTIGATION SURVEYED BY PERFECT POINT LAND SURVEYING ON APRIL 2, 2012. AN ARBITRARY DATUM (GROUND SURFACE NEAR THE SOUTHEAST CORNER OF THE SITE BUILDING) OF 100 FEET WAS USED TO GENERATE THE CROSS-SECTION.
  2. GEOLOGIC DESCRIPTIONS AND DEPTH AND EXTENT OF LAYERS REPRESENT INTERPRETATION AND EXTRAPOLATION OF FIELD DATA AND ARE APPROXIMATE.

NO.	DESCRIPTION	BY	DATE

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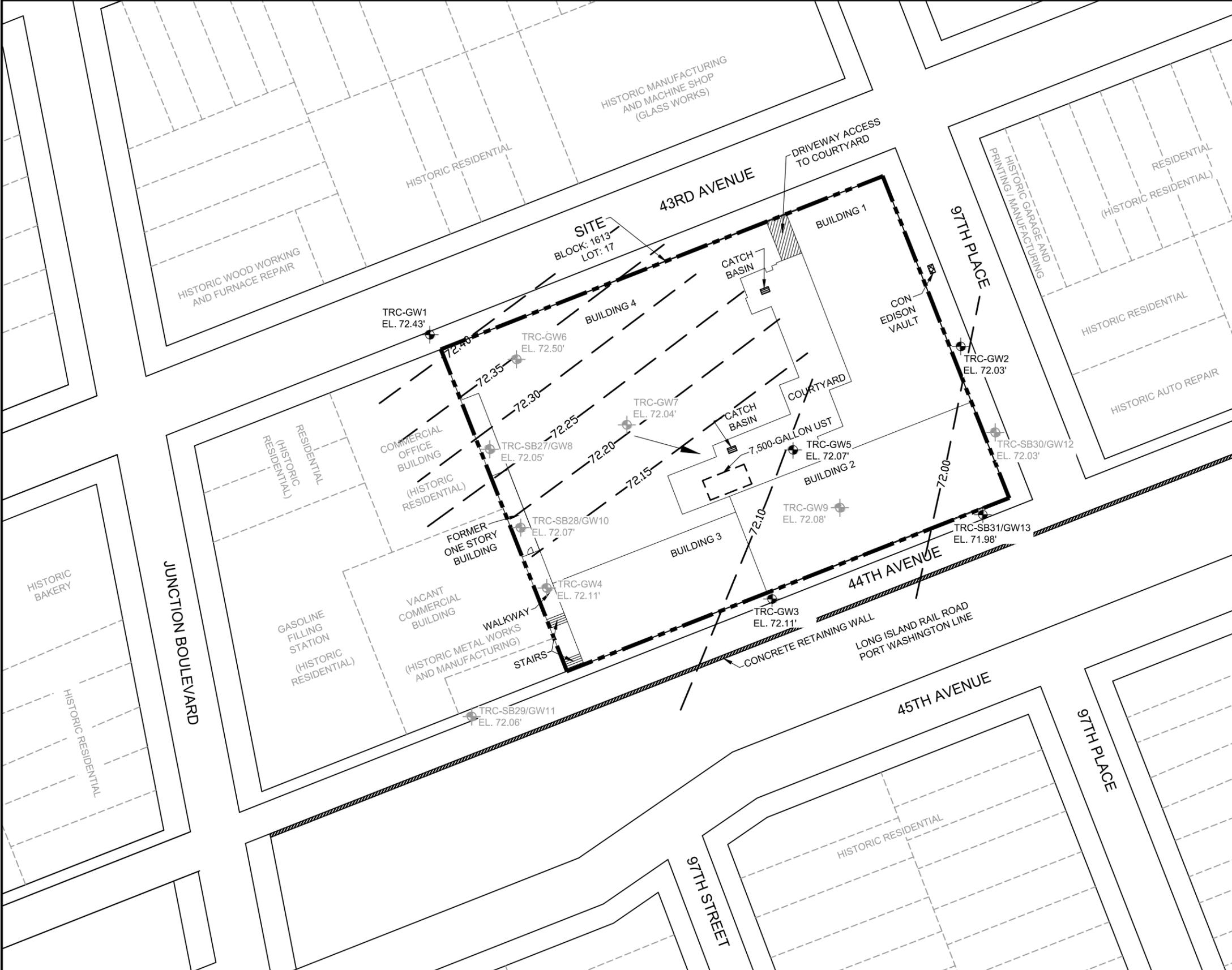


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PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17 PROPOSED PS 315Q - 96-18 43RD AVENUE QUEENS, NEW YORK 11368
DRAWING TITLE: GEOLOGIC CROSS-SECTION B-B'

FIGURE  
4

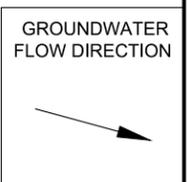
Path:\Name: i:\Projects\NYCSCA Contract\000012278\198908 - 3150 Const Insp and Remediation\Site Management Plan\Figures\Figure 5 - Groundwater Surface Elevation Contour Map December 2012.dwg - Date Time: Fri, 21 Aug 2015 - 11:40am - User Name: joup - Layout Tab: 11X17



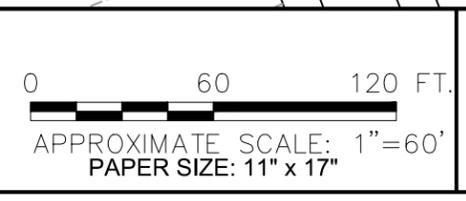
**LEGEND:**

- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- EL. 71.98'
- GROUNDWATER SURFACE ELEVATION IN FEET MEASURED DECEMBER 17, 2012
- GROUNDWATER SURFACE ELEVATION CONTOUR (IN FEET)
- INFERRED GROUNDWATER FLOW DIRECTION

- NOTES:**
- LOCATIONS OF MONITORING WELLS SURVEYED BY PERFECT POINT LAND SURVEYING ON DECEMBER 17, 2012. AN ARBITRARY ELEVATION DATUM (GROUND SURFACE NEAR THE SOUTHEAST CORNER OF THE SITE BUILDING) OF 100 FEET WAS USED.
  - 2" DIAMETER MONITORING WELLS TRC-GW1, TRC-GW2, TRC-GW3, TRC-GW5, AND TRC-GW13 WERE USED TO GENERATE THE GROUNDWATER SURFACE ELEVATION CONTOURS.
  - BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).



NO.	DESCRIPTION	BY	DATE



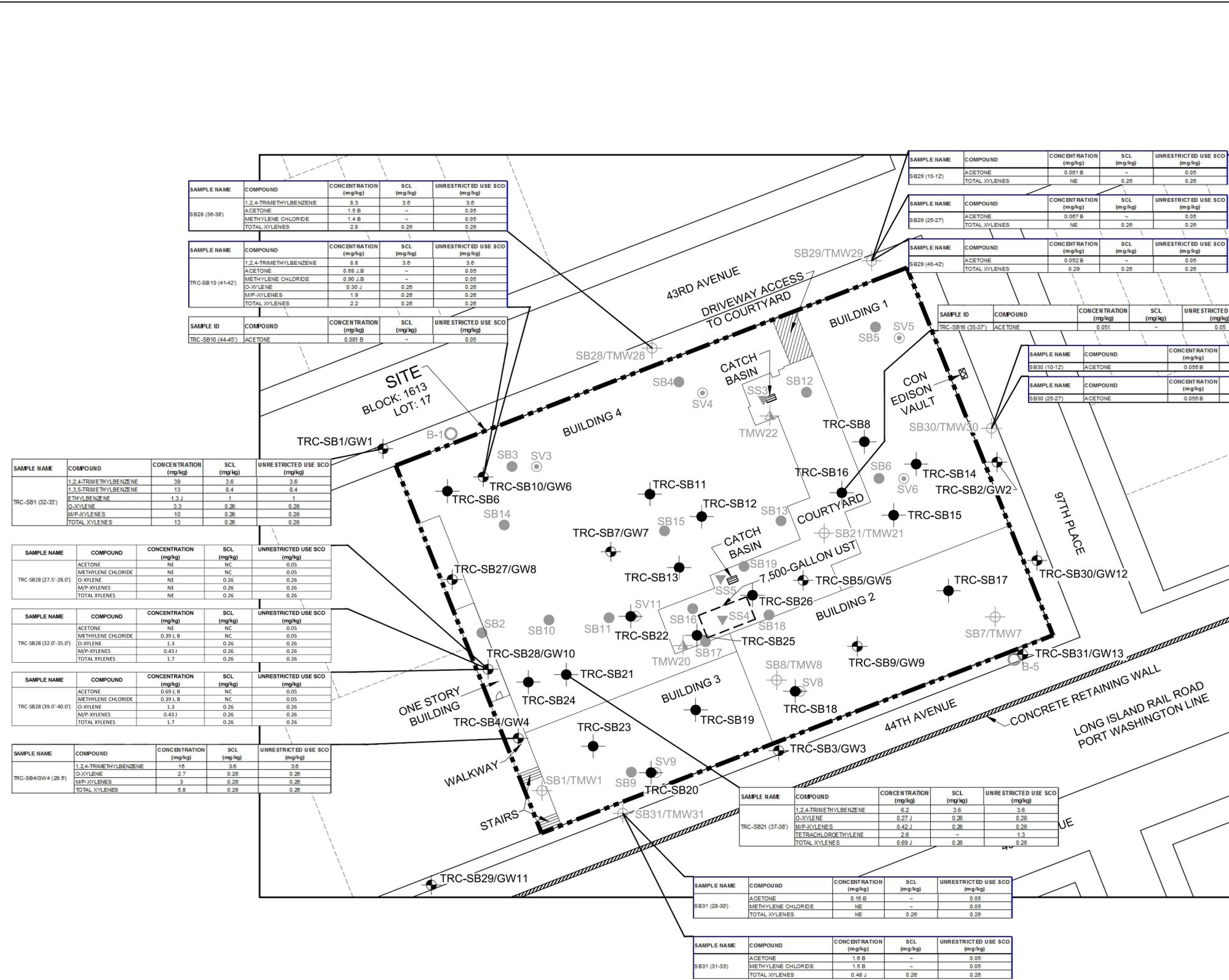
1430 BROADWAY, 10TH FLOOR  
 NEW YORK, NEW YORK 10018  
 212-221-7822

DESIGNED BY: LM
DRAWN BY: HD
CHECKED BY: RW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
 SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
 PROPOSED PS 315Q - 96-18 43RD AVENUE  
 QUEENS, NEW YORK 11368

DRAWING TITLE:  
 GROUNDWATER SURFACE ELEVATION CONTOUR MAP  
 DECEMBER 2012

**FIGURE 5**

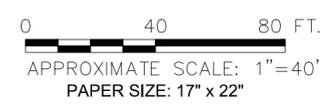


- LEGEND:**
- SITE BOUNDARY
  - BUILDING FOOTPRINT
  - LOT BOUNDARY
  - SBX HISTORIC SOIL BORING LOCATION AND IDENTIFICATION NUMBER
  - SVX HISTORIC SOIL VAPOR SAMPLE LOCATION AND IDENTIFICATION NUMBER
  - ▼ SSX HISTORIC SEDIMENT SAMPLE LOCATION AND IDENTIFICATION NUMBER
  - ⊕ SBX/TMWX HISTORIC SOIL BORING / TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - ▲ TMWX HISTORIC TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - B-X HISTORIC GEOTECHNICAL BORING / MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - TRC-SBX SOIL BORING LOCATION AND IDENTIFICATION NUMBER
  - ⊕ TRC-SBX/GWX SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

- NOTES:**
- mg/kg = MILLIGRAMS PER KILOGRAM
  - ~ = NO CRITERION
  - B = ANALYTE FOUND IN ASSOCIATED METHOD BLANK
  - J = ESTIMATED VALUE
  - NE = DETECTED CONCENTRATIONS DID NOT EXCEED COMPARISON CRITERIA
  - SCL = SOIL CLEANUP LEVEL
  - SCO = SOIL CLEANUP OBJECTIVE
  - THERE IS NO SCO OR SCL FOR M/P XYLENES OR O-XYLENE. THE SCL AND SCO FOR TOTAL XYLENES IS 0.26 mg/kg.
  - BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).



NO.	DESCRIPTION	BY	DATE



DESIGNED BY: RW  
DRAWN BY: HD  
CHECKED BY: RW  
DATE: AUGUST 2015  
SCALE: AS SHOWN  
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY  
SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
PROPOSED PS 315Q - 96-18 43RD AVENUE  
QUEENS, NEW YORK 11368**

DRAWING TITLE:  
REMEDIAL INVESTIGATION  
SUMMARY OF VOC EXCEEDANCES OF SOIL CLEANUP LEVELS AND  
UNRESTRICTED USE SCOs IN SOIL

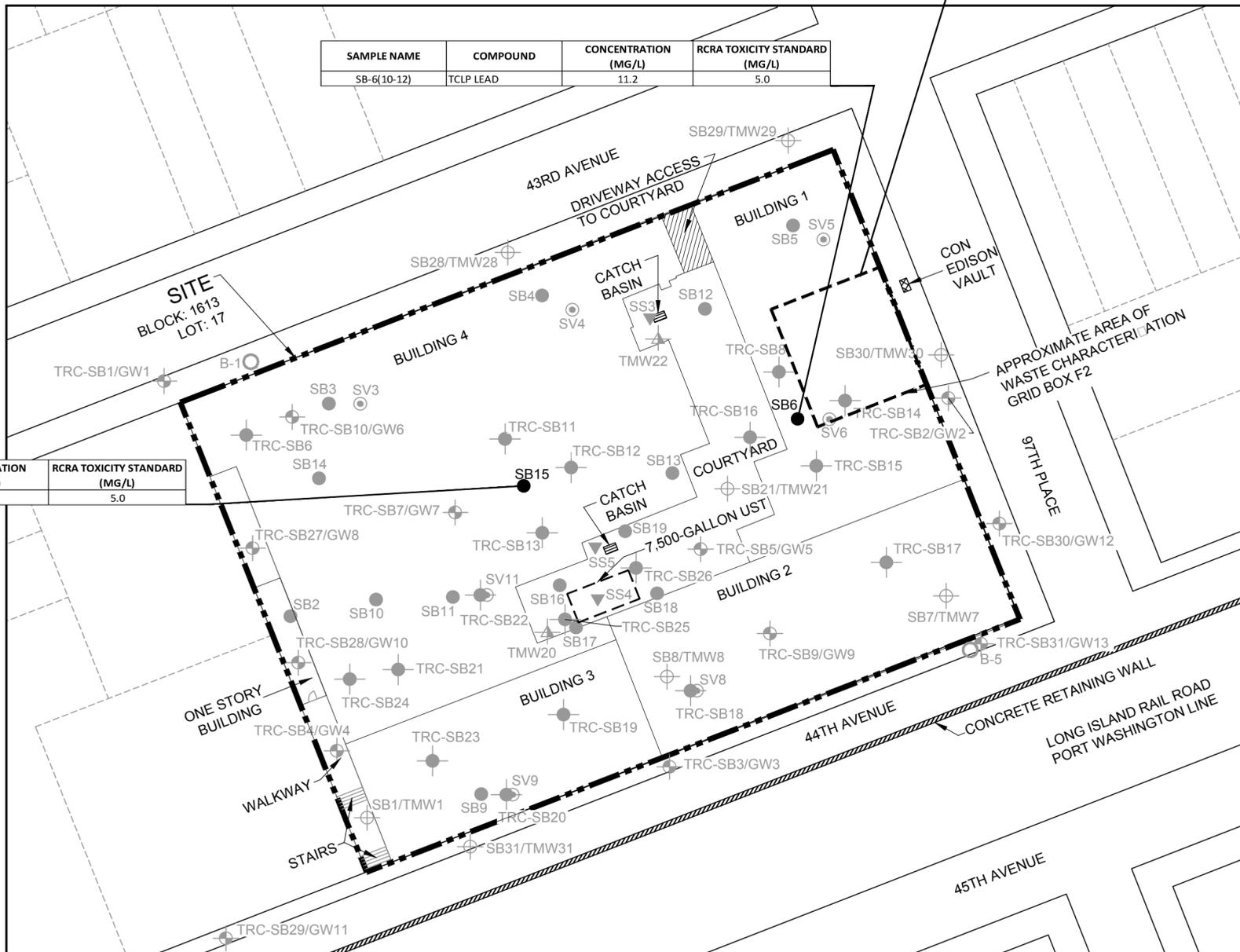
**FIGURE  
6**

Path\Name: I:\Projects\NYCSCA Contract 0000012279\198908 - 315Q Const Insp and Remediation\Site Management Plan\Figures\Figure 7 - RI Sum of TCLP Lead Exceed. of RCRA Toxicity Standard in Solid.dwg - Date\Time: Fri, 21 Aug 2015 - 1:19pm - User Name: P.Castellano - Layout Tab: 17X22

SAMPLE NAME	COMPOUND	CONCENTRATION (MG/L)	RCRA TOXICITY STANDARD (MG/L)
315 F2 15-20	TCLP LEAD	8.42	5.0

SAMPLE NAME	COMPOUND	CONCENTRATION (MG/L)	RCRA TOXICITY STANDARD (MG/L)
SB-6(10-12)	TCLP LEAD	11.2	5.0

SAMPLE NAME	COMPOUND	CONCENTRATION (MG/L)	RCRA TOXICITY STANDARD (MG/L)
SB-15(10-12)	TCLP LEAD	5.0	5.0



**LEGEND:**

- ▬ SITE BOUNDARY
- ▬ BUILDING FOOTPRINT
- - - LOT BOUNDARY
- SBX HISTORIC SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- ⊙ SVX HISTORIC SOIL VAPOR SAMPLE LOCATION AND IDENTIFICATION NUMBER
- ▼ SSX HISTORIC SEDIMENT SAMPLE LOCATION AND IDENTIFICATION NUMBER
- ⊕ SBX/TMWX HISTORIC SOIL BORING / TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- ▲ TMWX HISTORIC TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- B-X HISTORIC GEOTECHNICAL BORING / MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- TRC-SBX SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- ⊕ TRC-SBX/GWX SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

**NOTES:**

1. mg/L = MILLIGRAMS PER LITER
2. RCRA = RESOURCE CONSERVATION RECOVERY ACT
3. BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).

ASSUMED GROUNDWATER FLOW DIRECTION



NO.	DESCRIPTION	BY	DATE



DESIGNED BY: LM
DRAWN BY: HD
CHECKED BY: LM
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17 PROPOSED PS 315Q - 96-18 43RD AVENUE QUEENS, NEW YORK 11368
DRAWING TITLE: REMEDIAL INVESTIGATION SUMMARY OF TCLP LEAD EXCEEDANCES OF RCRA TOXICITY STANDARD IN SOIL

**FIGURE 7**

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-28	1,2,4-TRIMETHYLBENZENE	160	5
	1,3,5-TRIMETHYLBENZENE	48	5
	METHYLENE CHLORIDE	7 J, B	5
	CIS-1,2-DICHLOROETHYLENE	8 J	5
	ETHYLBENZENE	54	5
	ISOPROPYLBENZENE	9.8 J	5
	N-BUTYLBENZENE	9.2 J	5
	N-PROPYLBENZENE	15 J	5
	O-XYLENE	110	5
	M/P-XYLENES	180	5
	P-ISOPROPYLTOLUENE	6 J	5
	TOLUENE	16 J	5
XYLENES (TOTAL)	290	5	

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-29	1,2,4-TRIMETHYLBENZENE	140	5
	1,3,5-TRIMETHYLBENZENE	51	5
	METHYLENE CHLORIDE	6.8 J, B	5
	ETHYLBENZENE	24	5
	ISOPROPYLBENZENE	11	5
	N-BUTYLBENZENE	12	5
	N-PROPYLBENZENE	15	5
	O-XYLENE	52	5
	M/P-XYLENES	71	5
	P-ISOPROPYLTOLUENE	8	5
	SEC-BUTYLBENZENE	7	5
	TOLUENE	5	5
TRICHLOROETHYLENE	8	5	
XYLENES (TOTAL)	120	5	
NAPHTHALENE	26.4	10	

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-22	1,2,4-TRIMETHYLBENZENE	20	5
	METHYLENE CHLORIDE	5.3 J, B	5
	O-XYLENE	9.2	5
	TETRACHLOROETHENE (PCE)	11	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-30	1,1,2-TRICHLOROETHANE	1.5 J	1
	1,1,2-TRICHLOROETHANE	1.5	1
	TETRACHLOROETHENE (PCE)	83.0	5
	TRICHLOROETHYLENE	82	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW2	TRICHLOROETHENE	19	5
	TETRACHLOROETHENE	20	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-21	1,2,4-TRIMETHYLBENZENE	52	5
	METHYLENE CHLORIDE	7 J, B	5
	O-XYLENE	19 J	5
	P-ISOPROPYLTOLUENE	10 J	5
TETRACHLOROETHENE (PCE)	39 J	5	

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW5	O-XYLENE	7.1	5
	XYLENES, TOTAL	7.1 J	5
	TETRACHLOROETHENE	29	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW9	TETRACHLOROETHENE	28	5

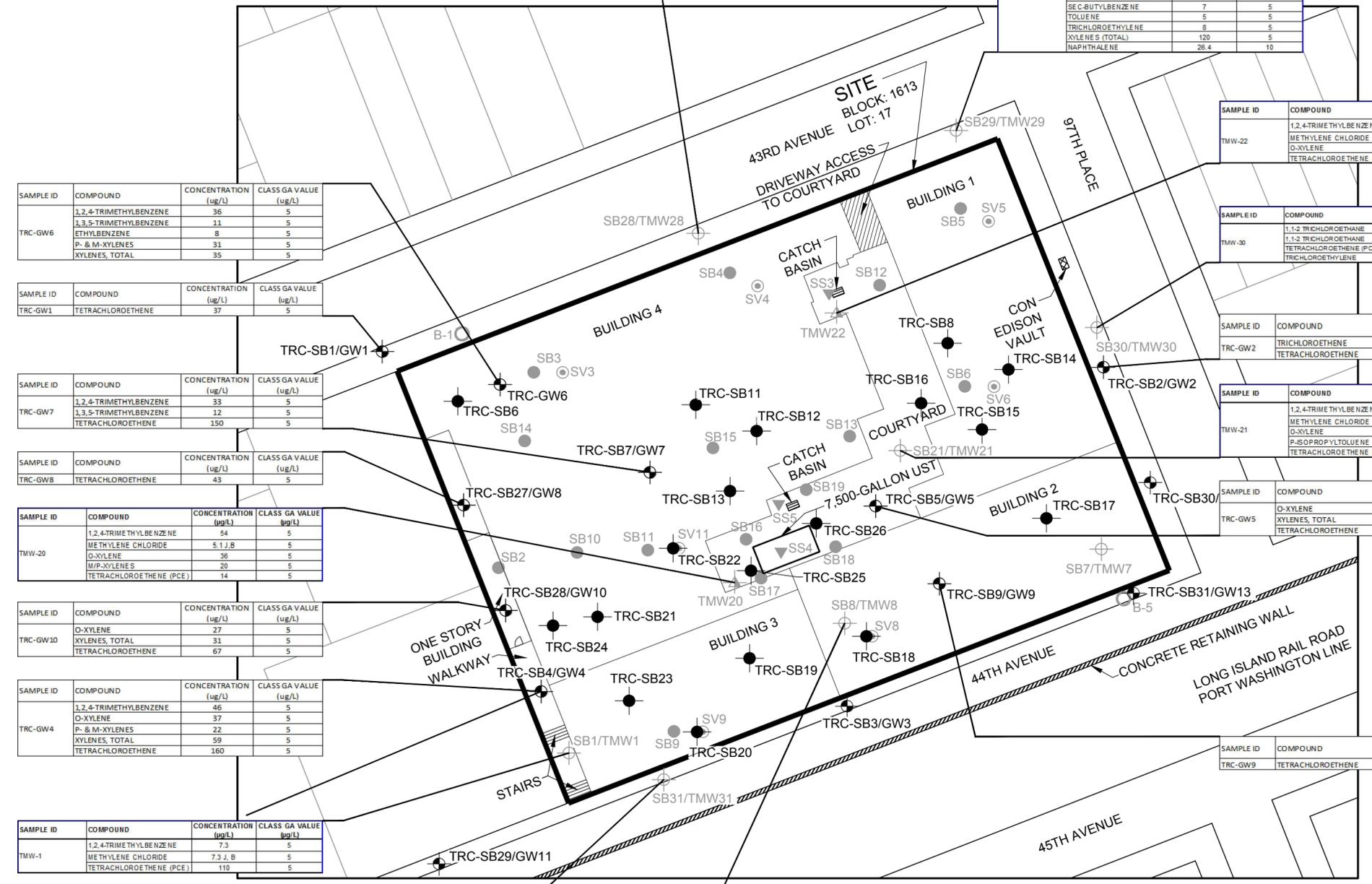
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-31	1,2,4-TRIMETHYLBENZENE	5.1	5
	METHYLENE CHLORIDE	6.5 J, B	5
	O-XYLENE	22	5
	TETRACHLOROETHENE (PCE)	24	5
	TRICHLOROETHYLENE	9.2	5
XYLENES (TOTAL)	22	5	

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-3	METHYL TERT-BUTYL ETHER (MTBE)	22	10
	TETRACHLOROETHENE (PCE)	6.2	5
	TRICHLOROETHYLENE	5	5

**LEGEND:**

- ▬ SITE BOUNDARY
- ▬ BUILDING FOOTPRINT
- - - LOT BOUNDARY
- SBX HISTORIC SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- SVX HISTORIC SOIL VAPOR SAMPLE LOCATION AND IDENTIFICATION NUMBER
- ▼ SSX HISTORIC SEDIMENT SAMPLE LOCATION AND IDENTIFICATION NUMBER
- ⊕ SBX/TMWX HISTORIC SOIL BORING / TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- ⊕ TMWX HISTORIC TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- B-X HISTORIC GEOTECHNICAL BORING / MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- TRC-SBX SOIL BORING LOCATION AND IDENTIFICATION NUMBER
- ⊕ TRC-SBX/GWX SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

- NOTES:**
1. µg/L = MICROGRAMS PER LITER
  2. B = ANALYTE FOUND IN THE ANALYSIS BLANK
  3. J = ESTIMATED VALUE
  4. THERE IS NO STANDARD OR GUIDANCE VALUE FOR TOTAL XYLENES. THE STANDARD FOR O-XYLENE, M-XYLENE, AND P-XYLENES IS 5 µg/L.
  5. BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).



SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW6	1,2,4-TRIMETHYLBENZENE	36	5
	1,3,5-TRIMETHYLBENZENE	11	5
	ETHYLBENZENE	8	5
	P- & M-XYLENES	31	5
	XYLENES, TOTAL	35	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW1	TETRACHLOROETHENE	37	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW7	1,2,4-TRIMETHYLBENZENE	33	5
	1,3,5-TRIMETHYLBENZENE	12	5
	TETRACHLOROETHENE	150	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW8	TETRACHLOROETHENE	43	5

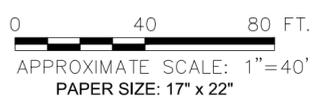
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-20	1,2,4-TRIMETHYLBENZENE	54	5
	METHYLENE CHLORIDE	5.1 J, B	5
	O-XYLENE	36	5
	M/P-XYLENES	20	5
	TETRACHLOROETHENE (PCE)	14	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW10	O-XYLENE	27	5
	XYLENES, TOTAL	31	5
	TETRACHLOROETHENE	67	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW4	1,2,4-TRIMETHYLBENZENE	46	5
	O-XYLENE	37	5
	P- & M-XYLENES	22	5
	XYLENES, TOTAL	59	5
	TETRACHLOROETHENE	160	5

SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TMW-1	1,2,4-TRIMETHYLBENZENE	7.3	5
	METHYLENE CHLORIDE	7.3 J, B	5
	TETRACHLOROETHENE (PCE)	110	5

NO.	DESCRIPTION	BY	DATE

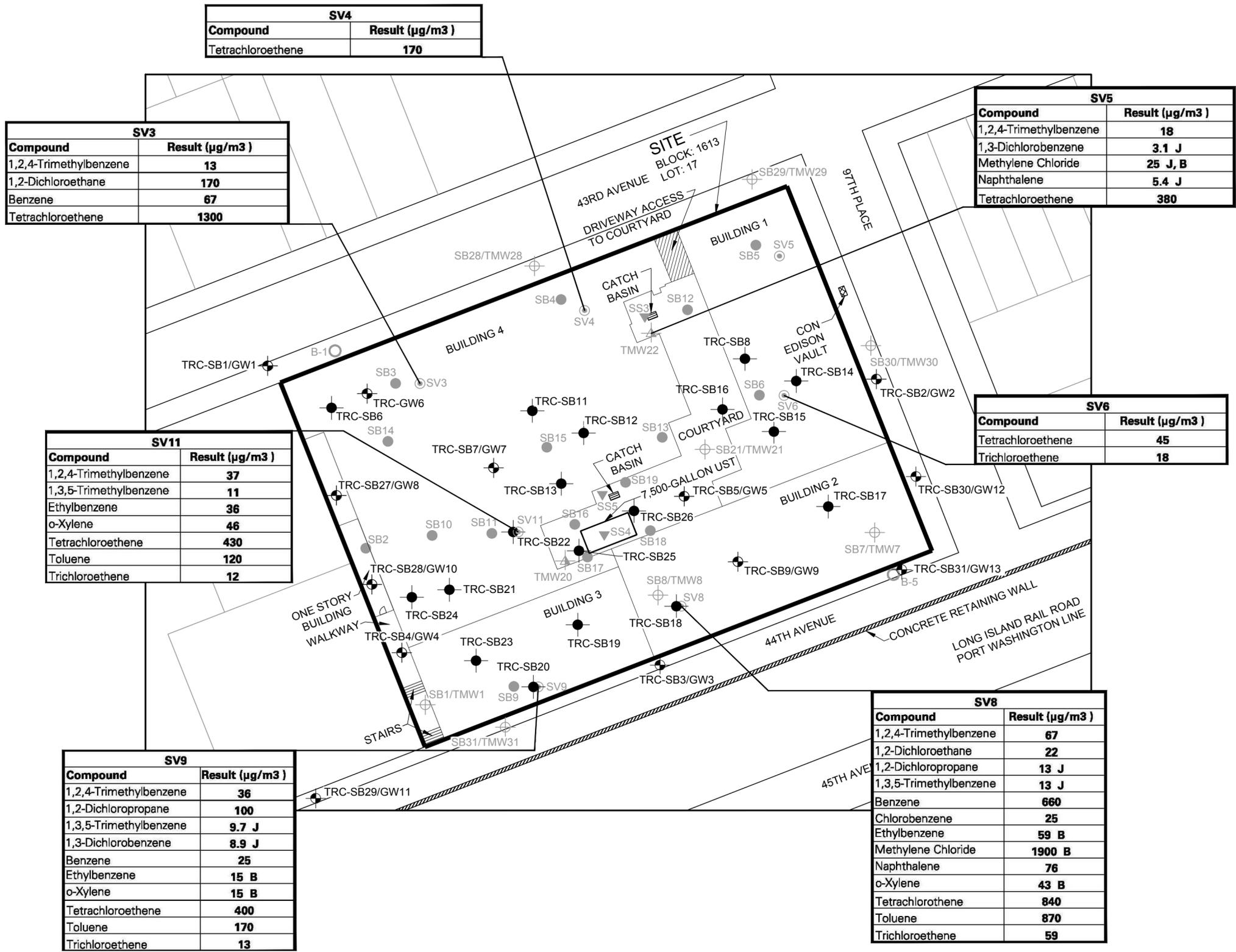


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 DRAWN BY: HD  
 CHECKED BY: RW  
 DATE: AUGUST 2015  
 SCALE: AS SHOWN  
 PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
**SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17**  
**PROPOSED PS 315Q - 96-18 43RD AVENUE**  
**QUEENS, NEW YORK 11368**  
 DRAWING TITLE:  
 REMEDIAL INVESTIGATION SUMMARY OF VOC EXCEEDANCES OF CLASS GA VALUES IN GROUNDWATER

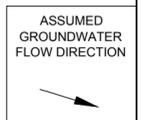
ASSUMED GROUNDWATER FLOW DIRECTION

**FIGURE 8**



- LEGEND:**
- ▬ SITE BOUNDARY
  - ▬ BUILDING FOOTPRINT
  - - - LOT BOUNDARY
  - SBX HISTORIC SOIL BORING LOCATION AND IDENTIFICATION NUMBER
  - SVX HISTORIC SOIL VAPOR SAMPLE LOCATION AND IDENTIFICATION NUMBER
  - ▼ SSX HISTORIC SEDIMENT SAMPLE LOCATION AND IDENTIFICATION NUMBER
  - ⊕ SBX/TMWX HISTORIC SOIL BORING / TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - ⊕ TMWX HISTORIC TEMPORARY MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - B-X HISTORIC GEOTECHNICAL BORING / MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
  - TRC-SBX SOIL BORING LOCATION AND IDENTIFICATION NUMBER
  - ⊕ TRC-SBX/GWX SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

- NOTES:**
1. µg/m<sup>3</sup> = MICROGRAMS PER METER CUBED
  2. B = ANALYTE FOUND IN THE ANALYSIS BLANK
  3. J = ESTIMATED VALUE
  4. THERE IS NO STANDARD OR GUIDANCE VALUE FOR TOTAL XYLENES. THE STANDARD FOR O-XYLENE, M-XYLENE, AND P-XYLENES IS 5 µg/L.
  5. DUP IS A DUPLICATE OF TRC-GW7.
  6. BUILDING AND STRUCTURES SHOWN ON DRAWING HAVE BEEN DEMOLISHED AND THE ENTIRE SITE HAS BEEN REDEVELOPED AS A NEW YORK CITY PUBLIC SCHOOL (PS 315Q).
  7. THERE ARE NO SOIL VAPOR STANDARDS OR GUIDELINE VALUES. COMPARISON CRITERIA ARE FOR REFERENCE ONLY.



NO.	DESCRIPTION	BY	DATE

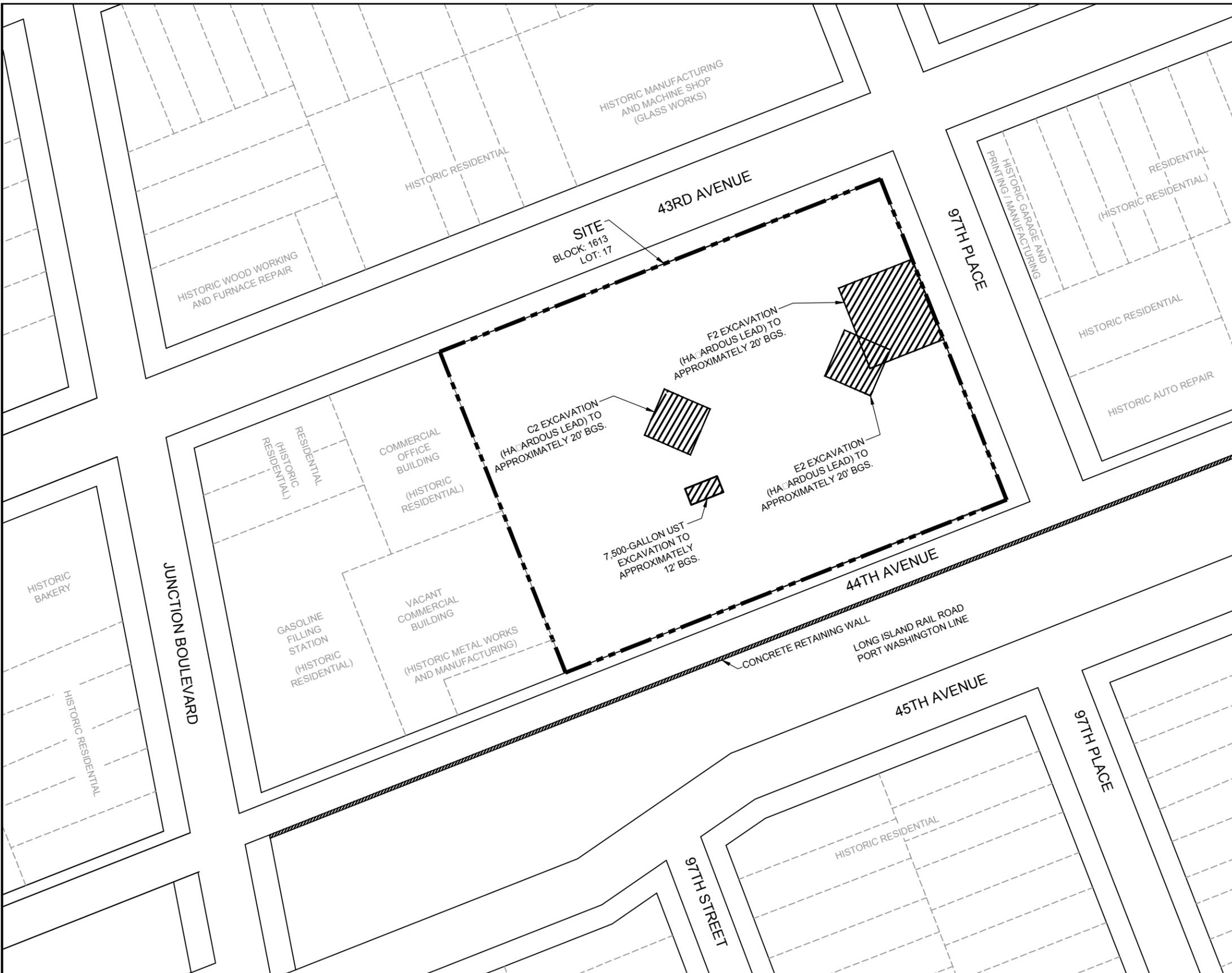


DESIGNED BY: RW
DRAWN BY: HD
CHECKED BY: DW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: <b>NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17 PROPOSED PS 315Q - 96-18 43RD AVENUE QUEENS, NEW YORK 11368</b>
DRAWING TITLE: <b>REMEDIAL INVESTIGATION SUMMARY OF EXCEEDENCES OF COMPARISON CRITERIA IN SUB-SLAB SOIL VAPOR.</b>

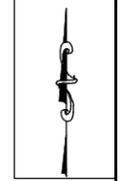
**FIGURE 9**

Path Name: I:\Projects\NYCSCA Contract 000012279\198908 - 3150 Const Insp and Remediation\Site Management\Plan\Figures\Figure 10 - Extent of Remedial Excavation Performed.dwg - Date: Fri, 21 Aug 2015 - 1:23pm - User Name: P.Castellano - Layout Tab: 11X17



**LEGEND:**

- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- APPROXIMATE AREA OF EXCAVATION
- BELOW GROUND SURFACE



GROUNDWATER FLOW DIRECTION

NO.	DESCRIPTION	BY	DATE

0                      60                      120 FT.  
  
 APPROXIMATE SCALE: 1"=60'  
 PAPER SIZE: 11" x 17"

**TRC**  
 1430 BROADWAY, 10TH FLOOR  
 NEW YORK, NEW YORK 10018  
 212-221-7822

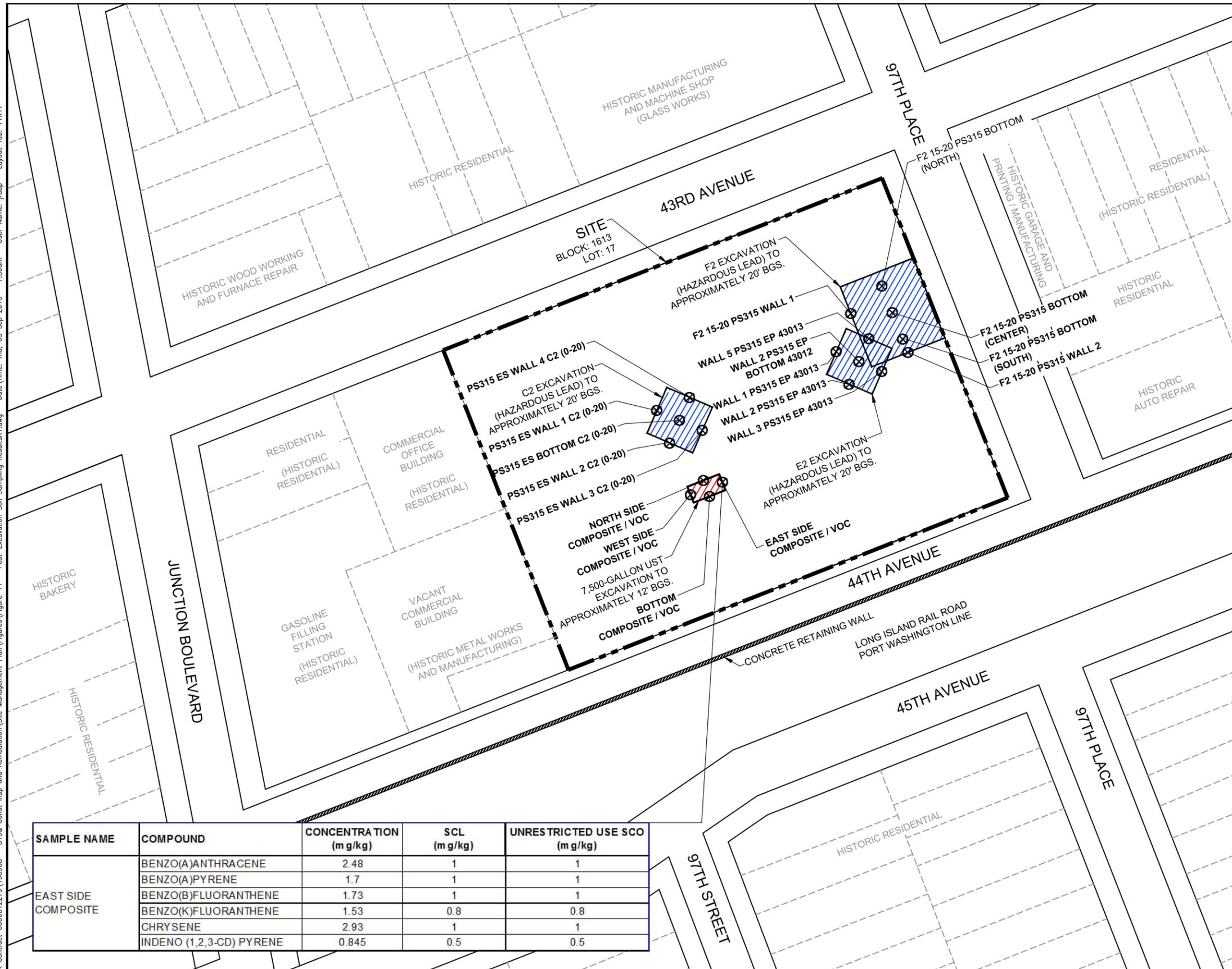
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CHECKED BY: RW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
**SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17**  
**PROPOSED PS 315Q - 96-18 43RD AVENUE**  
**QUEENS, NEW YORK 11368**

DRAWING TITLE:  
**EXTENT OF REMEDIAL EXCAVATION PERFORMED**

**FIGURE**  
**10**

Path Name: I:\Projects\NYCSCA Contract 000012279\198908 - 3150 Const Insp and Remediation\Site Management\Plan\Figures\Figure 11 - Post-Excavation Soil Sampling Results1.dwg - Date\Time: Thu, 03 Sep 2015 - 7:50am - User Name: jraup - Layout Tab: 11X17



**LEGEND:**

- SITE BOUNDARY
- LOT BOUNDARY
- APPROXIMATE AREA OF UST EXCAVATION
- APPROXIMATE AREA OF HAZARDOUS LEAD EXCAVATION
- BGS BELOW GROUND SURFACE
- UST UNDERGROUND STORAGE TANK
- POST-EXCAVATION SAMPLING LOCATION

**NOTES:**

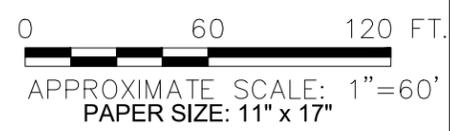
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. SCL = SOIL CLEANUP LEVEL
3. SCO = SOIL CLEANUP OBJECTIVE
4. ONLY RESULTS ABOVE THE UNRESTRICTED USE SCOs AND/OR SCLs (IN THE 7,500-GALLON UST EXCAVATION AREA) ARE SHOWN. THERE WERE NO EXCEEDANCES OF THE RESOURCE CONSERVATION AND RECOVERY ACT TOXICITY STANDARD FOR LEAD.
5. SIDEWALL SAMPLES WERE NOT COLLECTED FROM THE NORTH AND EAST SIDEWALLS OF THE F2 EXCAVATION DUE TO SHEETING/SHORING TO THE EAST AND NO SOIL PRESENT TO THE NORTH.

SAMPLE NAME	COMPOUND	CONCENTRATION (m g/kg)	SCL (m g/kg)	UNRESTRICTED USE SCO (m g/kg)
EAST SIDE COMPOSITE	BENZO(A)ANTHRACENE	2.48	1	1
	BENZO(A)PYRENE	1.7	1	1
	BENZO(B)FLUORANTHENE	1.73	1	1
	BENZO(K)FLUORANTHENE	1.53	0.8	0.8
	CHRYSENE	2.93	1	1
	INDENO (1,2,3-CD) PYRENE	0.845	0.5	0.5

GROUNDWATER FLOW DIRECTION



NO.	DESCRIPTION	BY	DATE



1430 BROADWAY, 10TH FLOOR  
 NEW YORK, NEW YORK 10018  
 212-221-7822

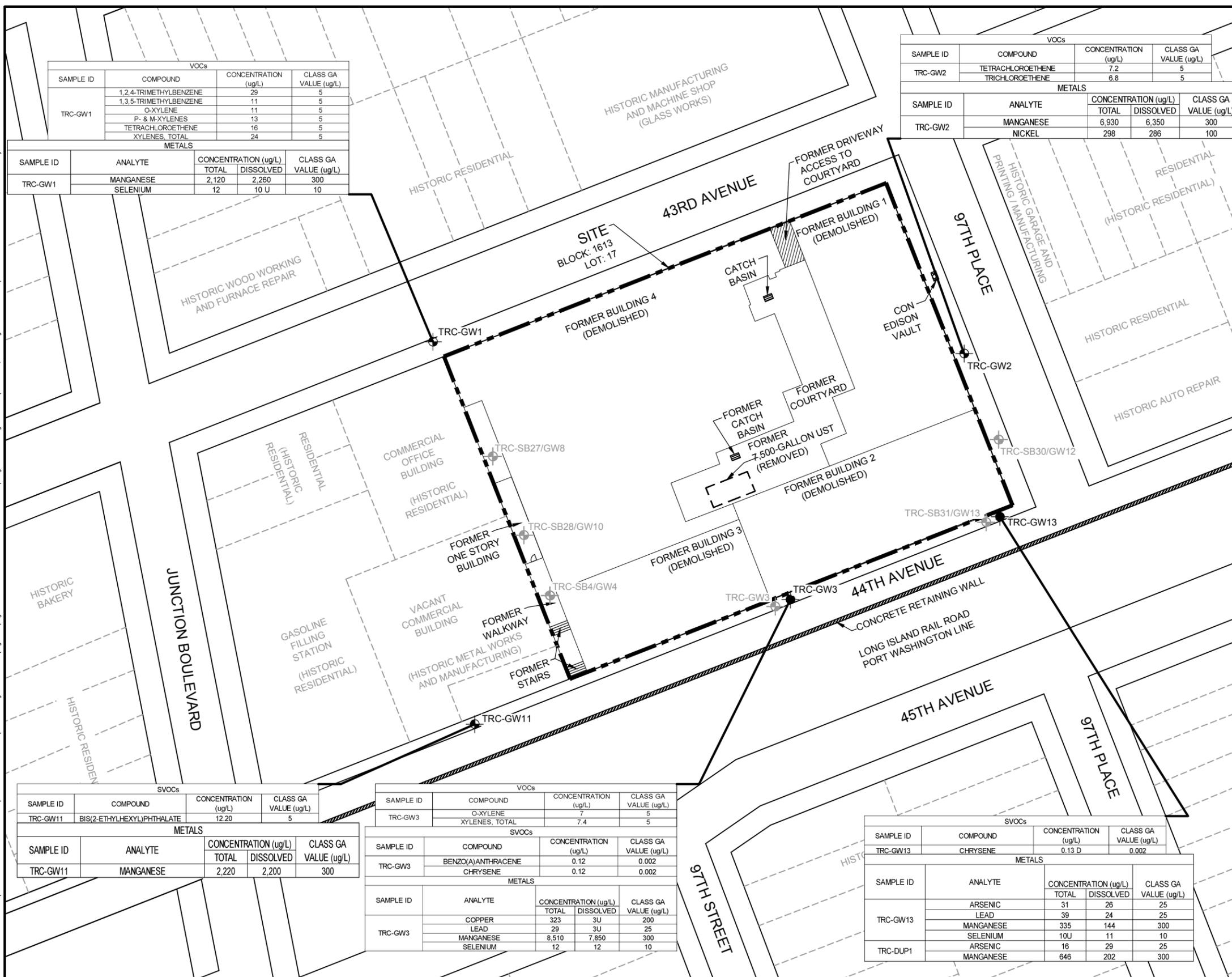
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DRAWN BY: HD
CHECKED BY: RW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
 SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
 PROPOSED PS 315Q - 96-18 43RD AVENUE  
 QUEENS, NEW YORK 11368

DRAWING TITLE:  
**POST-EXCAVATION SOIL SAMPLING RESULTS**

**FIGURE 11**

Path Name: I:\Projects\NYCSCA Contract C000012279\198908 - 315Q Const Insp and Remediation\Site Management Plan\Figures\Figure 12 - Post-Remediation GW Sampling Results.dwg - Date/Time: Fri, 21 Aug 2015 - 1:24pm - User Name: P.Castellano - Layout Tab: 11X17



VOCs					
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)		
TRC-GW1	1,2,4-TRIMETHYLBENZENE	29	5		
	1,3,5-TRIMETHYLBENZENE	11	5		
	O-XYLENE	11	5		
	P- & M-XYLENES	13	5		
	TETRACHLOROETHENE	16	5		
XYLENES TOTAL				24	5

METALS				
SAMPLE ID	ANALYTE	CONCENTRATION (ug/L)		CLASS GA VALUE (ug/L)
		TOTAL	DISSOLVED	
TRC-GW1	MANGANESE	2,120	2,260	300
	SELENIUM	12	10 U	10

VOCs			
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW2	TETRACHLOROETHENE	7.2	5
	TRICHLOROETHENE	6.8	5

METALS				
SAMPLE ID	ANALYTE	CONCENTRATION (ug/L)		CLASS GA VALUE (ug/L)
		TOTAL	DISSOLVED	
TRC-GW2	MANGANESE	6,930	6,350	300
	NICKEL	298	286	100

SVOCs			
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW11	BIS(2-ETHYLHEXYL)PHTHALATE	12.20	5

METALS				
SAMPLE ID	ANALYTE	CONCENTRATION (ug/L)		CLASS GA VALUE (ug/L)
		TOTAL	DISSOLVED	
TRC-GW11	MANGANESE	2,220	2,200	300

VOCs			
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW3	O-XYLENE	7	5
	XYLENES, TOTAL	7.4	5

SVOCs				
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)	
TRC-GW3	BENZO(A)ANTHRACENE	0.12	0.002	
	CHRYSENE	0.12	0.002	

METALS				
SAMPLE ID	ANALYTE	CONCENTRATION (ug/L)		CLASS GA VALUE (ug/L)
		TOTAL	DISSOLVED	
TRC-GW3	COPPER	323	3U	200
	LEAD	29	3U	25
	MANGANESE	8,510	7,850	300
	SELENIUM	12	12	10

SVOCs			
SAMPLE ID	COMPOUND	CONCENTRATION (ug/L)	CLASS GA VALUE (ug/L)
TRC-GW13	CHRYSENE	0.13 D	0.002

METALS				
SAMPLE ID	ANALYTE	CONCENTRATION (ug/L)		CLASS GA VALUE (ug/L)
		TOTAL	DISSOLVED	
TRC-GW13	ARSENIC	31	26	25
	LEAD	39	24	25
	MANGANESE	335	144	300
TRC-DUP1	SELENIUM	10U	11	10
	MANGANESE	646	202	300

**LEGEND:**

- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER (EXISTING WELL)
- SOIL BORING / GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER (WELL DECOMMISSIONED OR NOT LOCATED)
- REPLACEMENT MONITORING WELL AND IDENTIFICATION NUMBER

**NOTES:**

- LOCATIONS OF MONITORING WELLS SURVEYED BY PERFECT POINT LAND SURVEYING ON DECEMBER 17, 2012. AN ARBITRARY ELEVATION DATUM (GROUND SURFACE NEAR THE SOUTHEAST CORNER OF THE SITE BUILDING) OF 100 FEET WAS USED.
- WELLS SAMPLED AND ANALYZED FOR TCL VOCs, TCL SVOCs AND TAL METALS. EXCEEDANCES OF NYSDEC CLASS GA VALUES ARE REPORTED.
- NO STANDARD OR GUIDANCE VALUE FOR TOTAL XYLENES. THE STANDARD FOR O-XYLENE, M-XYLENE, AND P-XYLENE IS 5 µG/L.

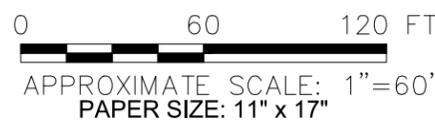
D - SAMPLE WAS DILUTED

U - NON-DETECT

µG/L - MICROGRAMS PER LITER

GROUNDWATER FLOW DIRECTION

NO.	DESCRIPTION	BY	DATE



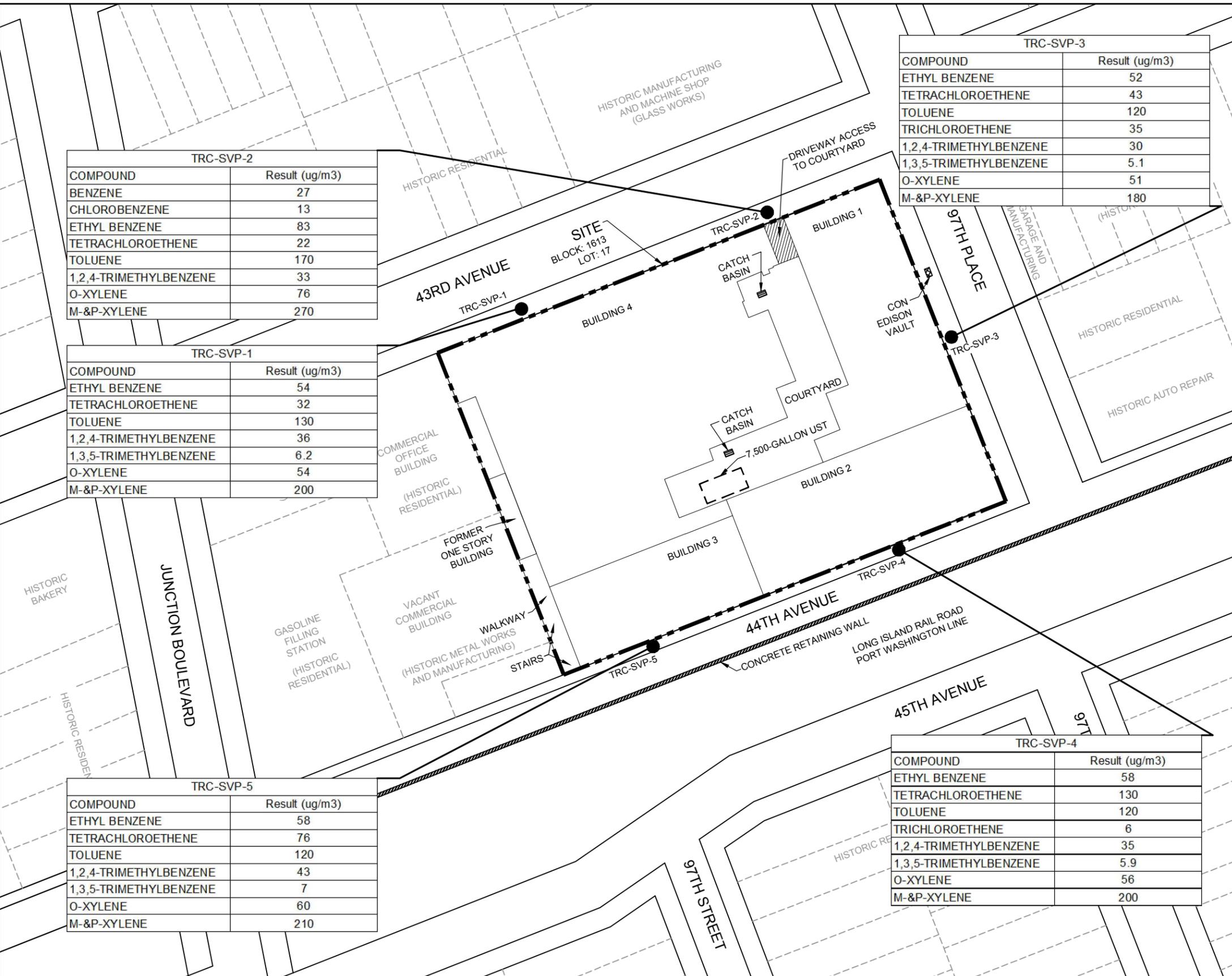
1430 BROADWAY, 10TH FLOOR  
NEW YORK, NEW YORK 10018  
212-221-7822

DESIGNED BY: MM
DRAWN BY: HD
CHECKED BY: JD
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME: <b>NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17 PROPOSED PS 315Q - 96-18 43RD AVENUE QUEENS, NEW YORK 11368</b>
DRAWING TITLE: <b>POST-REMEDIATION GROUNDWATER SAMPLING RESULTS</b>

**FIGURE 12**

Path Name: I:\Projects\NYCSCA Contract 000012279\198908 - 3150 Const Insp and Remediation\Site Management\Plan\Figures\Figure 13 - Post-Remediation Soil Vapor Sampling Results.dwg - Date: Fri, 21 Aug 2015 - 1:25pm - User Name: P.Castellano - Layout Tab: 11X17



TRC-SVP-2	
COMPOUND	Result (ug/m3)
BENZENE	27
CHLOROBENZENE	13
ETHYL BENZENE	83
TETRACHLOROETHENE	22
TOLUENE	170
1,2,4-TRIMETHYLBENZENE	33
O-XYLENE	76
M-&P-XYLENE	270

TRC-SVP-1	
COMPOUND	Result (ug/m3)
ETHYL BENZENE	54
TETRACHLOROETHENE	32
TOLUENE	130
1,2,4-TRIMETHYLBENZENE	36
1,3,5-TRIMETHYLBENZENE	6.2
O-XYLENE	54
M-&P-XYLENE	200

TRC-SVP-5	
COMPOUND	Result (ug/m3)
ETHYL BENZENE	58
TETRACHLOROETHENE	76
TOLUENE	120
1,2,4-TRIMETHYLBENZENE	43
1,3,5-TRIMETHYLBENZENE	7
O-XYLENE	60
M-&P-XYLENE	210

TRC-SVP-3	
COMPOUND	Result (ug/m3)
ETHYL BENZENE	52
TETRACHLOROETHENE	43
TOLUENE	120
TRICHLOROETHENE	35
1,2,4-TRIMETHYLBENZENE	30
1,3,5-TRIMETHYLBENZENE	5.1
O-XYLENE	51
M-&P-XYLENE	180

TRC-SVP-4	
COMPOUND	Result (ug/m3)
ETHYL BENZENE	58
TETRACHLOROETHENE	130
TOLUENE	120
TRICHLOROETHENE	6
1,2,4-TRIMETHYLBENZENE	35
1,3,5-TRIMETHYLBENZENE	5.9
O-XYLENE	56
M-&P-XYLENE	200

**LEGEND:**

- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- PROPOSED SOIL VAPOR PROBE LOCATION AND IDENTIFICATION NUMBER

**NOTES:**

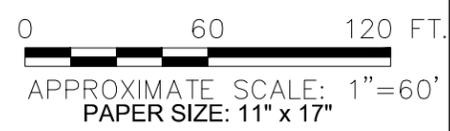
- LOCATIONS OF MONITORING WELLS SURVEYED BY PERFECT POINT LAND SURVEYING ON DECEMBER 17, 2012.
- THERE ARE NO SOIL VAPOR STANDARDS OR GUIDELINE VALUES. COMPARISON CRITERIA PRESENTED ARE FOR REFERENCE ONLY.
- SEE TABLE BELOW FOR SOIL VAPOR COMPARISON CRITERIA:

COMPOUND	COMPARISON CRITERIA			
	NYSDOH AGV (ug/m3)	NYSDOH Fuel Oil 2003 Upper Fence Limit (ug/m3) (1)	USEPA BASE Data 90th Percentile Value (ug/m3)(1)	HEI RIOPA 2005 95th Percentile Value (ug/m3) (1)
Benzene	--	13	9.4	10
Chlorobenzene	--	0.4	<0.9	--
Ethyl Benzene	--	6.4	5.7	7.62
Tetrachloroethylene (PCE)	30	2.5	15.9	6.01
Toluene	--	57	43.0	39.8
Trichloroethylene (TCE)	5	0.5	4.2	1.36
1,2,4-Trimethylbenzene	--	9.8	9.5	--
1,3,5-Trimethylbenzene	--	3.9	3.7	--
o-Xylene	--	7.1	7.9	7.24
m- & p- Xylenes	--	11	22.2	22.2

Notes:  
 ug/m<sup>3</sup> = micrograms per cubic meter  
 -- = Not Available  
 NYSDOH - New York State Department of Health  
 AGV - Air Guideline Value  
 BASE - Building Assessment and Survey Evaluation  
 HEI RIOPA - Health Effect Institute: Relationship of Indoor, Outdoor and Personal Air  
 (1) - Per Appendix C of the Final NYSDOH Guidance.

GROUNDWATER FLOW DIRECTION

NO.	DESCRIPTION	BY	DATE



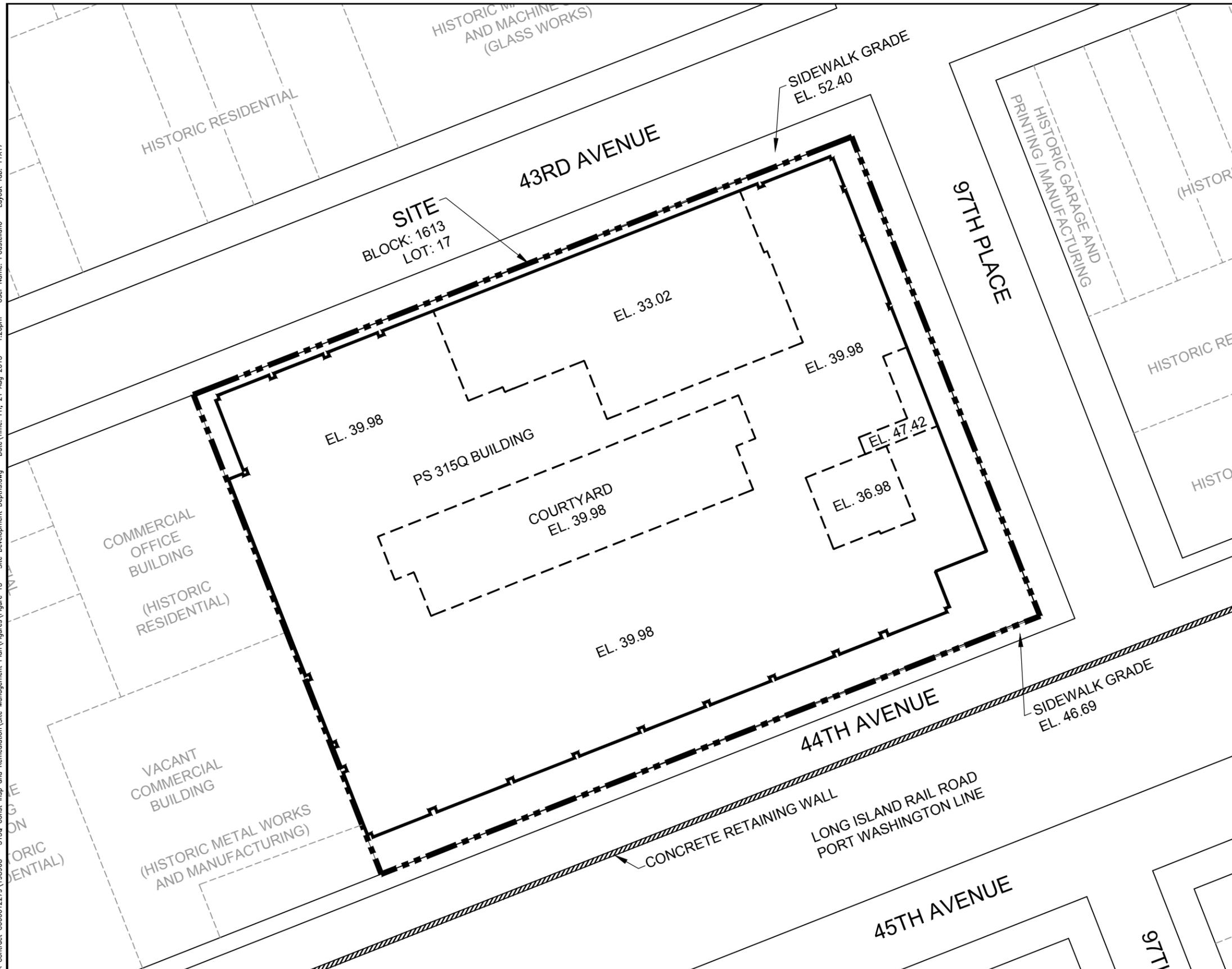
DESIGNED BY: MM  
 DRAWN BY: HD  
 CHECKED BY: JD  
 DATE: AUGUST 2015  
 SCALE: AS SHOWN  
 PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
 SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
 PROPOSED PS 315Q - 96-18 43RD AVENUE  
 QUEENS, NEW YORK 11368  
 DRAWING TITLE:  
 POST-REMEDIATION SOIL VAPOR SAMPLING RESULTS

**FIGURE 13**



Path Name: I:\Projects\NYCSCA Contract C000012279\198908 - 3150 Const Insp and Remediation\Site Management\Plan\Figures\Figure 15 - Site Development Depths.dwg - Date Time: Fri, 21 Aug 2015 - 1:26pm - User Name: Pcastellano - Layout Tab: 11X17



**LEGEND:**

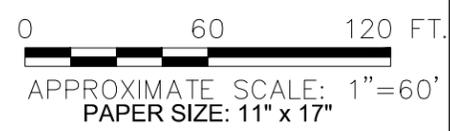
- SITE BOUNDARY
- BUILDING FOOTPRINT
- LOT BOUNDARY
- APPROXIMATE AREA REPRESENTING FINAL DEVELOPMENT ELEVATION DEPTH (QUEENS BOROUGH DATUM)



GROUNDWATER FLOW DIRECTION



NO.	DESCRIPTION	BY	DATE



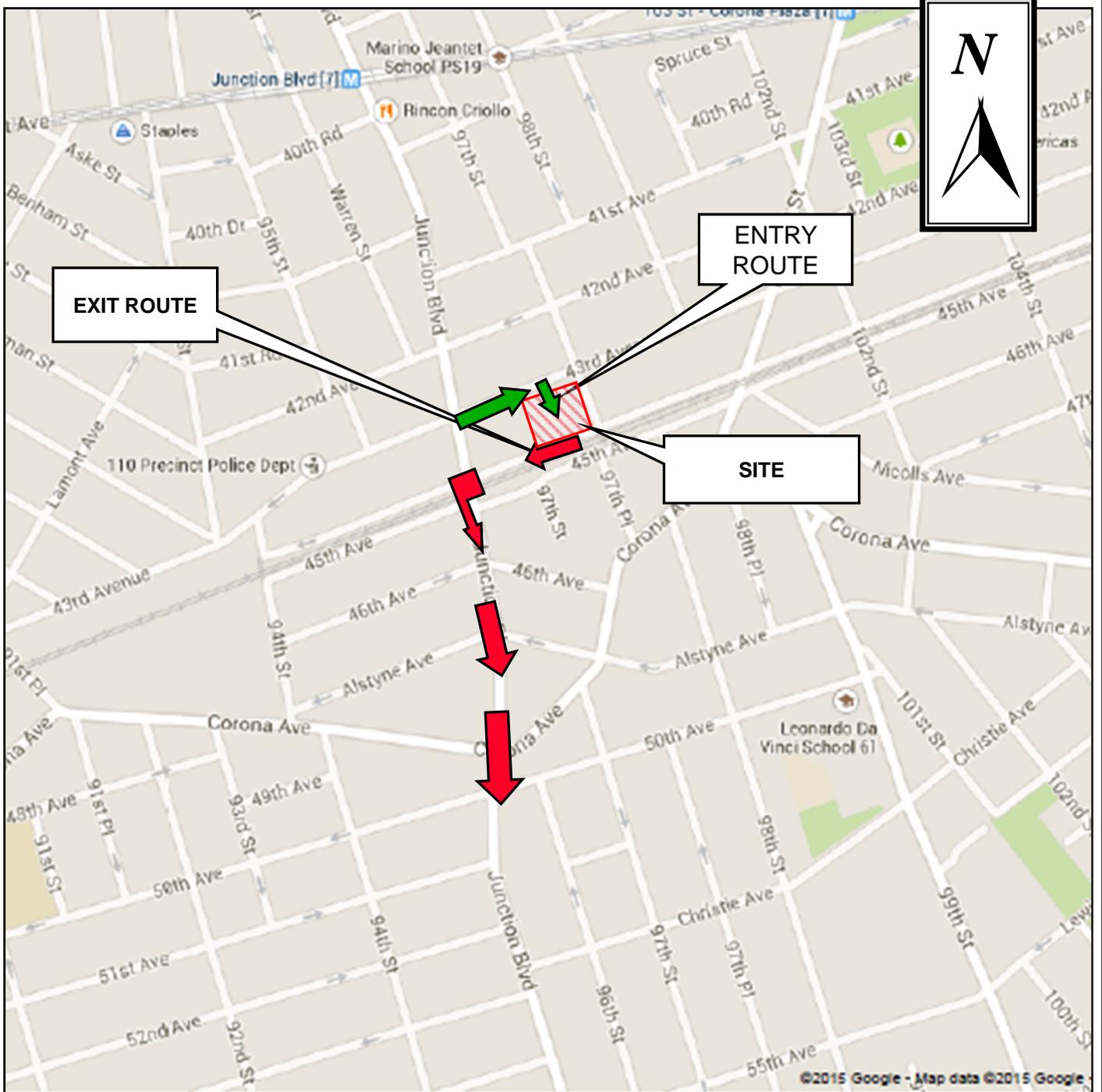
1430 BROADWAY, 10TH FLOOR  
 NEW YORK, NEW YORK 10018  
 212-221-7822

DESIGNED BY: LM
DRAWN BY: HD
CHECKED BY: RW
DATE: AUGUST 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
 SITE MANAGEMENT PLAN - BLOCK: 1613, LOT: 17  
 PROPOSED PS 315Q - 96-18 43RD AVENUE  
 QUEENS, NEW YORK 11368

DRAWING TITLE:  
 SITE DEVELOPMENT DEPTHS

**FIGURE 15**



**SITE MANAGEMENT PLAN  
NYSDEC SITE NO. 241140  
TRUCK ROUTE**

**FORMER TIFFANY'S STUDIO SITE  
(PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK**



1430 BROADWAY, 10TH FLOOR  
NEW YORK, NEW YORK 10018

DATE  
**AUGUST 2015**

DRAWING BY  
**LM**

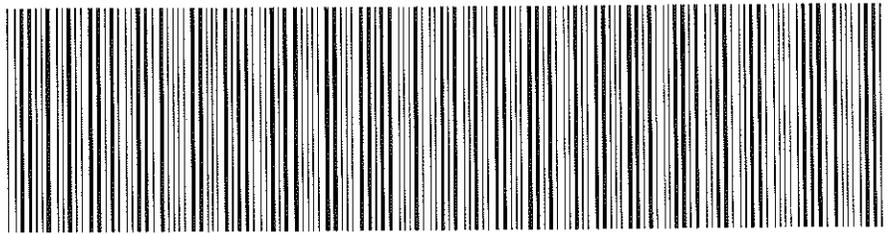
PROJECT No.  
**198908.0001**

FIGURE No.  
**16**

**APPENDIX A – ENVIRONMENTAL  
EASEMENT WITH METES AND BOUNDS**

**NYC DEPARTMENT OF FINANCE  
OFFICE OF THE CITY REGISTER**

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument. The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.



2015041600312001001ECC75

**RECORDING AND ENDORSEMENT COVER PAGE**

**PAGE 1 OF 10**

**Document ID: 2015041600312001**

Document Date: 04-06-2015

Preparation Date: 04-16-2015

Document Type: EASEMENT

Document Page Count: 9

**PRESENTER:**

LT SERIVE CORP. - P/U ELTON (LT11926)  
331 MADISON AVENUE 9FL  
NEW YORK, NY 10017  
212-599-1300  
NYCID@LEXTERRAE.COM

**RETURN TO:**

MICHAEL MCDERMOTT, ESQ.  
NYC SCHOOL CONSTRUCTION AUTHORITY  
30-30 THOMSON AVENUE  
LONG ISLAND CITY, NY 11101

**PROPERTY DATA**

Borough	Block	Lot	Unit	Address
QUEENS	1613	17	Entire Lot	96-18 43RD AVENUE
<b>Property Type: OTHER</b>				

**CROSS REFERENCE DATA**

CRFN \_\_\_\_\_ or DocumentID \_\_\_\_\_ or Year \_\_\_\_\_ Reel \_\_\_\_\_ Page \_\_\_\_\_ or File Number \_\_\_\_\_

**PARTIES**

**GRANTOR/SELLER:**

NEW YORK CITY SCHOOL CONSTRUCTION  
AUTHORITY  
30-30 THOMSON AVENUE  
LONG ISLAND CITY, NY 11101-3045

**GRANTEE/BUYER:**

COMMISSIONER OF THE DEPARTMENT OF  
ENVIRONMENTAL  
CONSERVATION, 625 BROADWAY  
ALBANY, NY 12233

**FEES AND TAXES**

Mortgage :		Filing Fee:	
Mortgage Amount:	\$ 0.00		\$ 100.00
Taxable Mortgage Amount:	\$ 0.00	NYC Real Property Transfer Tax:	\$ 0.00
Exemption:		NYS Real Estate Transfer Tax:	\$ 0.00
TAXES: County (Basic):	\$ 0.00		
City (Additional):	\$ 0.00		
Spec (Additional):	\$ 0.00		
TASF:	\$ 0.00		
MTA:	\$ 0.00		
NYCTA:	\$ 0.00		
Additional MRT:	\$ 0.00		
<b>TOTAL:</b>	<b>\$ 0.00</b>		
Recording Fee:	\$ 82.00		
Affidavit Fee:	\$ 0.00		

**RECORDED OR FILED IN THE OFFICE  
OF THE CITY REGISTER OF THE**

**CITY OF NEW YORK**

Recorded/Filed 04-28-2015 15:30

City Register File No.(CRFN):

2015000142100



*Annette McMill*

City Register Official Signature

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36  
OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 6<sup>th</sup> day of April, 2015, between Owner(s) New York City School Construction Authority, having an office at 30-30 Thomson Avenue, County of Queens, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

**WHEREAS**, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

**WHEREAS**, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

**WHEREAS**, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

**WHEREAS**, Grantor, is the owner of real property located at the address of 96-18 43rd Avenue in the City of New York, County of Queens and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 1613 Lot 17, being the same as that property conveyed to Grantor by deed dated May 3, 2012 and recorded in the City Register of the City of New York in Instrument No. 2012050700696001. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 1.2626 +/- acres, and is hereinafter more fully described in the Land Title Survey dated January 14, 2015 prepared by Perfect Point Land Surveying Corporation, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

**WHEREAS**, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

**NOW THEREFORE**, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: R2-0789-12-08, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement")

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

**Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii),  
Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial  
as described in 6 NYCRR Part 375-1.8(g)(2)(iv)**

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section  
Division of Environmental Remediation  
NYSDEC  
625 Broadway  
Albany, New York 12233  
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

**This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation**

**pursuant to Title 36 of Article 71 of the Environmental Conservation Law.**

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:      Site Number: 241140  
Office of General Counsel  
NYSDEC  
625 Broadway  
Albany New York 12233-5500

With a copy to:                                      Site Control Section  
Division of Environmental Remediation  
NYSDEC  
625 Broadway  
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

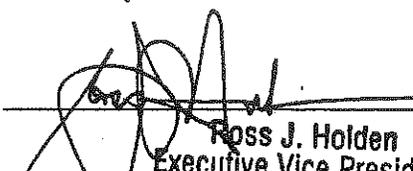
8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

New York City School Construction Authority:

By:  \_\_\_\_\_

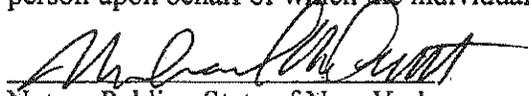
Print Name: Ross J. Holden  
Executive Vice President  
& General Counsel

Title: \_\_\_\_\_ Date: Mar 3, 2015

**Grantor's Acknowledgment**

STATE OF NEW YORK )  
 ) ss:  
COUNTY OF )

On the 7<sup>th</sup> day of March, in the year 20 15, before me, the undersigned, personally appeared Ross J. Holden, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

  
Notary Public - State of New York

Michael McDermott  
Notary Public, State of New York  
No. 02MC5077331  
Qualified in Queens County  
Commission Expires May 5, 20 15

**SEAL**

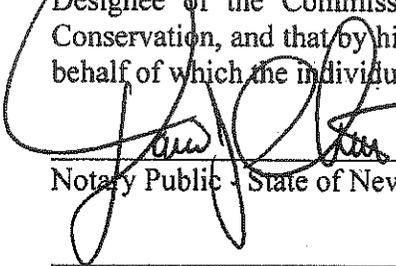
**THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,**

By:   
Robert W. Schick, Director  
Division of Environmental Remediation

**Grantee's Acknowledgment**

STATE OF NEW YORK    )  
  ) ss:  
COUNTY OF ALBANY    )

On the 6<sup>th</sup> day of April, in the year 2015, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

  
Notary Public - State of New York

**David J. Chinsano**  
Notary Public, State of New York  
No. 01CH5082146  
Qualified in Schenectady County,  
Commission Expires August 22, 2018

**SEAL**

**SCHEDULE "A" PROPERTY DESCRIPTION**

ALL that certain plot, piece and parcel of land, situate, lying and being in the Borough and County of Queens, City and State of New York, known and designated on a certain map entitled, "Map of Valuable Building Lots at West Flushing, situated upon Newton Avenue and the Railroad, surveyed and laid out by R. Graves, C.S., June 15, 1853", Page 4 Section 4, and filed in the Office of the Clerk of the County of Queens as and by Lots Nos. 73, 74, 75, 82, 83 and 84, which said Lots when taken together as one parcel are bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southerly side of 43<sup>rd</sup> Avenue (formerly Kingsland Avenue and also formerly Main Street) with the westerly side of 97<sup>th</sup> Place (formerly Luydig Place and also formerly Irving Place);

RUNNING THENCE westerly along the southerly side of 43<sup>rd</sup> Avenue, 275 feet to the easterly line of Lot No. 81 on said Map;

THENCE southerly parallel with 97<sup>th</sup> Place and at right angles to 43<sup>rd</sup> Avenue, 200 feet to the northerly side of 44<sup>th</sup> Avenue (formerly North Railroad Avenue), 25 feet wide;

THENCE easterly along said northerly side of 44<sup>th</sup> Avenue, 275 feet to the westerly side of 97<sup>th</sup> Place;

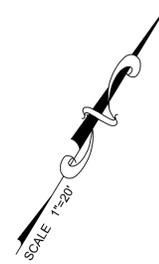
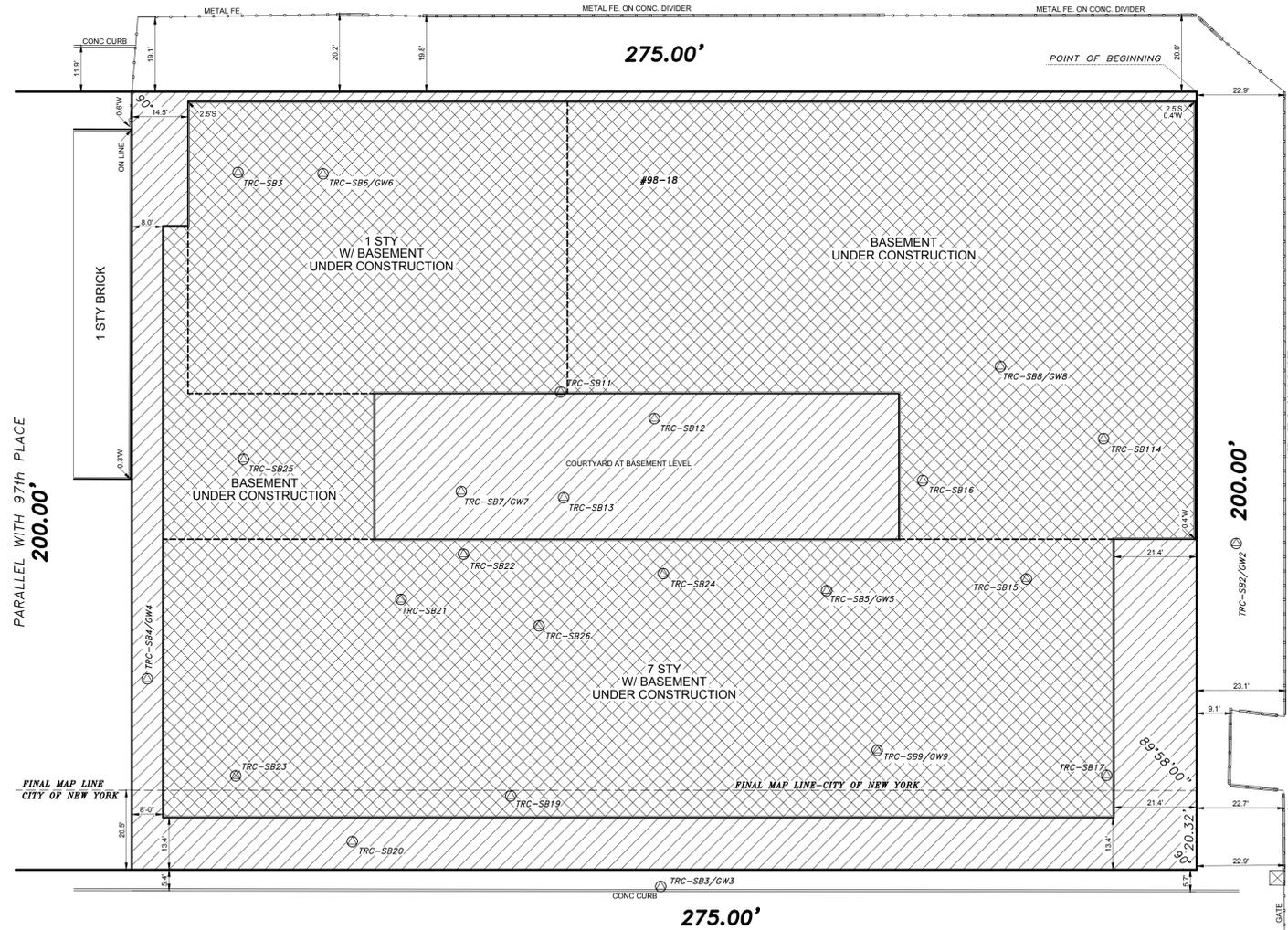
THENCE northerly along said side of 97<sup>th</sup> Place, 200 feet to the corner or place of BEGINNING.

Being approximately 55,000 square feet or 1.2626 acres more or less.

For Conveyance Only: Premises being known as 96-18 43<sup>rd</sup> Avenue, Queens, New York

JOB NO. Q 1613-17-EN  
 SURVEYED ON: JANUARY 14, 2015

43<sup>RD</sup> 60' WIDE KINGSLAND AVENUE MAIN STREET AVENUE



PLACE  
 97<sup>TH</sup> 60' WIDE LIVING PLACE IRVING PLACE

44<sup>TH</sup> 25' WIDE 45' WIDENING NORTH RAILROAD AVENUE AVENUE

LEGAL DESCRIPTION  
 BLOCK 1613, LOT 17  
 ENVIRONMENTAL EASEMENT AREA

**ALL THAT** certain plot, piece or parcel of land, situate, lying and being in the Borough and County of Queens, City and State of New York, known and designated on a certain map entitled, "Map of Valuable Building Lots at West Flushing, situated upon Newtown Avenue and the Railroad, surveyed and laid out by R.Graves, C.S., June 15, 1853", Page 4 Section 4, and filed in the Office of the Clerk of the County of Queens as and by Lots Nos. 73, 74, 75, 82, 83 and 84, which said Lots when taken together as parcel are bounded and described as follows:

**BEGINNING** at the corner formed by the intersection of the southerly side of 43rd Avenue (formerly Kingsland Avenue and also formerly Main Street) with the westerly side of 97th Place (formerly Lydig Place and also formerly Irving Place);

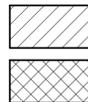
**RUNNING THENCE** westerly along the southerly side of 43rd Avenue, 275 feet to the easterly line of Lot No. 81 on said Map;

**THENCE** southerly parallel with 97th Place and at right angles to 43rd Avenue, 200 feet to the northerly side of 44th Avenue (formerly North Railroad Avenue), 25 feet wide;

**THENCE** easterly along said northerly side of 44th Avenue, 275 feet to the westerly side of 97th Place;

**THENCE** northerly along said side of 97th Place, 200 feet to the corner or place of **BEGINNING**.

LOT AREA = 55000.00 s<sup>q</sup>ft. = 1.2626 acres



— ENVIRONMENTAL EASEMENT AREA

— AREA ENCOMPASSING THE ENGINEERING CONTROLS — VAPOR BARRIER AND SUB-SLAB DEPRESSURIZATION SYSTEM

SYMBOLS AND ABBREVIATIONS	
FENCE	CH.L.F.E. WOOD F.E.
UTILITY POLE	U.P.
PARKING METER	P.M.
OIL FILL	O.F.
MONITORING WELL	M.W.
TRAFFIC LIGHT	T.L.
LIGHT	L.
STREET LIGHT	S.L.
FIRE HYDRANT	H.Y.D.
SIAMMSE CONNECTION	S.P.K.
SHUT OFF VALVE	G.V. W.V.
HANDICAPPED PARKING	H.P.
EXISTING TREE	12" DR.
DRAINS	DR.
ROOF OVER	R.O.
EXISTING ELEVATIONS	+43.78 TOP OF CURB +42.48 BOTTOM OF CURB L.G. 7.52
CITY ESTABLISHED GRADES	CURB CUT C&S.W.
OVERHEAD SERVICE	O.H.S.
CABLE TV MANHOLE	C.T.V.
MANHOLES	M.H.
CATCH BASIN	C.B.
FIRE ESCAPE	F.E.
PLATFORM	PL or PLTF.
BASEMENT ENTRANCE	B.E.
CELLAR ENTRANCE	C.E.
AIR WAY	A.W.
BAY WINDOW	B.W.
CONCRETE	CONC.
OVERHANG	O.H.
AIR CONDITION	AC
METAL	MET.
NORTH OF PROPERTY LINE	N
SOUTH OF PROPERTY LINE	S
EAST OF PROPERTY LINE	E
WEST OF PROPERTY LINE	W

SUBSURFACE UTILITIES ARE NOT GUARANTEED BY SURVEYOR. HIGH CAUTION RECOMMENDED AND VERIFICATION WITH PROPER CITY AGENCIES, IS MANDATORY BEFORE COMMENCING ALL NEW WORK.

ALL SUBSURFACE AND OVERHEAD UTILITIES (AS TO SIZE, TYPE AND DEPTH) SHOWN ON THIS SURVEY ARE TAKEN FROM RECORDS OF GOVERNMENTAL AGENCIES AND UTILITY COMPANIES, UNLESS OTHERWISE NOTED AND SHOWN.

COVER OR DEPTH OF UTILITIES WHICH DERIVED FROM FIELD MEASUREMENTS SHOWN ON THIS SURVEY SHOULD BE VERIFIED WITH PROPER AGENCY PRIOR TO CONSTRUCTION OF PROJECT. INVERT ELEVATIONS ARE DERIVED FROM CITY AGENCY RECORDS WHEN NOT AVAILABLE BY FIELD SURVEY AND NOTED AS 'PER RECORD' ON THE SURVEY.

ALL SUBSURFACE UTILITY AS TO LOCATION AND DEPTH, SHOULD BE RECHECKED AND LEGAL GRADES SHOULD BE VERIFIED WITH THE TOPOGRAPHICAL BUREAU, PREFERABLY IN WRITING BEFORE COMMENCING CONSTRUCTION.

THIS IS TO CERTIFY THAT THERE ARE NO STREAMS OR NATURAL WATER COURSES ON THE SURVEYED PROPERTY EXCEPT AS SHOWN AND/OR DESCRIBED ON THIS SURVEY.

ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 36 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART 100.10 BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA.

ALL ELEVATIONS SHOWN REFER TO THE NAVD 1988 DATUM. TO OBTAIN:  
 - NGVD 1929 DATUM - ADD 1.086 FEET  
 - QUEENS BOROUGH DATUM - SUBTRACT 1.625 FEET

EASEMENTS IF ANY ARE NOT SHOWN ON THIS SURVEY, NO INFORMATION PROVIDED TO SURVEYOR AT THIS TIME.

**UNDERGROUND UTILITIES NOTE**

UNDERGROUND, OVERHEAD AND GROUND LEVEL UTILITIES ARE NOT GUARANTEED AS TO ACCURACY, EXACT LOCATION, TYPE OR USE, ACTIVE OR INACTIVE. VERIFICATION IS MANDATORY WITH MUNICIPAL AGENCIES, PUBLIC AND PRIVATE UTILITY COMPANIES PRIOR TO TAKING TITLE AND OR DESIGN WORK. BOUNDARIES ARE NOT GUARANTEED UNLESS SO NOTED.

**ENVIRONMENTAL EASEMENT NOTE**

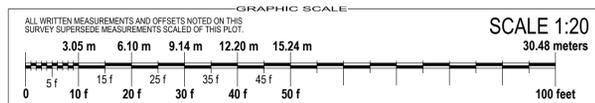
THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT [dec.ny.gov](http://dec.ny.gov).

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID COPY. GUARANTEES OR CERTIFICATIONS INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY IS PREPARED AND ON HIS BEHALF TO THE TITLE COMPANY, GOVERNMENTAL AGENCY AND LENDING INSTITUTION LISTED HEREON, AND TO THE ASSIGNEES OF THE LENDING INSTITUTION. GUARANTEES OR CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

GUARANTEED TO: TRC Engineers, INC,	
COUNTY: QUEENS	CITY: CORONA
SECTION: BLOCK: 1613	LOT(S): 17
PROPERTY ADDRESS: 96-18 43rd AVENUE	

**ENVIRONMENTAL EASEMENT SURVEY**

PREPARED BY  
**PERFECT POINT**  
 LAND SURVEYING RT  
 brooklyn - queens - manhattan - bronx  
 staten island - nassau  
 phone: (718) 474-7700  
 fax: (718) 872-9699  
 info@ppsurveying.com  
 www.ppsurveying.com



## **APPENDIX B – EXCAVATION WORK PLAN**



## **APPENDIX B – EXCAVATION WORK PLAN**

### **B-1 NOTIFICATION**

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the Department. Currently, this notification will be made to:

Jane O’Connell  
Regional Hazardous Waste Remediation Engineer  
NYSDEC Region 2 Office  
47-40 21st Street, Long Island City, NY 11101

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor’s health and safety plan, in electronic format, which adheres to the outline provided in Appendix C of the SMP,
- Identification of disposal facilities for potential waste streams,



- Identification of sources of any anticipated backfill, along with all required chemical testing results.

## **B-2 SOIL SCREENING METHODS**

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-Site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

## **B-3 STOCKPILE METHODS**

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

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

## **B-4 MATERIALS EXCAVATION AND LOAD OUT**

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.



The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

#### **B-5 MATERIALS TRANSPORT OFF-SITE**

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

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

All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.



Truck transport routes are as follows: 1) Enter Site are from the west via 43<sup>rd</sup> Avenue 2) Exit Site via 44<sup>th</sup> Avenue and head west toward Junction Boulevard 3) Make a left onto Junction Boulevard and head south toward I-495 (refer to Figure 16 of the SMP). All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

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

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

#### **B-6 MATERIALS DISPOSAL OFF-SITE**

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal



quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

#### **B-7 MATERIALS REUSE ON-SITE**

No excavated material will be reused on-Site.

#### **B-8 FLUIDS MANAGEMENT**

All liquids to be removed from the Site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, but will be managed off-Site.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

#### **B-9 COVER SYSTEM RESTORATION**

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Order on Consent. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), (refer to Figure 14 of the SMP) this will constitute a modification of the cover element of the remedy. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

## **B-10 BACKFILL FROM OFF-SITE SOURCES**

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the following DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 5, “Allowable Constituent Levels for Imported Fill or Soil” criteria depending on use:

- Cover material (top two feet): Material will meet Unrestricted Use SCOs.
- Backfill for use below cover material: Material will meet Restricted Residential SCOs.

Representative samples of the proposed backfill material will be collected at a frequency in accordance with Table 5.4(e)10 and analyzed for parameters listed in Appendix 5 of NYSDEC DER-10. Acceptable laboratory reporting limits (below the regulatory comparison criteria) have been achieved to demonstrate that the fill/backfill complies with the requirements for environmentally clean fill.

Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 8 of the SMP. Soils that meet ‘exempt’ fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.



## **B-11 STORMWATER POLLUTION PREVENTION**

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

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

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

## **B-12 CONTINGENCY PLAN**

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling



results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

### **B-13 COMMUNITY AIR MONITORING PLAN**

The Community Air Monitoring Plan is provided in Appendix C of this SMP. Additionally, a figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in Figure 1 of Appendix C of the SMP. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Additional stations will be added based on the area to be disturbed with a maximum of four locations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

### **B-14 ODOR CONTROL PLAN**

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used on a routine basis as necessary will include the use of foams, neutralizing agents, encapsulants and tarps. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation

Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

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

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

#### **B-15 DUST CONTROL PLAN**

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

- Dust suppression will be achieved through the use of a dedicated on-Site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.



**B-16 OTHER NUISANCES**

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

**APPENDIX C – HEALTH AND SAFETY PLAN  
OUTLINE AND COMMUNITY AIR  
MONITORING PLAN**

**SAMPLE  
HEALTH AND SAFETY PLAN OUTLINE  
(TO BE PREPARED BY CONTRACTORS PERFORMING WORK BELOW THE  
FINAL SITE DEVELOPMENT COVERS)**

- 1.0 Introduction
  - 1.1 Objectives and Applicability
  - 1.2 General Site Description
- 2.0 Hazard Evaluation
- 3.0 Health and Safety Personnel
  - 3.1 Organizational Structure
  - 3.2 Key Personnel/Responsibilities
    - 3.2.1 Health and Safety Director/Manager
    - 3.2.2 Project Manager
    - 3.2.3 On-Site Health and Safety Coordinator
    - 3.2.4 Subcontractors
- 4.0 Training Requirements
- 5.0 Site Control Measures
  - 5.1 Work Zone Definition
  - 5.2 Nearest Medical Assistance
  - 5.3 Safe Work Practices
  - 5.4 Response Actions
- 6.0 Personnel Protective Equipment
  - 6.1 Overview of Levels of Protection
  - 6.2 Personal Protective Equipment
    - 6.2.1 Equipment Overview
    - 6.2.2 Monitoring Requirements
    - 6.2.3 Action Levels
- 7.0 Emergency Response/Contingency Plan
  - 7.1 Pre-Emergency Planning
  - 7.2 Evacuation Routes and Procedures
  - 7.3 Site Security and Control
  - 7.4 Emergency Contact/Notification System
  - 7.5 Emergency Equipment
- 8.0 Air Monitoring
  - 8.1 Instrumentation
  - 8.2 Air Monitoring Frequency
  - 8.3 Perimeter Air Monitoring

**SITE MANAGEMENT PLAN**  
**APPENDIX C – COMMUNITY AIR MONITORING PLAN**  
**NYSDEC Order On Consent No. R2-0789-12-08; Site No. 241140**  
**Former Tiffany’s Studio Site (Proposed Public School 315Q)**  
**Queens, New York**  
**August 2015**

INTERIM REMEDIAL MEASURE WORK PLAN – APPENDIX C  
COMMUNITY AIR MONITORING PLAN  
NYSDEC ORDER ON CONSENT NO. R2-0789-12-08; SITE NO. 241140  
FORMER TIFFANY’S STUDIO SITE (PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK

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**FIGURE 1 - COMMUNITY AIR MONITORING PLAN LOCATIONS**

**APPENDIX A – MANUFACTURERS’ OWNER’S MANUALS**

## **1.0 INTRODUCTION**

In accordance with the Site Management Plan, this Community Air Monitoring Plan (CAMP) is developed for utilization during excavation activities at the Former Tiffany’s Studio Site (Proposed Public School 315Q) located at 96-18 43rd Avenue, Queens, New York. The Site is an approximately 55,000-square-foot lot. Prior to construction of the current school building the Site was improved with four contiguous, two- and three-story commercial buildings.

TRC Engineers, Inc. (TRC) developed this CAMP to describe the procedures for real-time air monitoring for volatile organic compounds (VOCs) and particulate levels which will be completed during intrusive activities. Continuous monitoring and observations will be required during excavation activities. This CAMP was developed based on the requirements of New York State Department of Health (NYSDOH) Generic CAMP, Appendix 1A and Fugitive Dust and Particulate Monitoring, Appendix 1B, of NYSDEC DER-10.

## **2.0 PURPOSE**

The Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of the work area at the Site. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of excavation work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities do not spread contamination off-site through the air.

### **3.0 AIR MONITORING PROTOCOL**

A qualified environmental monitor with “stop work authority” will be responsible for the air monitoring and daily calibration and maintenance of the equipment in accordance with the manufacturer’s specifications. All instrumentation and equipment will be maintained at all times in proper operating condition. The qualified environmental monitor will be responsible for documenting in the dedicated project log book each calibration event, any equipment and instrument malfunctions, unusual conditions, air monitoring station locations, and any exceedances of action levels and countermeasures implemented. Copies of the manufacturers’ owner’s manuals (cover and outline only) for monitoring instrumentation to be used is included as *Appendix A*.

#### **3.1 VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the work area on a continuous basis. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present (i.e., photoionization detector MiniRae 2000). The equipment will be calibrated daily and will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring. Note that odor

complaints from any owner of an adjacent or nearby property will be managed by the Contractor in a manner equivalent to an exceedance of an action level in the CAMP.

2. If total organic vapor levels at the downwind perimeter of the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

### **3.2 Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind locations of the perimeter of the Site at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level (i.e., TSI DusTrak Model 8520). The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed.

INTERIM REMEDIAL MEASURE WORK PLAN – APPENDIX C  
COMMUNITY AIR MONITORING PLAN  
NYSDEC ORDER ON CONSENT NO. R2-0789-12-08; SITE NO. 241140  
FORMER TIFFANY'S STUDIO SITE (PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK

---

Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \mu\text{g}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area. Note dust complaints from any owner of an adjacent or nearby property will be managed by the Contractor in a manner equivalent to an exceedance of an action level in the CAMP.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \mu\text{g}/\text{m}^3$  above the upwind level, work will be stopped and a re-evaluation of activities will be initiated. Work will be able to be resumed provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \mu\text{g}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

#### **4.0 REPORTING**

Any exceedance of a CAMP threshold or action level will be reported to the NYCSCA immediately and additionally via email within 4 hours of the time it is recorded. The report will include the instrument readings; location of the monitoring station where the exceedance was recorded; readings at upwind locations; date, time, and duration of elevated readings (i.e., number of 15 minute time-weighted exceedances); activities being performed at the time of the exceedances; and descriptions of countermeasures implemented to control the exceedance and prevent future occurrences.

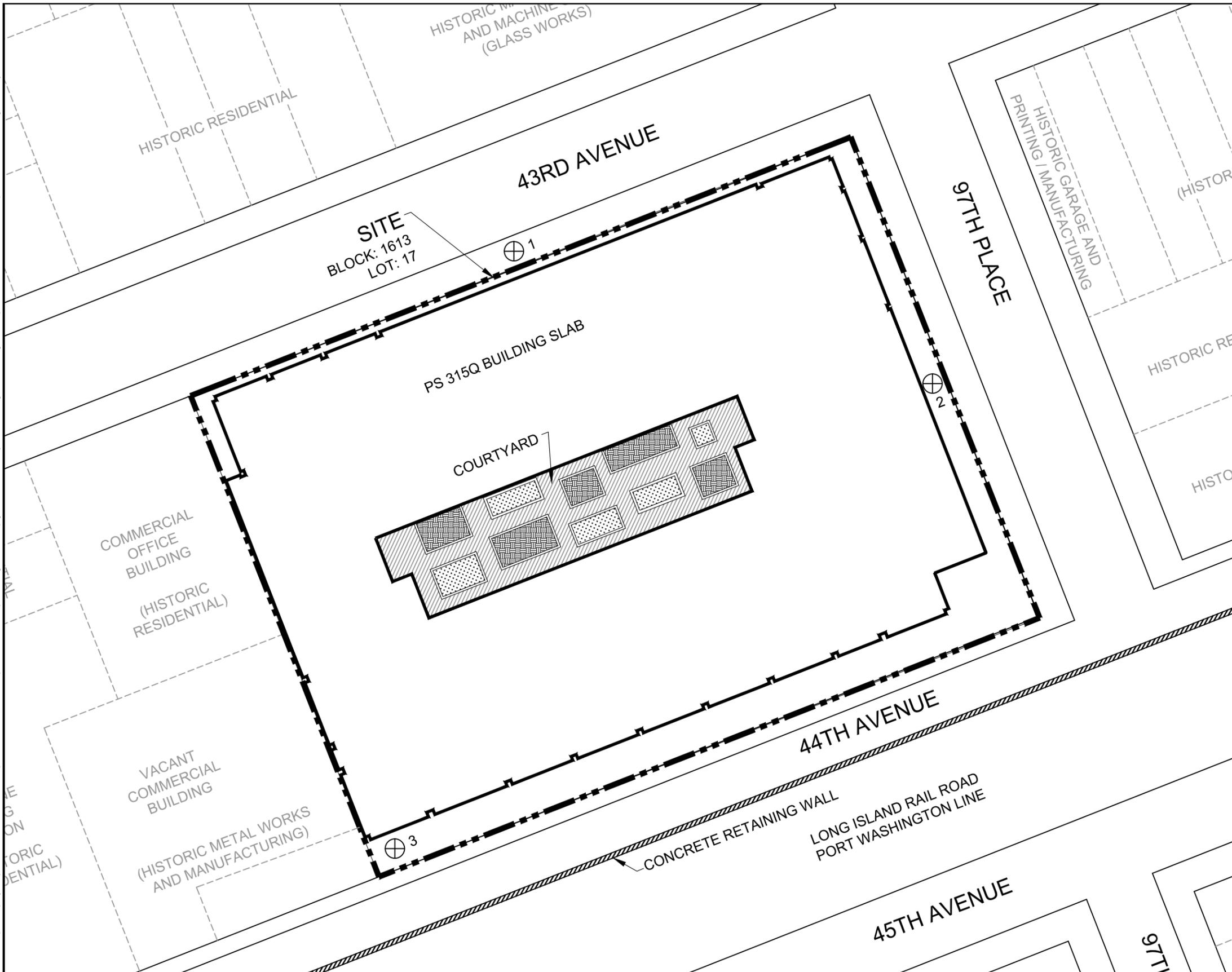
At the completion of each work day, the data recorded from each air monitoring station will be downloaded onto a dedicated field computer and evaluated by the qualified environmental monitor. All readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review.

**INTERIM REMEDIAL MEASURE WORK PLAN – APPENDIX C  
COMMUNITY AIR MONITORING PLAN  
NYSDEC ORDER ON CONSENT NO. R2-0789-12-08; SITE NO. 241140  
FORMER TIFFANY’S STUDIO SITE (PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK**

---

**FIGURE 1**

Path Name: \\NTAPA-NYC\environmental\Shared\Projects\NYCSCA Contract 000012279\198908 - 3150 Const. Insp and Remediation\Site Management Plan\Figure 1 - Community Air Monitoring Locations.dwg - Date\Time: Mon, 19 Jan 2015 - 2:12pm - User Name: Hdelgado - Layout Tab: 11X17



**LEGEND:**

-  SITE BOUNDARY
-  BUILDING FOOTPRINT
-  LOT BOUNDARY
-  LANDSCAPED AREAS (PROPOSED)
-  ARTIFICIAL TURF (PROPOSED)
-  PAVERS (PROPOSED)
-  CAMP STATION

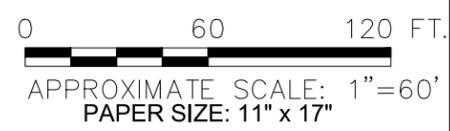
**NOTE:**

THE EXACT LOCATIONS TO BE MONITORED ON A GIVEN DAY WILL BE ESTABLISHED BASED ON THE DAILY WIND DIRECTION

GROUNDWATER FLOW DIRECTION



NO.	DESCRIPTION	BY	DATE




1430 BROADWAY, 10TH FLOOR  
NEW YORK, NEW YORK 10018  
212-221-7822

DESIGNED BY: LM
DRAWN BY: HD
CHECKED BY: RW
DATE: JANUARY 2015
SCALE: AS SHOWN
PROJECT NUMBER: 198908.0000.0000

PROJECT NAME:  
**NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY**  
SITE MANAGEMENT PLAN - APPENDIX D - CAMP - BLOCK: 1613, LOT: 17  
PROPOSED PS 315Q - 96-18 43RD AVENUE  
QUEENS, NEW YORK 11368

DRAWING TITLE:  
COMMUNITY AIR MONITORING LOCATIONS

**FIGURE 1**

**INTERIM REMEDIAL MEASURE WORK PLAN – APPENDIX C  
COMMUNITY AIR MONITORING PLAN  
NYSDEC ORDER ON CONSENT NO. R2-0789-12-08; SITE NO. 241140  
FORMER TIFFANY’S STUDIO SITE (PROPOSED PUBLIC SCHOOL 315Q)  
QUEENS, NEW YORK**

---

**APPENDIX A  
MANUFACTURERS’ OWNER’S MANUALS**

# MiniRAE 2000

## Portable VOC Monitor PGM-7600



## OPERATION AND MAINTENANCE MANUAL

(Document No.: 011-4001-000)  
Revision E, May 2005



## **ATTENTION!**

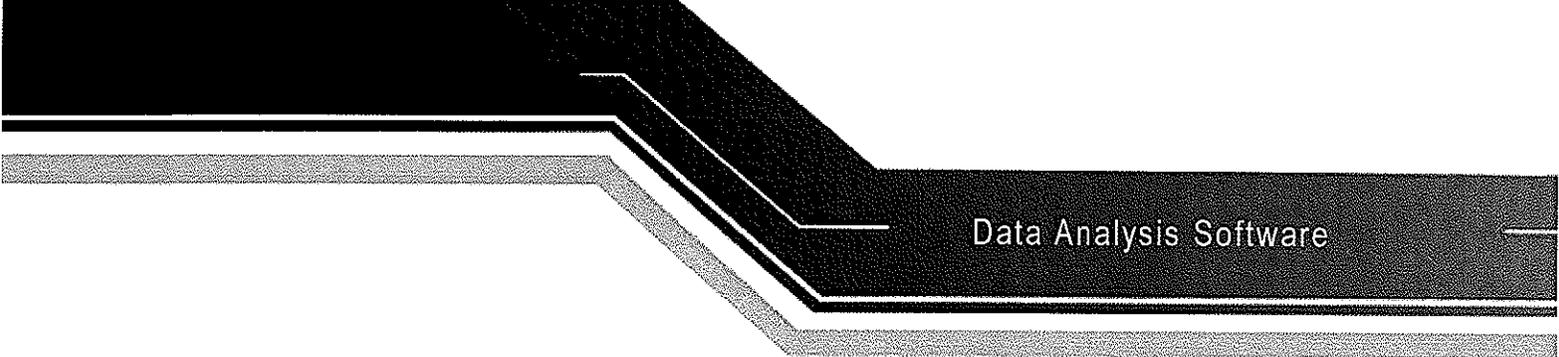
### **For European Applications**

- A. CE 0575 Ⓢ II 1G/2G  
DEMKO 03 ATEX 0204759X  
Eex ia IIC T4**
- B. Recharge batteries only in non-hazardous locations.**
- C. Do not connect external cable to serial interface jack in hazardous locations.**
- D. Use RAE Systems Adapter P/N 500-0072 for connection to communication port and charging jack only in a non-hazardous area.**

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Data Analysis Software

**TRAKPRO™**  
Data Analysis Software

User's Guide

1980581, Revision D  
July 2009



TRUST. SCIENCE. INNOVATION.



**Part Number**

1980581 / Revision D / July 2009

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TSI Incorporated / 500 Cardigan Road / Shoreview, MN 55126 / USA

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(651) 490-3824

**E-mail Address**

[answers@tsi.com](mailto:answers@tsi.com)

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- b. Parts repaired or replaced as a result of repair services are warranted to be free from defects in workmanship and material, under normal use, for 90 days from the date of shipment.
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**APPENDIX D – MONITORING WELL  
CONSTRUCTION LOGS**



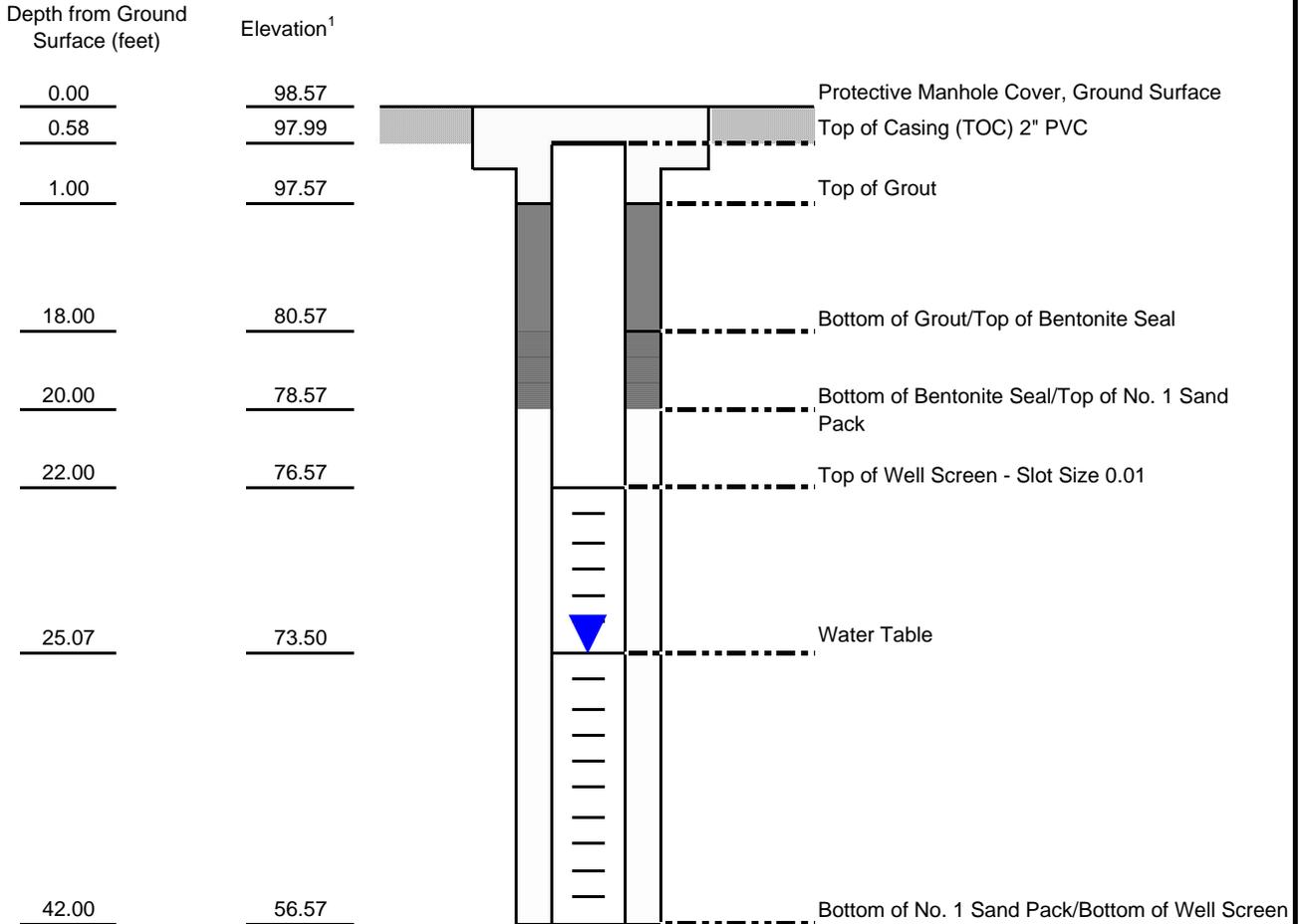
TRC Engineers, Inc.  
1430 Broadway, 10th Floor  
New York, New York 10018  
Phone 212 221 7822

## WELL INSTALLATION LOG

**WELL: TRC-GW1**

**SHEET 1 OF 1**

JOB NAME:	Public School 315Q	DRILLING METHOD:	Hollow Stem Auger Rig
ADDRESS:	96-18 43rd Avenue Queens, New York	DRILLER:	Aquifer Drilling & Testing, Inc.
ELEVATION <sup>1</sup> :	97.99	INSTALLATION DATE:	3/9/2012
INSPECTOR:	Lindsay Metcalf	DEVELOPMENT DATE:	3/22/2012
		DEPTH TO WATER <sup>2</sup> :	24.49
		PRODUCT THICKNESS:	None detected



**Notes:**

<sup>1</sup>Feet below arbitrary datum point which was given an elevation of 100 feet. Groundwater monitoring well was surveyed by Perfect Point Land Surveying on April 2, 2012.

<sup>2</sup>Feet below top of casing



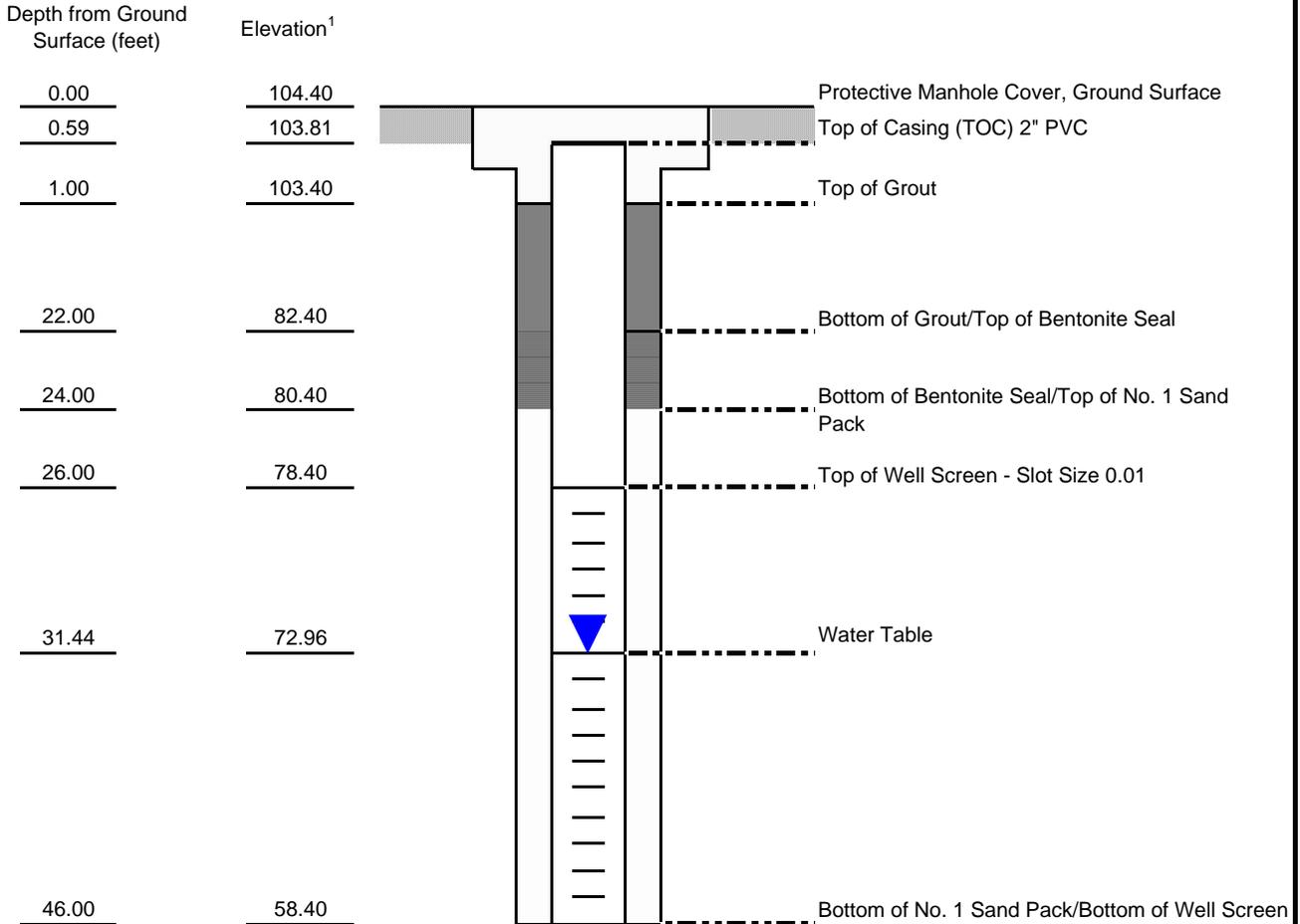
TRC Engineers, Inc.  
1430 Broadway, 10th Floor  
New York, New York 10018  
Phone 212 221 7822

## WELL INSTALLATION LOG

**WELL: TRC-GW2**

**SHEET 1 OF 1**

JOB NAME:	Public School 315Q	DRILLING METHOD:	Hollow Stem Auger Rig
ADDRESS:	96-18 43rd Avenue Queens, New York	DRILLER:	Aquifer Drilling & Testing, Inc.
ELEVATION <sup>1</sup> :	103.81	INSTALLATION DATE:	3/7/2012
INSPECTOR:	Lindsay Metcalf	DEVELOPMENT DATE:	3/22/2012
		DEPTH TO WATER <sup>2</sup> :	30.85
		PRODUCT THICKNESS:	None detected



**Notes:**

<sup>1</sup>Feet below arbitrary datum point which was given an elevation of 100 feet. Groundwater monitoring well was surveyed by Perfect Point Land Surveying on April 2, 2012.

<sup>2</sup>Feet below top of casing



TRC Engineers, Inc.  
1430 Broadway, 10th Floor  
New York, New York 10018  
Phone 212 221 7822

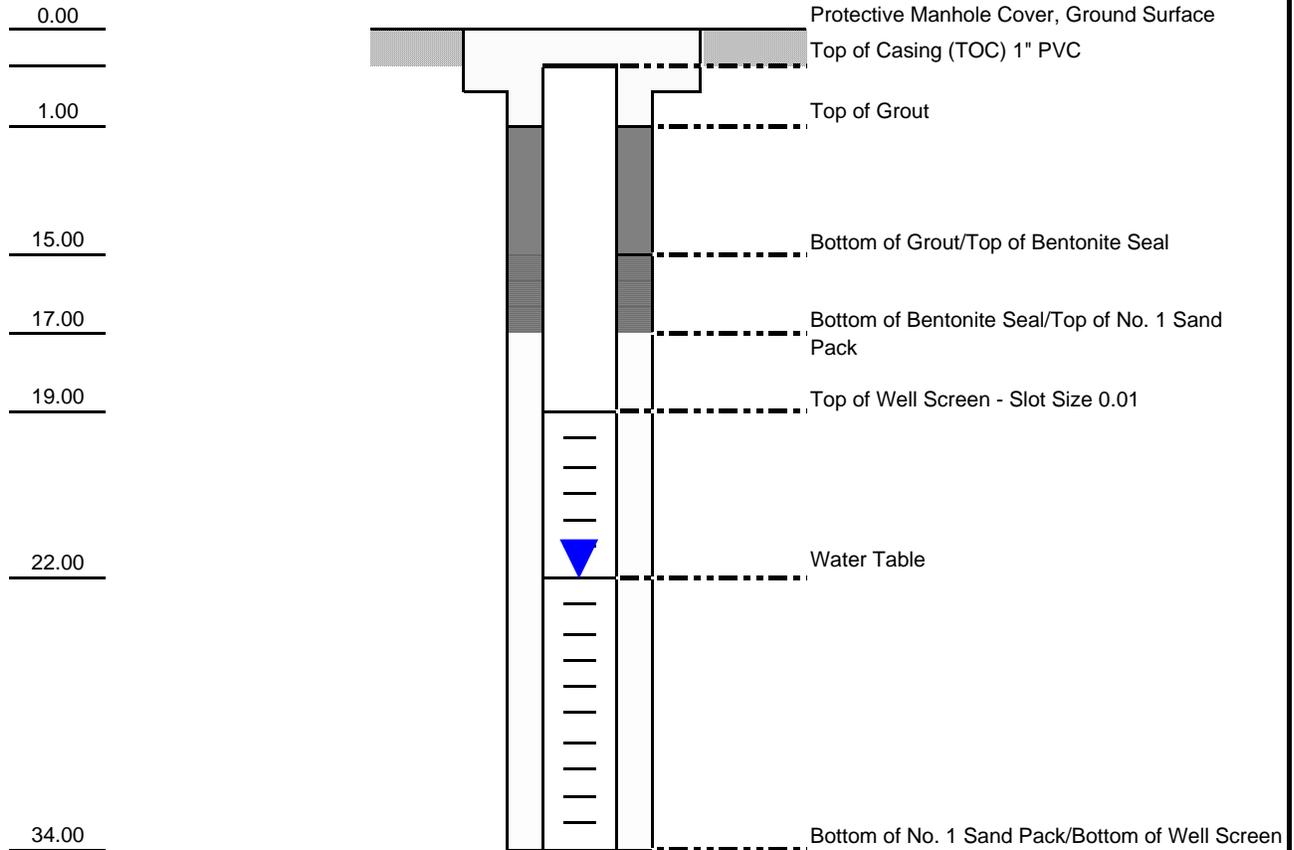
## WELL INSTALLATION LOG

**WELL: TRC-GW3**

**SHEET 1 OF 1**

JOB NAME:	Public School 315Q	DRILLING METHOD:	Geoprobe
ADDRESS:	96-18 43rd Avenue Queens, New York	DRILLER:	Zebra Environmental
ELEVATION <sup>1</sup> :	NA	INSTALLATION DATE:	1/24/2015
INSPECTOR:	Phil Castellano	DEVELOPMENT DATE:	1/25/2015
		DEPTH TO WATER <sup>1</sup> :	22
		PRODUCT THICKNESS:	None detected

Depth from Ground  
Surface (feet)



Not to Scale

**Notes:**

<sup>1</sup>Feet below top of casing



TRC Engineers, Inc.  
1430 Broadway, 10th Floor  
New York, New York 10018  
Phone 212 221 7822

## WELL INSTALLATION LOG

**WELL: SB-29|GW-11**

**SHEET 1 OF 1**

JOB NAME: PS - 315 Q  
ADDRESS: 96-18 43rd Avenue, Queens, NY

WELL NUMBER: SB-29|GW-11 (2.0 inch Dia.)  
DRILLING METHOD: Geoprobe DT 6610 DT

INSTALLATION DATE: 11/29/12

DRILLER: Aquifer Drilling & Testing, Inc.

DEVELOPMENT DATE: 11/30/12

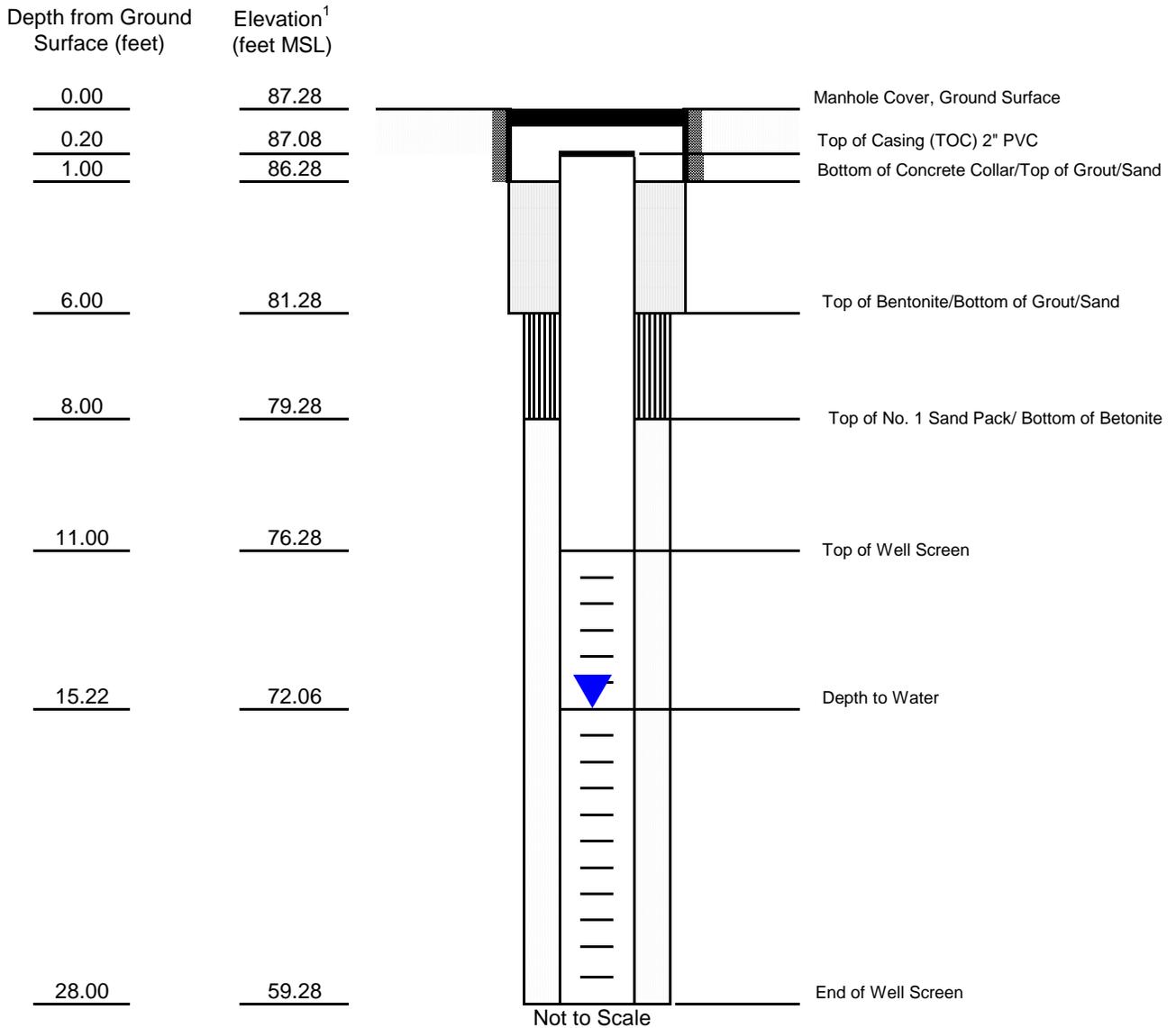
GAUGING DATE: 12/17/12

ELEVATION/ DATUM: Arbitrary reference datum

DEPTH TO WATER<sup>2</sup>: 15.02

INSPECTOR: Sanjay Sharma

DEPTH TO PRODUCT: None detected



**Notes:**

<sup>1</sup>Groundwater monitoring well was surveyed by Perfect Point Land Surveying on December 17, 2012.

<sup>2</sup>Feet below top of casing measured on December 17, 2012



TRC Engineers, Inc.  
1430 Broadway, 10th Floor  
New York, New York 10018  
Phone 212 221 7822

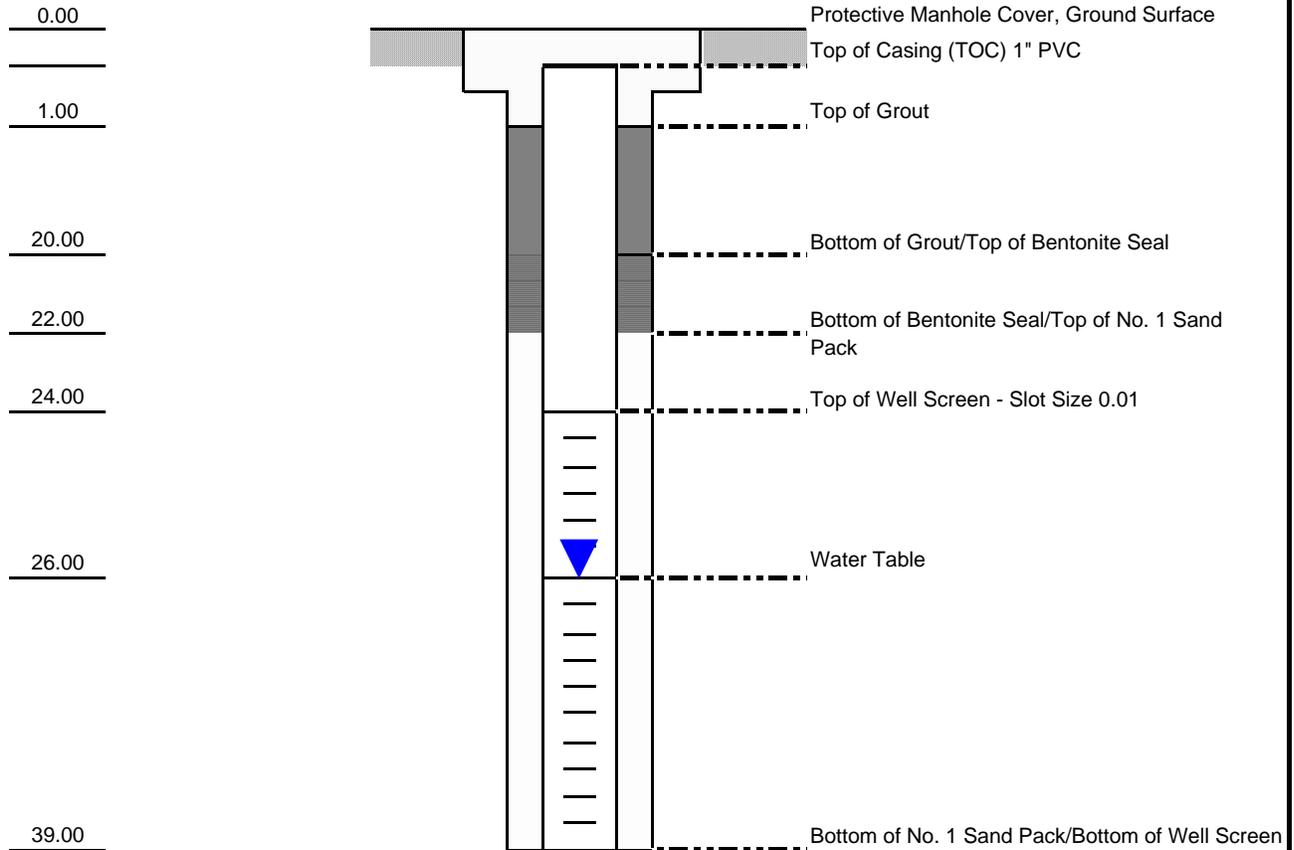
## WELL INSTALLATION LOG

**WELL: TRC-GW13**

**SHEET 1 OF 1**

JOB NAME:	Public School 315Q	DRILLING METHOD:	Geoprobe
ADDRESS:	96-18 43rd Avenue Queens, New York	DRILLER:	Zebra Environmental
ELEVATION:	NA	INSTALLATION DATE:	1/24/2015
INSPECTOR:	Lindsay Metcalf	DEVELOPMENT DATE:	1/25/2015
		DEPTH TO WATER <sup>1</sup> :	26
		PRODUCT THICKNESS:	None detected

Depth from Ground  
Surface (feet)



Not to Scale

**Notes:**

<sup>1</sup>Feet below top of casing

**APPENDIX E – QUALITY ASSURANCE  
PROJECT PLAN**

# **QUALITY ASSURANCE PROJECT PLAN**

# **QUALITY ASSURANCE PROJECT PLAN**

## **APPENDIX E - QUALITY ASSURANCE PROJECT PLAN**

This Section presents the organization, objectives, planned activities, and specific quality assurance/quality control (QA/QC) procedures associated with the field activities described in the scope of work. The Section also describes specific protocols for field sampling, sampling handling and storage, and laboratory analysis. The data generated from the analysis of samples will be used to document post-remedial groundwater conditions.

### **Project Organization and Responsibility**

A qualified person will coordinate and manage the sampling and analysis program, data reduction, QA/QC, data validation, analysis, and reporting. TRC will direct the sampling activities and coordinate laboratory and drilling activities. The TRC Project QA Officer will be Elizabeth Denly and will report directly to the project manager, Jenna Raup.

A qualified person will insure that the QAPP is implemented and will oversee data validation. A qualified person will provide oversight and technical support for the sampling and analytical procedures followed in this project. This individual has the broad authority to approve or disapprove project plans, specific analyses, and final reports. The Project QA Officer is independent from the data generation activities. In general, the QA officer will be responsible for reviewing and advising on all QA/QC aspects of this program.

Laboratories used will be NYSDOH ELAP certified laboratories. The laboratories will communicate directly with the sampler regarding the analytical results and reporting and will be responsible for providing all labels, sample containers, trip blanks, shipping coolers, and laboratory documentation.

### **QA Objectives for Data Management**

The analytical data will be provided by the laboratory using the New York State ASP Category B deliverable format.

All analytical measurements will be made so that the results are representative of the media sampled and the conditions measured. Data will be reported in consistent dry weight units for solid samples (i.e.,  $\mu\text{g}/\text{kg}$  and/or  $\text{mg}/\text{kg}$ ) and in  $\mu\text{g}/\text{L}$  or  $\text{mg}/\text{L}$  for aqueous samples. Table 1 presents the proposed samples, sampling and analytical parameters, analytical methods, sample preservation requirements, containers and QA/QC samples.

Quantitation Limits (QLs) are laboratory-specific and reflect those values achievable by the laboratory performing the analyses. Data Quality Levels (DQLs) are those reporting limits required to meet the objectives of the program (i.e., program action levels, cleanup standards, etc.). Data Quality Objectives (DQOs) define the quality of data and documentation required to support decisions made in the various phases of the data collection activities. The DQOs are dependent on the end uses of the data to be collected and are also expressed in terms of objectives for precision, accuracy, representativeness, completeness, and comparability.

The analytical methods to be used at this site provide the highest level of data quality and can be used for purposes of risk assessment, evaluation of remedial alternatives and verification that cleanup standards have been met. However, in order to ensure that the analytical methodologies are capable of achieving

the DQOs, measurement performance criteria have been set for the analytical measurements in terms of accuracy and precision.

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting which will provide results that are scientifically valid, and the levels of which are sufficient to meet DQOs.

For quantitation limits for parameters associated with groundwater samples, the laboratory will be required to attempt to meet or surpass the parameter-specific limits for groundwater from the Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values.

The QA objectives are defined as follows:

- **Accuracy** is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error.

Accuracy in the field is assessed through the adherence to all field instrument calibration procedures, sample handling, preservation, and holding time requirements, and through the collection of equipment blanks prior to the collection of samples for each type of equipment being.

The laboratory will assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of “standards,” materials of accepted reference value. Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy will be measured in terms of blank results, the percent recovery (%R) of surrogate compounds in organic analyses and/or laboratory control samples (LCSs). This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds. Table 2 summarizes the laboratory accuracy requirements.

- **Precision** is the agreement among a set of replicate measurements without consideration of the “true” or accurate value: i.e., variability between measurements of the same material for the same analyte. Precision is measured in a variety of ways including statistically, such as calculating variance or standard deviation.

Precision in the field is assessed through the collection and measurement of field duplicates (one extra sample in addition to the original field sample). Field duplicates will be collected at a frequency of one per twenty investigative samples per matrix per analytical parameter. Precision will be measured through the calculation of relative percent differences (RPDs). The resulting information will be used to assess sampling and analytical variability. Field duplicate RPDs must be  $\leq 30$  for aqueous samples. These criteria apply only if the sample and/or duplicate results are  $>5x$  the quantitation limit; if both results are  $\leq 5x$  the quantitation limit, the criterion will be doubled.

Precision in the laboratory is assessed through the calculation of RPD for duplicate samples. For groundwater analyses, laboratory precision will be assessed through the analysis of field duplicates.

- **Completeness** is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. “Normal conditions” are defined as the conditions expected if the sampling plan was implemented as planned.

Field completeness is a measure of the amount of (1) valid measurements obtained from all the measurements taken in the project and (2) valid samples collected. The field completeness objective is greater than 90 percent.

Laboratory completeness is a measure of the amount of valid measurements obtained from all valid samples submitted to the laboratory. The laboratory completeness objective is greater than 95 percent.

- **Representativeness** is a qualitative parameter that expresses the degree to which data accurately and precisely represents either a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. To ensure representativeness, the sampling locations have been selected to provide coverage over a wide area and to highlight potential trends in the data. In addition, field duplicate samples will provide an additional measure of representativeness at a given location.

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plan are followed and that proper sampling, sample handling, and sample preservation techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, appropriate methods, and meeting sample holding times.

- **Comparability** expresses the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plan are followed and that proper sampling techniques are used. Maximization of comparability with previous data sets is expected because the sampling design and field protocols are consistent with those previously used.

Comparability is dependent on the use of recognized EPA or equivalent analytical methods and the reporting of data in standardized units. Laboratory procedures are consistent with those used for previous sampling efforts.

**Table 1  
Analytical Parameters, Methods, Preservation, Holding Time and Container Requirements**

<b>Sample Matrix</b>	<b>Analytical Parameter</b>	<b>Sample Type</b>	<b>No. of Samples<sup>1</sup></b>	<b>No. of QA/QC Samples</b>	<b>EPA Analytical Method</b>	<b>Sample Preservation</b>	<b>Holding Time<sup>2</sup></b>	<b>Sample Container<sup>3</sup></b>
Groundwater	VOCs	Grab	TBD	Trip Blank: as necessary Equipment Blank: 1/20 Duplicate: 1/20	SW-846 Method 8260B	pH<2 with HCl; Cool to 4 <sup>0</sup> C; no headspace	14 days to analysis	(3) 40 mL VOA vials
Groundwater	SVOCs	Grab	TBD	Equipment Blank: 1/20 Duplicate: 1/20	SW-846 Methods 8270	Cool to 4 <sup>0</sup> C	7 days until extraction; 40 days after extraction.	(1) 1 L amber glass container
Groundwater	Metals	Grab	TBD	Equipment Blank: 1/20 Duplicate: 1/20	SW-846 Methods 3010A, 6010B, and 7470	pH<2 with HNO <sub>3</sub> ; Cool to 4 <sup>0</sup> C	6 months to analysis (28 days for Mercury)	(1) 500 mL poly container

<sup>1</sup> Actual number of samples may vary depending on field conditions, sample material availability, and field observations.

<sup>2</sup> From date of sample collection

<sup>3</sup> Trip blank bottleware = (3) 40 mL VOA vials

TBD = To Be Determined

**Table 2**  
**Laboratory Data Quality Objectives: Precision and Accuracy: Groundwater Samples**

<b>Parameter</b>	<b>Method</b>	<b>Matrix</b>	<b>Accuracy Control Limits</b>	<b>Accuracy Frequency Requirements</b>	<b>Precision (RPD) Control Limits</b>	<b>Precision Frequency Requirements</b>
VOCs (TCL)	SW-846 Method 8260B	Groundwater	<u>Surrogates</u> 1,2-Dichloroethane-d4 4-Bromofluorobenzene Dibromofluoromethane Toluene-d8 % Rec. 66-150 70-131 76-130 70-131	Surrogates: All samples, standards, QC samples	<u>Field Duplicates</u> RPD ≤30	Field Duplicates: One per 20
SVOCs (TCL)	SW-846 Method 8270	Groundwater	<u>Surrogates</u> 2,4,6-Tribromophenol 2-Fluorobiphenyl 2-Fluorophenol Nitrobenzene-d5 Phenol-d5 Terphenyl-d14 % Rec. 15-110 30-130 15-110 30-130 15-110 30-130	Surrogates: All samples, standards, QC samples	<u>Field Duplicates</u> RPD ≤30	Field Duplicates: One per 20 per matrix
Metals (TAL)	SW-846 Methods 3010A, 6010B, and 7470	Groundwater	<u>Matrix Spikes</u> 75-125% recovery	<u>Matrix Spikes:</u> One per 20 per matrix per batch	<u>Field Duplicates</u> RPD ≤ 30  <u>Matrix Duplicates</u> RPD ≤ 30	<u>Field Duplicates:</u> One per 20 per matrix  <u>Matrix Duplicates:</u> One per 20 per matrix per batch

## **Sampling Plan**

Environmental sampling will include groundwater. Groundwater samples will be collected from permanent monitoring wells using low flow pumps and new dedicated Teflon tubing.

### **Groundwater Sampling**

Groundwater samples will be collected from permanent monitoring wells installed on the sidewalk. Upon opening each monitoring well, the concentration of VOCs in the headspace will be measured using a PID and water level measurements will be recorded using an electronic oil-water interface probe. The depth to LNAPL (if present), depth to water, and the total well depth will be measured from the top of the marked polyvinyl chloride (“PVC”) casings. Water level and LNAPL thickness (if any) measurements will first be made and the volume of water in the well determined. All measurements will be recorded. If LNAPL is encountered a groundwater sample will not be collected for analysis.

Groundwater from each well will be purged via a bladder pump (QED SamplePro® MicroPurge pump) lined with a Teflon bladder operated by an air compressor; or a peristaltic pump. Purging will be performed with the pump inlet placed a minimum of 15 inches above the bottom of the well and a minimum of 0.5 feet from the top of the water level, in order to minimize the amount of suspended sediment, while not disturbing sediment that may have accumulated on the bottom of the well. Equipment will be lowered into the well to prevent suspension of bottom sediment and subsequent entrainment onto sampling equipment. Surging will be avoided.

Purging will continue until parameters have stabilized in accordance with USEPA Low-Stress (Low-Flow) sampling procedures. A turbidity level of fifty NTUs or less is the well purging goal, but not an absolute value before sampling. Other field parameters including temperature, conductivity, pH, and dissolved oxygen (DO) will also be monitored. As practical, all field measurements will be taken from the flow cell and will be recorded during and after purging, and before sampling. Field parameters should generally be within  $\pm 10$  percent for three consecutive readings, prior to sampling.

It is anticipated that no more than three well volumes will be purged in order for turbidity to reach a minimum and the other parameters to stabilize. Ideally, pumping rates will be at a rate maintained between 100 and 500 milliliters per minute (ml/min) so that no drawdown of the groundwater level occurs (i.e., pumping rate is less than recharge rate). During purging, the sampler will actively monitor and track the volume of water purged and the field parameter readings. Data will be recorded in the field logbook. For example, the sampler will record the running total volume purged from each well and note the readings for the corresponding field parameters.

Once groundwater conditions have stabilized and groundwater levels have recovered, samples will be collected. Sampling will be performed with the pump intake at the same location used for purging. Pumping rates for withdrawing the samples will be similar to those followed for well purging.

The samples will be collected in sample bottles (pre-preserved, if appropriate), placed in iced coolers and removed from light immediately after collection. In addition, all sample bottles must be filled to the top so that no aeration of the samples occurs during transport. All bottles will be filled to avoid cascading and aeration of the samples, the goal being to minimize any precipitation of colloidal matter.

### **QC Sample Collection**

QC samples will include trip blanks and field duplicates for groundwater samples.

**Trip blanks** will consist of distilled water (supplied by the laboratory) and will be used to assess the potential for volatile organic compound contamination of groundwater samples due to contaminant migration during sample shipment and storage. Trip blanks will be transported to the site unopened, stored with the investigative samples, and kept closed until analyzed by the laboratory. Trip blanks will be submitted to the laboratory at a frequency of one per cooler that contains groundwater samples for analysis for VOCs.

**Equipment blanks** will consist of distilled water and will be used to check for potential contamination of the equipment which may cause sample contamination. Equipment blanks will be collected by routing the distilled water through the sampling equipment prior to sample collection. Equipment blanks will be submitted to the laboratory at a frequency of one per 20 samples per matrix per type of non-dedicated equipment being used per parameter.

**Field duplicates** are an additional aliquot of the same sample submitted for the same parameters as the original sample. Field duplicates will be used to assess the sampling and analytical reproducibility. Field duplicates will be collected by alternately filling sample bottles from the source being sampled. Field duplicates will be submitted at a frequency of one per 20 samples for all matrices and all parameters. Refer to Table 1 for a summary of QC sample preservation and container requirements.

### **Sample Preservation and Containerization**

The analytical laboratory will supply the sample containers for the chemical samples. These containers will be cleaned by the manufacturer to meet or exceed all analyte specifications established in the latest U.S. EPA's *Specifications and Guidance for Contaminant-Free Sample Containers*. Certificates of analysis are provided with each bottle lot and maintained on file to document conformance to EPA specifications. Groundwater samples will be placed in iced coolers immediately after collection.

### **Equipment Decontamination**

Re-usable Teflon<sup>®</sup>, stainless steel, and aluminum sampling equipment shall be cleaned between each use in the following manner:

- Wash and scrub with Alconox and water mixture
- Tap water rinse
- Wash/scrub with a biodegradable degreaser ("ZEP") if there is oily residue on equipment surface
- Tap water rinse
- Distilled/deionized water rinse
- Air dry

Cleaned equipment shall be wrapped in aluminum foil if not used immediately after air-drying.

Groundwater sampling pumps will be cleaned by washing and scrubbing with an Alconox/water mixture, rinsing with tap water and irrigating with deionized water.

## Field Custody Procedures

Sample chain-of-custody and packaging procedures are summarized below. These procedures are intended to ensure that the samples will arrive at the laboratory with the chain-of-custody intact.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or dispatched properly. Field procedures have been designed such that as few people as possible will handle the samples.
- All bottles will be identified by the use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis.
- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the pen would not function in wet weather.
- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage location.
- All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment, and copies will be retained by the sampler and placed in the project files.
- Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be secured with strapping tape and custody seals for shipment to the laboratory. The custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by field personnel. The cooler will be strapped shut with strapping tape in at least two locations.
- If the samples are sent by common carrier, the air bill will be used. Air bills will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the custody forms since the custody forms will be sealed inside the sample cooler and the custody seals will remain intact.
- Samples remain in the custody of the sampler until transfer of custody is completed. This consists of delivery of samples to the laboratory sample custodian, and signature of the laboratory sample custodian on chain-of-custody document as receiving the samples and signature of sampler as relinquishing samples.

**APPENDIX F – GROUNDWATER  
MONITORING WELL SAMPLING LOG  
FORM**



Project: PS-315Q  
96-18 43rd Avenue, Queens, NY

Project No.:

Date/Time:

Sheet 1 of 1

**Groundwater Sampling  
Data Record Form**

TRC Personnel:

**Well Identification:**

**WELL INTEGRITY**

	YES	NO
Protect. Casing Secure	<input type="checkbox"/>	<input type="checkbox"/>
Concrete Collar Intact	<input type="checkbox"/>	<input type="checkbox"/>
PVC Stick-up Intact	<input type="checkbox"/>	<input type="checkbox"/>
Well Cap Present	<input type="checkbox"/>	<input type="checkbox"/>
Security Lock Present	<input type="checkbox"/>	<input type="checkbox"/>

Protective Casing Stick-up NA ft.  
(from Ground)

WELL DIAMETER

<input type="checkbox"/>	2 inch
<input type="checkbox"/>	4 inch
<input type="checkbox"/>	6 inch

Well Depth (ft.):	<input type="checkbox"/>
Depth to Water (ft):	<input type="checkbox"/>

Reference Point:  
 top of riser  
 top of casing

historical measured:  
 notch  
 north side  
 high pt  
 pen mark

Depth of pump intake (ft.): 29.0

<input type="checkbox"/>	.16 gal/ft (2 in.)
<input type="checkbox"/>	.65 gal/ft (4 in.)
<input type="checkbox"/>	1.5 gal/ft (6 in.)
<input type="checkbox"/>	gal/ft (in.)

Height of water column (ft.):

**PID SCREENING (ppmV)**

Background	<input type="checkbox"/>
Well Mouth	<input type="checkbox"/> (if required)

WELL MATERIAL

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PVC	SS	___

Volume of Water in Well (gal):	<input type="checkbox"/>
Total Gallons Purged:	<input type="checkbox"/>

[Vol. = r<sup>2</sup>h(0.163)]

Depth to NAPL (ft.):	<input type="checkbox"/>
Thickness of NAPL (ft.):	<input type="checkbox"/>

**FIELD WATER QUALITY MEASUREMENTS**

Time	<input type="checkbox"/>								
Temp. (C.)	<input type="checkbox"/>								
Conduct.(umhos/com)	<input type="checkbox"/>								
DO (mg/L)	<input type="checkbox"/>								
pH (Std.Units)	<input type="checkbox"/>								
ORP (millivolts)	<input type="checkbox"/>								
Turb. (NTU)	<input type="checkbox"/>								
Flow (ml/min)-approx.	<input type="checkbox"/>								
Depth to water (ft)	<input type="checkbox"/>								
Comments	<input type="checkbox"/>								

Pump Type	Purge	Sample	Description of Sampling Equipment
Peristaltic Pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Submersible Pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bladder Pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Analytical Parameters	Filtered (Y/N)	Preservation	Volume/Containers	Time Collected	Sample ID
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					
<input type="checkbox"/>					

REMARKS:

NA Not Applicable  
 NM Not Measured  
 ND Non Detect

**APPENDIX G – SSDS AND GAS VAPOR  
BARRIER AS-BUILT DOCUMENTS**

11.17 - ATTACHED WORKS - AS-BUILT - 315Q Const. Insp. and Remediation As Built Drawings: AB-1 - SSDS Plan.dwg - PILOT DATE: September 02, 2015 - 7:51 PM - LAYOUT: 11x17  
 DRAWING NAME: I:\Projects\NYCSCA Contract C000012279\198908 - 315Q Const. Insp. and Remediation As Built Drawings: AB-1 - SSDS Plan.dwg

- LEGEND (SYMBOLS NOT TO SCALE):**
-  6"Ø PIPE BENEATH FLOOR SLAB
  -  6"Ø VERTICAL RISER AND IDENTIFICATION NUMBER EXTEND THROUGH ROOF TO SUCTION FAN
  -  SUB-SLAB MONITORING POINT AND IDENTIFICATION NUMBER
  -  SUB-SLAB DEPRESSURIZATION SYSTEM PIT AND IDENTIFICATION NUMBER
  -  HORIZONTAL EXTENT OF GAS VAPOR BARRIER AND MINIMUM 12-INCH THICK GAS PERMEABLE AGGREGATE LAYER
  -  CONDENSATE DRAIN

- NOTES:**
1. DRAWING NOT INTENDED TO SHOW STRUCTURAL, ARCHITECTURAL OR CONDITIONS OTHER THAN SPECIFICALLY RELATED TO SUB-SLAB DEPRESSURIZATION SYSTEM AND GAS VAPOR BARRIER.
  2. BASED ON OBSERVATIONS DURING PERIODIC INSPECTIONS, THE EXTENT OF BUILDING CONSTRUCTION BENEATH THE FLOOR SLABS ARE LINED WITH GAS VAPOR BARRIER. APPLICATION OF GAS VAPOR BARRIER TO BELOW GRADE WALLS AND BOTTOM SLABS AND WALLS OF PITS AND SUMPS WAS ALSO REQUIRED AS PART OF CONSTRUCTION.
  3. CONSTRUCTION CONTRACT DOCUMENTS REQUIRED A MINIMUM OF 1% SLOPE ON SSDS PIPING, TOWARDS SUB-SLAB DEPRESSURIZATION SYSTEM PITS OR TO CONDENSATE DRAINS.
  4. TRC CONDUCTED PERIODIC PROGRESS INSPECTIONS DURING THE CONSTRUCTION OF THE SUB-SLAB DEPRESSURIZATION SYSTEM (SSDS) AND GAS VAPOR BARRIER (GVB). TRC DID NOT PERFORM FULL TIME INSPECTION DURING CONSTRUCTION. THE SSDS AND GVB WILL BE CERTIFIED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER, WHO CONDUCTED SPECIFIED MILESTONE INSPECTIONS. THE CONTRACTOR'S PROFESSIONAL ENGINEER WILL PROVIDE A SIGNED AND SEALED REPORT CERTIFYING THE INSTALLATION.
  5. THE LOCATIONS OF SSDS COMPONENTS SHOWN ARE APPROXIMATE, AND BASED ON THE CONTRACT DRAWINGS AND OBSERVATIONS DURING PERIODIC FIELD INSPECTIONS PERFORMED BY TRC.

IT IS A VIOLATION OF THE STATE EDUCATION LAW SECTION 2209 (2) FOR ANY PERSON TO ALTER AN ITEM IN ANY WAY UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER AND THE ENGINEER STAMPS THE CHANGES.



JENNIFER DIPILATO, PE  
 NY PE # 085404-1  
 DATE: 9-2-2015

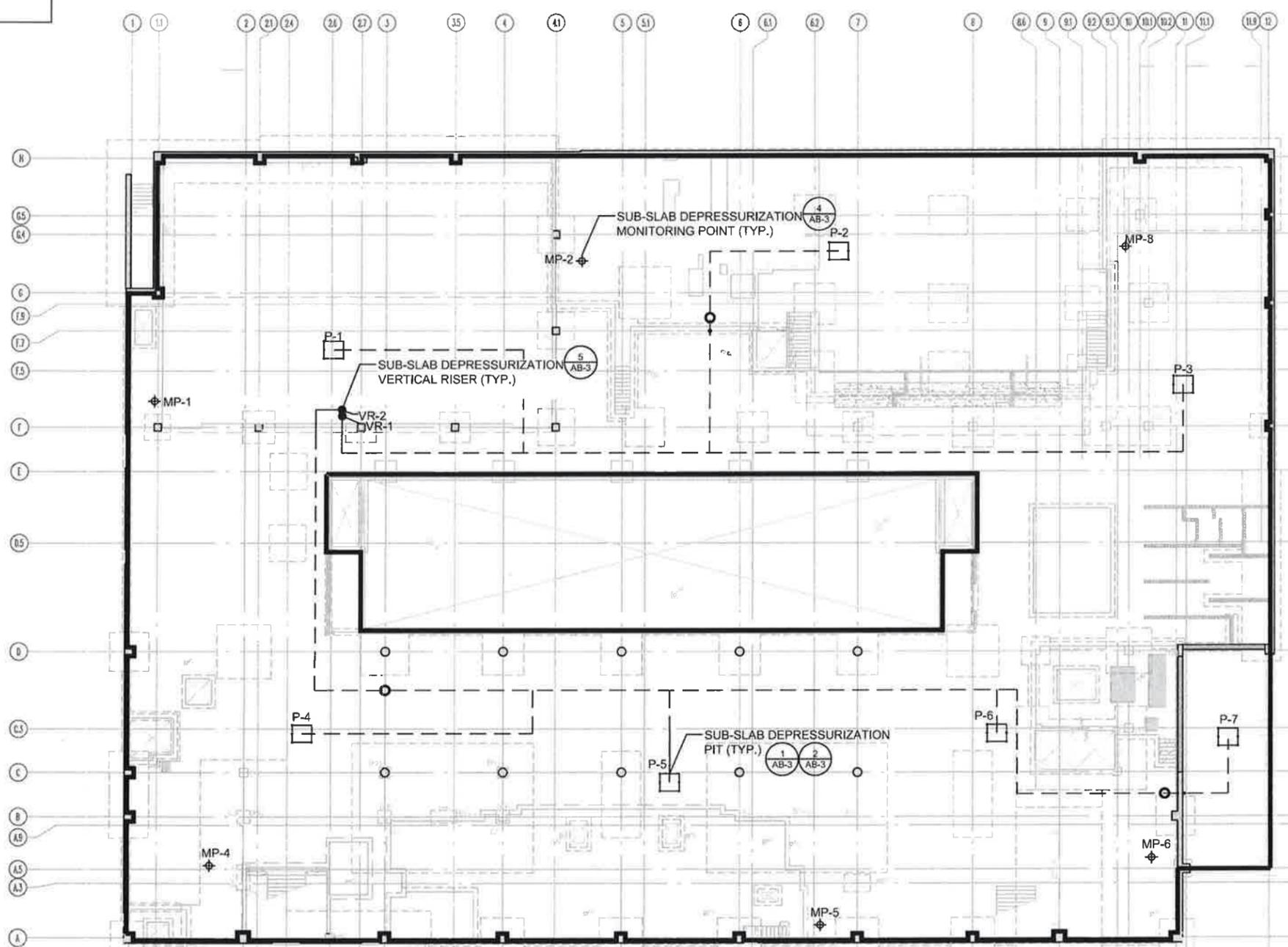
PROJECT: NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY  
 AS-BUILTS - P.S. 315Q - 43-18 97TH PLACE  
 QUEENS, NEW YORK 11368  
 NYSDEC SITE NUMBER 241140

TITLE: **SUB-SLAB DEPRESSURIZATION SYSTEM AND GAS VAPOR BARRIER PLAN AS BUILT**

DRAWN BY:	HD	PROJ NO.:	198908.0000.0000
CHECKED BY:	PC		
APPROVED BY:	JD		<b>AB-1</b>
DATE:	SEPTEMBER 2015		

 1430 Broadway  
 10th Floor  
 New York, NY 10018  
 Phone: 212.221.7822

FILE NO.: AB-1 - SSDS Plan.dwg



**SUB-SLAB DEPRESSURIZATION SYSTEM AND GAS VAPOR BARRIER PLAN**

SCALE: 1" = 30'  






**APPENDIX H – ENGINEERING CONTROLS  
INSPECTION CHECKLISTS**

**Annual Inspection Form**  
**Gas Vapor Barrier and Sub-Slab Depressurization System**  
**P.S. 315Q**

Inspector's Name: _____	Weather Conditions: _____
Inspection Date: _____	Air Temperature (°F): _____
Inspection Time: _____	
Comments: _____	

**A. PRE INSPECTION CHECKLIST**

- \* Schedule Annual Inspection when school is not occupied by students.
- \* Review 12 Previous Monthly Inspection Checklists.
- \* Meet with Custodial Engineer and Principal to solicit comments/concerns regarding the operation of the Engineering Controls over the last 12 months.
- \* Conduct Annual Refresher Training with DOE EHS.
- \* Follow proper safety protocols including lockout/tagout.
- \* Comments: \_\_\_\_\_

**B. SSDS SYSTEM INSPECTION**

**Walk the entire roof surface of school building.**

- \* Inspect fan stack guy wires.
- \* Inspect monitoring points.
- \* Record vacuum gauge reading.
- \* Ensure all SSDS accessories listed in section 15880 are functioning properly.
- \* Inspect bolts and set screws for tightness and rusty condition.
- \* Inspect SSDS fan for cleanliness. Clean exterior surfaces only. Remove dust and grease on motor housing.
- \* Are the indicator lights on the Building Management System functioning properly?
- \* Is the spare fan unit missing from the school?
- \* Comments (see or hear anything unusual?): \_\_\_\_\_

**C. VAPOR BARRIER INSPECTION**

**Walk all of the cellar floor.**

- \* Review all cracks or other openings identified in cellar floor during previous inspections.
- \* Any new visible cracks in the cellar floor?
- \* Any new visible opening (unintended) in the floor?
- \* Any new visible cracks in accessible pits?
- \* Note the length of any new cracks/openings in the cellar floor.
- \* Draw approximate location of floor cracks/openings that appear to have potential leak through vapor barrier.

Comments: \_\_\_\_\_

**D. Repair**

Summarize needed/completed repairs to Engineering Controls:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Inspector's Signature:** \_\_\_\_\_

**Annual Inspection Form  
Cover System  
P.S. 315Q**

Inspector's Name: _____	Weather Conditions: _____
Inspection Date: _____	Air Temperature (°F): _____
Inspection Time: _____	_____
Comments: _____ _____	

**A. COVER SYSTEM BUILDING INTERIOR - LOWEST LEVEL (CELLAR) INSPECTION**

**Inquire with Custodian whether any ground intrusive activities have taken place within the lowest level (cellar) since the last cover system inspection (typically annually).**

**Walk the entire lowest level (cellar) and report the following:**

- \* Any penetrations not sealed in the cellar floors/walls.
- \* Any visible cracks or settlement in the cellar floors/walls.
- \* Any other visible openings (unintended) in the ground floors.
- \* Draw approximate location of floor cracks/openings on site map.
- \* Note the length of the crack/opening.
- \* Note the width of the crack/opening.

Comments:  
\_\_\_\_\_  
\_\_\_\_\_

**B. COVER SYSTEM - EXTERIOR INSPECTION**

**Inquire with Custodian whether any ground intrusive activities have taken place since the last cover system inspection (typically annually).**

**Walk and inspect the entire perimeter and courtyard of the Site.**

**Walk and inspect all of the paved areas (concrete and asphalt) of the Site**

**Walk and inspect all of the unpaved areas of the Site including areas with pavers, synthetic turf, and landscaping, and report the following:**

- \* Any penetrations not sealed in the paved areas.
- \* Any signs of significant cracks, settlement, or deterioration of the paved areas.
- \* Any of the pavement material removed.
- \* Any indicators of vehicular use on the unpaved areas (tire tracks, rutting, etc.).
- \* Any structures that have been constructed on the unpaved areas or through paved areas.
- \* Inspect synthetic turf/concrete pavers/landscaped area. Any problems identified?
- \* Any indicators of soil washing or erosion (gullies, soil washed out onto the pavement).
- \* Any indicators of intrusive activities (drilling, digging, trenching, grading, excavating, etc.).

Comments:  
\_\_\_\_\_  
\_\_\_\_\_

**C. Repair**

Summarize needed/completed repairs to Engineering Controls:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Inspector's Signature:** \_\_\_\_\_

**Custodian Monthly or Severe Condition Inspection Form**  
**Vapor Barrier and SSDS**

Inspector's Name:

Inspection Date/Time:

Purpose: (circle one)      **Monthly Inspection**      **Severe Condition Inspection (describe)**

		Yes / No *	Notified Person / Date
<b>A. VAPOR BARRIER INSPECTION</b>	<b>1. Walk the entire cellar floor</b>		
	* Any visible cracks in the floor?		
	* Any other visible openings (unintended) in the floor?		
	* Any construction activities affecting the floor?		
	* Any visible cracks in any accessible pits?		
	** Notification of DOE EHS is required if cracks are noted. Include the following information: - Draw approximate location of floor cracks/openings on site map. - Note the length of the crack/opening. Note the width of the crack/opening.		
<b>B. SSDS INSPECTION</b>	<b>1. Walk the entire roof surface.</b>		
	* Any rust or other debris (bird nest, etc.) in or on SSDS Exhaust Stacks?		
	* Are the SSDS fan units functioning at a lower vacuum than the previous inspection?		
	* Is the spare fan unit missing from the school?		
	* Are any lights out on the SSDS Monitoring System (Light panel)? Which one(s)?		
<b>C. ACTIONS TAKEN</b>			
	Inspector's Signature:		

**Routine and Preventative Maintenance Checklist**  
**SSDS Fans**

Inspector's Name:

Inspection Date/Time:

Purpose: (circle one)      Biannual Inspection      Fan Malfunction (describe)

SSDS Fan Maintenance Checklist	Perform the steps below for every SSDS fan during a biannual inspection, or for any SSDS fan experiencing issues	Completed Y/N	List Any Issues or Unusual Behavior
	1. Disconnect, lock out, and tag fan electrical power source		
	2. Check all SSDS fan bearings		
	3. Inspect SSDS fan drive belt for tightness and wear. Adjust/replace if required		
	4. Clean/blow down centrifugal fan wheel, inlet, fan, and motor housing		
	5. Grease fan shaft bearing pillow blocks		
	6. Inspect fan inlet and outlet ductwork flex joints		
	7. Inspect damper for proper orientation		
	8. Inspect fan stack guy wires		
	9. Inspect fan mounting and vibration isolators		

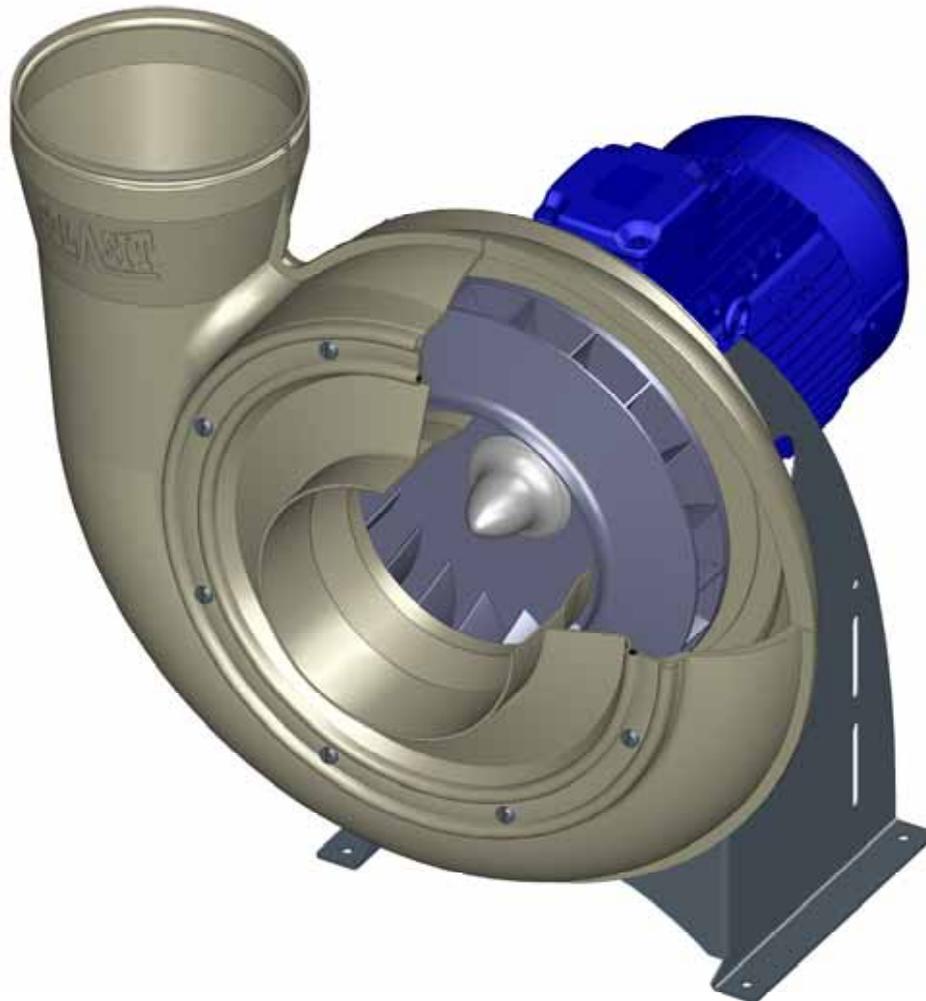
\*Notify the DOE EHS of any fan unit/component failure. In the event that a fan component fails, the component will be replaced by DOE EHS. DOE EHS will make appropriate arrangements in advance with suppliers to provide SSDS replacement parts within 12 hours notice. In the event that a fan unit fails, the fan unit will be replaced by DOE EHS. A spare fan will be available on-site for immediate replacement in case of fan failure.

Inspector's Signature:



**APPENDIX I – SSDS MANUALS AND GAS  
VAPOR BARRIER REPAIR DETAILS**

**Plastic industrial fan**



<b>Agent:</b>	COLASIT AG – Faulenbachweg 63 – CH-3700 Spiez Phone: +41 33 655 61 61 – Fax: +41 33 654 81 61 e-mail: info@colasit.ch
COLASIT Order No.:	_____
Fan type:	_____
Year of manufacture:	_____
<input type="checkbox"/> For use in Ex zones	<input type="checkbox"/> Not for use in Ex zones

TD-000 674-E

## 1.8 General risk matrix

### Operation

The safety regulations prevailing at the operator's location are mandatory and must be observed at all times. Before making an intervention, the process must be stopped, i.e. all mechanical movement must be stopped and it must be ensured that no automatic motion can occur.



### Missing safety devices

If the fan is equipped with safety devices, they may neither be modified nor removed. Further safety devices of suitable design must be fitted by the operator and are subject to his control.



### Disregard of safety precautions

Please implement all safety measures so that the fan, together with its associated equipment, can operate properly and any danger to persons, materials and products can be excluded.



### Putting the fan out of operation

In the case of damage to or failure of safety devices, the fan must be stopped and put out of operation. It may only be put into operation again when the safety devices are fully functional again.



### Overpressure

If the fan is operated in overpressure conditions with normal seals, there is a danger of gas escaping.  
For operation in overpressure conditions, special seals must be fitted.



### Electricity

When any work is carried out on the fan, the electric motor must be deenergised and secured to prevent it from switching on. The main power switch must be secured against operation by third parties using a lockable device (e.g. padlock) by the persons working on the fan. **Full disconnection of the motor is only permissible in case of complete removal!**

The safety regulations for work on electrical equipment prevailing at the place of operation must be observed at all times and be available for reference at the place of operation.



### Electrostatic charge

Media flowing through the plastic components may cause the buildup of electrostatic charge. These are harmless to persons who do not react to electrical impulses in the body



### Unsuitable materials

Through the use of inappropriate materials, the fan and/or parts may be damaged or become non-functional. Please always use original spare parts and contact the manufacturer in any case of doubt.



## Dangerous media

Depending on the mode of operation, fan parts may come in contact with dangerous media.

Work on the fan or carrying out maintenance work is not allowed during operation. Before carrying out any work, any dangerous media must be removed from the system and, when required, must be neutralized and secured in such a way that an inflow of dangerous media is prevented.



## 1.9 EC conformity of the COLASIT fan

The fan was designed, built and tested to Directive 2006/42 EC.

In addition to this EC Directive and EN standards which have the equivalent status of a Swiss standard, Swiss safety and accident-prevention regulations have also been taken into account.

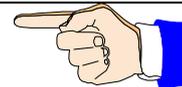
An EC Declaration of Conformity in terms of the EC guidelines 2006/42 EC on machines will be issued along with the fan.

## 1.10 Restrictions when commissioning

We stipulate that putting into operation is prohibited as long as the fan, including all parts belonging to it or equipment connected to it, has not been installed and checked out and until the operating manual has been read completely before commissioning.



We stipulate that the fan may only be put into operation when the safety inspector has given his approval. He is obliged to record this approval in a protocol.

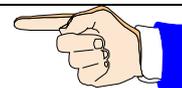


The disregard of these stipulations constitutes negligence.

## 1.11 General operation conditions

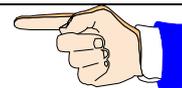
The permissible operating conditions are indicated on the manufacturer's plate.

The fan is not suitable for the transport of solids in the air flow. This operating mode will lead to the destruction of the fan.

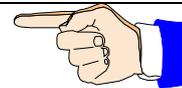


The ducts on the intake and delivery sides must always be open. A closed duct will lead to a rise in temperature which could cause the destruction of the fan.

The minimum air speed through the fan is 3 meters per second.

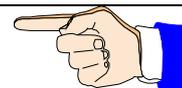


The maximum air speed may not exceed 30 meters per second through the fan.



The standard motors are designed for normal operating conditions (ambient temperature +40°C, altitude below 1000 m above sea level, air pressure up to 1050 hPa). In case of any divergence from these conditions, please contact COLASIT.

Compliance with these operating conditions is the responsibility of the operator.

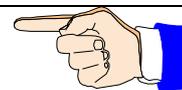


## 2 Explosion protection

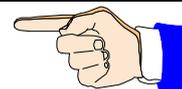
COLASIT plastic fans are suitable for the conveyance of gases in Zone 1 or 2 (Equipment Category 1 or 2) depending on the model. COLASIT plastic fans are not suitable for the conveyance of gases in Zone 0 (Equipment Category 1).

The zone classification of the conveyed medium and the site of installation must be made known by the fan operator so that COLASIT can take the necessary measures to prevent the risk of ignition.

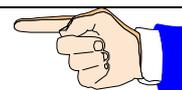
The explosion-proof COLASIT fans are not suitable for the conveyance of explosive dusts



No modifications may be made to ATEX-certified fans. All work on the fan may only be carried out by ATEX-trained skilled personnel. Otherwise the ATEX Certificate will lose its validity.

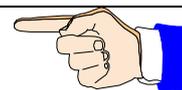


On ATEX certified fans, the external grounding terminal of the motor and fan must be connected to a potential equalization system.



Motors with protection type "e" are standard for using in the explosion-proof design of our fans. The standard version of the motors used complies with temperature class T3 (maximum surface temperature 200°C). As special-purpose design, motors with protection type "d" or motors with temperature class T4 (maximum surface temperature 135°C) are also available.

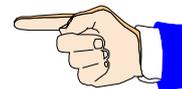
The user must define a suitable temperature class for his application that does not reach the ignition temperature of his conveyed medium.



Please also observe the specifications in the operating instructions of the motor manufacturer. The thermal motor protection must be connected in compliance with the manufacturer's specifications (operating instructions).



If a frequency converter is fitted, we recommend using pressure-proof enclosed motors. In addition, a certified PTC resistor releasing device must be fitted. The following specifications must be included on the motor rating plate: min and max frequencies, min and max speeds, min and max torque or output, limit temperature PTC and PTC release time.



## 2.1 Fan Ex marking

The Ex marking is located on the rating plate of each ATEX fan. On a fan of Equipment Category 2 (Zone 1), it looks like this

 **II 2/3G c T3**

	CE-marking
	Marking denoting prevention of explosions
II	Equipment Category II, for all Ex applications which do not fall in Class I (mines and surface workings).
2/3G	Equipment Category inside/outside the fan Equipment Category 2 is the equivalent of Zone 1 and Equipment Category 3 is the equivalent of Zone 2 “G” fan for the conveyance of explosive gases
c	Protection type „design safety“
T3	Temperature class T3: Max. surface temp. 200 °C T4: Max. surface temp. 135 °C

## 2.2 Correct installation of ATEX fan

The fan must be installed properly to guarantee trouble-free operation. To document proper installation, you will find a form on the last pages of this operating manual. The fitter must confirm the proper installation item for item on this form.

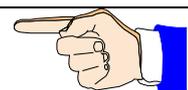
The signed form must be kept by the safety officer or operating company.

COLASIT also offers a comprehensive installation service for fans.

## 3 Shipping, unpacking, inspection, storage

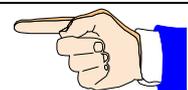
The fan is completely assembled and can be delivered in a closed film wrapping. Please make sure the delivery corresponds to the shipping documents.

Please examine the packaging for external damage and report any damage immediately to the transport company, the supervisor and the manufacturer.



Please handle the fan with care. During transportation, only apply strain on the steel parts. Plastic is sensitive to impact and knocks, especially in the temperature range under +5°C.

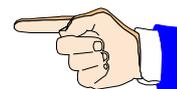
When the film is removed, the intake and pressure nozzles are open and unprotected against the intrusion of foreign objects. Therefore, please do not remove the protective film until shortly before final installation.



### Storage

If the fans are not put into operation immediately, store them in a clean dry place where they are protected from impacts, vibrations, and temperature fluctuations and where the air humidity is under 90%.

If these storage conditions are not available, switch the fans on at regular intervals to exclude the risk of condensate forming. Before switching on, unscrew the condensate drain plugs each time and replace them afterwards.



Store the fan in a dry, weather-protected place and cover with a tarpaulin to protect it from dust and soiling.

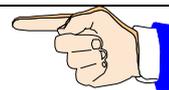
If stored for over one year, test whether the fan bearings rotate freely before putting into operation.

## 4 Installation, configuration

Before installation, check whether all the locking screws (including the motor screws) are tightened properly.  
Check the electrical connections if wired at the factory.



Before installation, check that there are no foreign bodies in the coil or in the intake and pressure connections.



The fan must be installed at a location provided and prepared by the customer and must be secured and connected in such a way that any possible vibration occurring can be absorbed by the vibration dampers supplied by COLASIT.

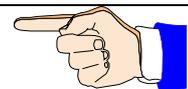
If no ducting is foreseen on the intake side, the intake connection should be protected by a sturdy protective grating (10mm mesh) to be provided by the customer.

Connection ducting on the pressure side must be routed to prevent the backflow of foreign bodies, rainwater or condensate into the fan. To ensure this, please use the COLASIT condensate drain nozzles.

**Due to the possibility of noise nuisance, we recommend that the fan should not be installed in the immediate vicinity of workplaces.**

## 5 Commissioning, initial startup, test run

The fan should only be put into operation after inspection and approval by the safety officer.



### 5.1 Inspection of the installation and settings

Check list:

Prior to commissioning and initial start-up, it must be guaranteed that

- the fan is installed vibration-free and mechanically secured,
- all components are cleaned both on the inside and the outside and are free from foreign bodies,
- all intake and pressure ducts connections are leak-proofed
- all rotating parts are protected against unintentional contact,
- the electrical connections are installed and their function tested,
- a lockable main control switch is available to which the fan is connected
- the EMERGENCY-STOP equipment is functionally tested,
- the safety inspector has made sure that safety equipment exists,
- the operating personnel is familiar with the operating manual,
- the safety inspector has given his approval for the operation of the installation and that no external persons are present in the plant area

If envisaged by procedural regulations provided by the operator, minutes have to be taken on the commissioning work, including the observance of the check list.

## 5.2 Drive

The fan is driven by an electric motor which is connected to the impeller shaft either directly or via a V-belt.

The motor electrical specifications are indicated on the motor's rating plate or in the motor manufacturer's data sheet.

When speed is controlled by means of a frequency converter, the maximum speed is limited by COLASIT to the value indicated on the manufacturer's rating plate.

If the frequency converter is not supplied by COLASIT, the operator is responsible for compliance with the maximum speed limitation. In this case, COLASIT will not assume any liability for damage that may be attributed to exceeding the maximum speed.



In the case of motor outputs over 3kW, we recommend the use of a soft starter or a star-delta connection.

## 5.3 Electrical installations, EMERGENCY STOP

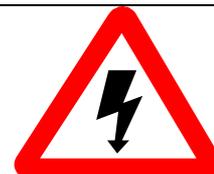
The electrical installations may only be carried out by an authorised electrician in accordance with the regulations prevailing at the site at which the fan is installed.

To interrupt the power supply, an EMERGENCY STOP switch must be provided. It is advisable to mount this switch in the vicinity of the emergency exit.

Please request confirmation from an in-house electrician that the electrical installations were carried out and tested in accordance with regulations, that all functions were tested (or simulated) and that the rotational direction is correct.

### Warning

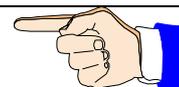
Do not turn power on or off without prior warning to persons in the area where the fan is operating. Switching operations must be co-ordinated with other functions in the working area of the fan.



## 6 Operation

### 6.1 Safety instructions

The fan must be operated according to this manual. This will avoid the occurrence of any damage.



### Supervision

The fan must not be operated unattended as long as it conveys substances whose reactions are unknown or if unexpected reactions are anticipated. If supervision must be withdrawn for operational reasons, this must be reported to the safety officer and the system must be secured in such a way that no unauthorized intervention can be carried out. The safety officer must decide on issues regarding supervision.



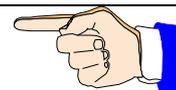
## 6.2 Putting out of operation

An internal process instruction must regulate the work to be carried out as well as the preparatory work for putting back into operation (e.g. cleaning).

## 7 Maintenance, repair, cleaning

### 7.1 Preparation

Before any work is carried out on the fan, the fan must be set to its "safety position".



The „safety position“ is defined as follows:

- The drive must be currentless and the main switch secured against switching on,
  - The fan impeller can be manually rotated,
  - Fan must be flushed with fresh air and be condensate-free,
  - Fan must be at room temperature,
  - Personal protective equipment must be available and it must be worn. (Use of protective gloves because of sharp edges, ear protectors if necessary).
  - A sign, e.g. „Under-repair“, must be attached to the system,
  - The safety devices may be removed,
  - The work to be carried out must not be done under time pressure,
  - The general and specific regulations on accident prevention as well as the EKAS guidelines (Switzerland) must be observed,
  - The safety officer must be informed about the nature and course of the work,
- If the intake and delivery ducts of the fan are dismantled for a longer period of time, the openings must be closed off.

### 7.2 Performance

The fan must be maintained in accordance with the Maintenance Plan below. The maintenance work carried out must be noted down in the logbook (see the section on Logbook).

Every week	Every month	Every year
<ul style="list-style-type: none"> <li>• Make a visual inspection of fan for damage, leaks, corrosion and attachment.</li> <li>• Check the smooth running of the fan and electric motor.</li> <li>• Check state and tension of the V-belt and replace if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the impeller and casing for deposits and clean if necessary.</li> <li>• Check the shaft bearing for smooth running and vibrations. Bearing maintenance -&gt; see chart below for regreasing intervals.</li> <li>• Remove any dust deposits on the fan and motor.</li> <li>• Check the flexible transitions from fan to duct system for leaks and state.</li> <li>• Check the function of the condensate nozzle.</li> <li>• Check the state of the vibration dampers.</li> <li>• Check the state of the hub gasket (if fitted).</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out a thorough cleaning of the entire fan (including impeller).</li> <li>• Check the parts in contact with the conveyed medium for corrosion.</li> <li>• Check the minimum clearance between the impeller and casing (minimum 1% of intake diameter, maximum 20mm).</li> <li>• Measure the vibrations at bearings (KA) or motor (DA). Permitted value acc. to ISO 14694 Class BV-3, 5.1mm/s.</li> <li>• Check the safety devices (e.g. splinter protection or intake grating) for condition and function.</li> <li>• Check the stands for damage and stability.</li> <li>• Check all screw unions for firm seating.</li> </ul>

Normally the bearings are designed for a service life of 40,000 hrs. After this period the bearings must be replaced. The service life of the bearings is reduced when subjected to increased requirements (e.g. high temperature, aggressive ambient air or operation with frequency converter).



On drives with V-belts, check the tension regularly and monitor the belts closely particularly during the first weeks of operation. This also applies after long periods of downtime. Excessive tension leads to bearing damage, insufficient tension leads to slip, wear and frictional heat.

After replacing a V-belt, check the tension after 1 to 4 hours of operation and retension as necessary. The fan bearings are maintenance-free.

The bearing temperature of 70°C may not be exceeded. In cases of high stress (environment) the grease quantity loses its lubricity over time due to mechanical stresses, ageing and increasing contamination. This issue can reduce the service life of the bearings.

Components which are not intended for repair by the operator must be sent to the manufacturer or agent for repair or replacement (e.g. damaged impeller).

Your agent or COLASIT  
also offers customer services

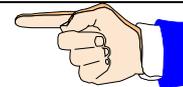
Manufacturer	<b>COLASIT AG</b>
	P.O. 85
	CH 3700 Spiez / Switzerland
	Tel.: 0041 (0)33 655 61 61
Agent	Fax.: 0041 (0)33 654 81 61
	e-mail info@colasit.ch
	see front page

Deposits on the impeller and soiling lead to imbalance and as a result to vibrations with undesirable side effects.  
If vibration occurs, switch the fan off immediately



Contamination and encrustations should be removed with a soft tool without damaging the surface (e.g. with a wooden spatula or scraper). If possible, use water and a household cleaning agent

Solvents can corrode the material. These may only be used with the written consent of COLASIT.



To carry out cleaning work, we recommend the production of a process instruction

## 8 Spare parts

Please identify components by means of the position and drawing numbers as well as the order number and type designation.

Use only original spare parts. Our warranty becomes null and void if other or unapproved components are used.

Please address your spare parts order to our customer service department.

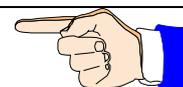
## 9 Operating instructions

To operate the fan, we recommend the production of process instructions. These documents are intended to simplify repetitive workflows, reduce the risk of incorrect operation and are a valuable aid for training and when personnel changes occur.

If the fan must be qualified, process instructions are an absolute prerequisite.

You will find important instructions on how to produce process instructions in various chapters of this operating manual.

To help ensure the safe operation of the fan, COLASIT offers the service of reviewing process instructions prepared by the operator



## 10 Logbook

For your own safety and as an aid to personal responsibility, we recommend the keeping of a logbook for the entire period during which the fan is in service.

All events should be recorded in the logbook.

In case of damage and also in case of an accident, this document is the first source of information.

For example, enter the date and your signature:

- Start and end of a work cycle
- Special events, even if they do not concern the fan itself (e.g. power failure, alarm)
- Change of supervision staff (e.g. in case of shift operation),
- Repairs carried out and spare parts installed,
- Putting out of operation,
- Special instructions,
- etc.

## 11 Disposal

Before disposing of plastics and other components (complete or as broken parts), please clean them as necessary to avoid any danger to the environment.

Dispose of the components properly. Instruct a waste disposal company to do this or return them to us for disposal.

## 12 Troubleshooting

If faults occur, we recommend you identify and clear them using the following table.

If the fault cannot be cleared, please contact our customer service department.

Fault	Possible causes	Remedy
Fan not running smoothly	Impeller imbalance	Rebalance by specialist company
	Impeller caked up	Clean carefully rebalance if necessary
	Material corrosion on impeller due to aggressive conveyed medium.	Consult the manufacturer
	Impeller deformed due to high temperature.	Consult the manufacturer. Install new impeller. Check bearings
	V-belt drive not correctly aligned.	Adjust belt drive
V-belt torn or damaged	Normal wear and tear	Replace V-belts in sets
	V-belt pretensioned too strongly	Tension replacement belt to manufacturer's specifications
V-belts slip due to	Incorrect pretension	Check belt tension and retighten if necessary
	Foreign bodies or soiling in grooves or pulleys	Clean pulleys and check belt profile
Leak at shaft bushing	Seal not suitable for application	Consult the manufacturer
Leak on sleeves	Sleeves defective	Replace sleeves
	Tensioning straps not tight enough	Retighten tensioning straps
Fan output too low	Incorrect rotation direction of impeller	Change rotation direction
	Pressure losses in ducts too high	Change duct arrangement
	Restrictors not or only partly open	Check opening on site

Fault	Possible causes	Remedy
	Intake or pressure duct blocked	Remove blockage
Fan fails to reach its rated speed	Electrical switching mechanisms incorrectly adjusted	Check motor protection setting and reset if necessary
	Motor winding defective	Please consult the manufacturer
	Drive motor drive not correctly designed	Please consult manufacturer to verify starting torque
Grinding noises when fan is running or starting	Intake duct fitted under tension	Remove intake duct and realign
Rise in temperature of roller bearings	Bearing was not greased	Change bearing and grease at regular intervals as stipulated in the maintenance instructions

### **13 Retrofittable original accessories**

If not already a part of our scope of supply, these original parts are available ex stock when ordered.

- Frequency converters
- Elastic sleeves
- Vibration dampers
- Condensate drains
- Motor cover for outdoor installation
- Splinter protection

### **14 Fan identification**

The following rating plate is affixed to each COLASIT fan:

- 1 Manufacturer
- 2 Field for CE marking and applicable standards
- 3 ATEX-identification, for details see the section on Explosion Protection
- 4 Fan specifications: fan type, casing design, material of casing and impeller, order number and date of manufacture.
- 5 Technical specifications

## **Part 2: Units**

### **15 Design and function of the CMVeco 125 - 400**

All impellers in this series are balanced to better than Q6.3 according to VDI 2060.

The casing with its thermoplastic rear panel is screwed onto the support base and can be easily dismantled for inspection or cleaning purposes.

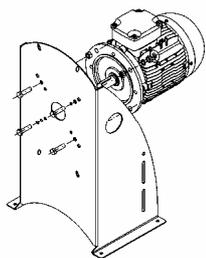
The fans are available in 2 standard designs

- Direct drive
- V-belt drive

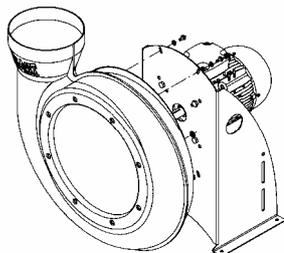
As a basic principle, plastic fans are to be installed on the intake side in order to avoid leaks.

## 17 Assembly instructions

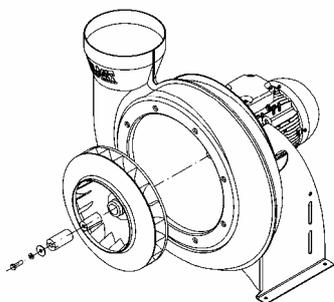
### 17.1 Assembly instructions CMVeco 125 – 400 with direct drive



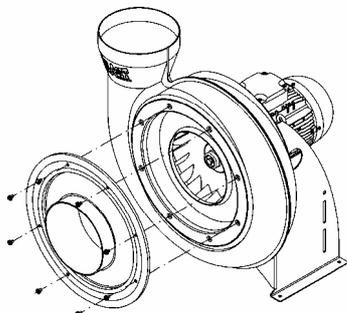
1. Attach motor to the support



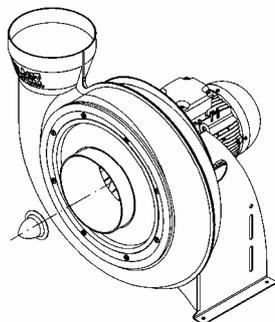
2. Attach casing to the support



3. Fasten impeller with the clamp adapter set on motor shaft  
(do not tight yet the clamp adapter)



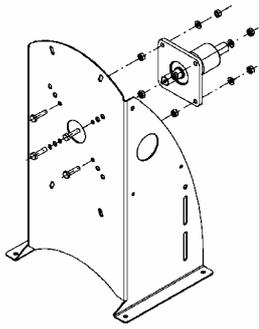
4. Fasten inlet section on the casing



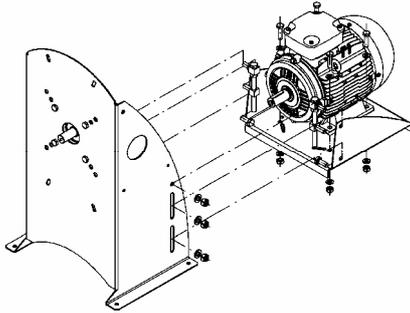
5. Adjust impeller, tighten clamp adapter set.  
Mount hub cap

Dismantling in the same way but in reverse order

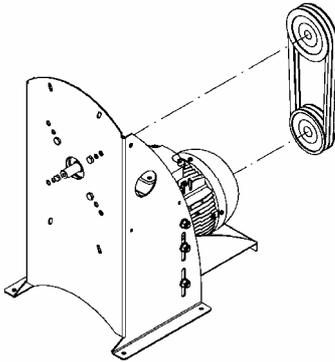
## 17.2 Assembly instructions for CMVeco 125 – 400 with V-belt drive



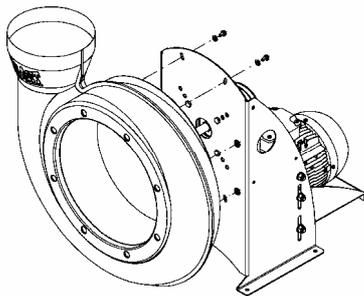
1. Install flanged bearings and support plates



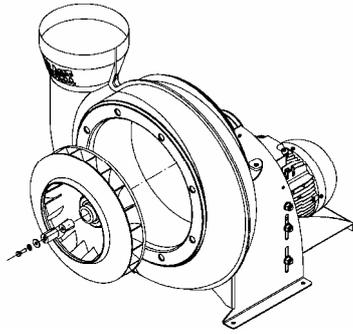
2. Bolt motor bracket together and attach motor



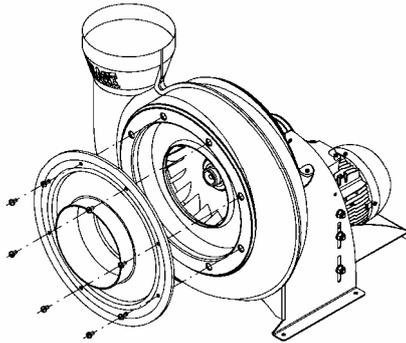
3. Install V-belt drive. Tension drive belt



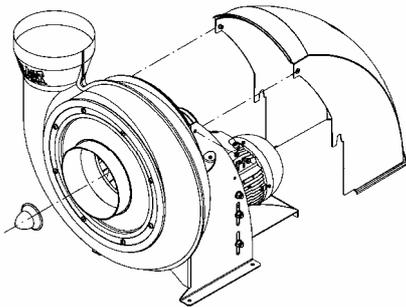
4. Attach casing to the support



5. Fasten impeller with clamp adapter set on motor shaft  
(Do not tight yet the clamp adapter)



6. Fasten inlet section on the casing

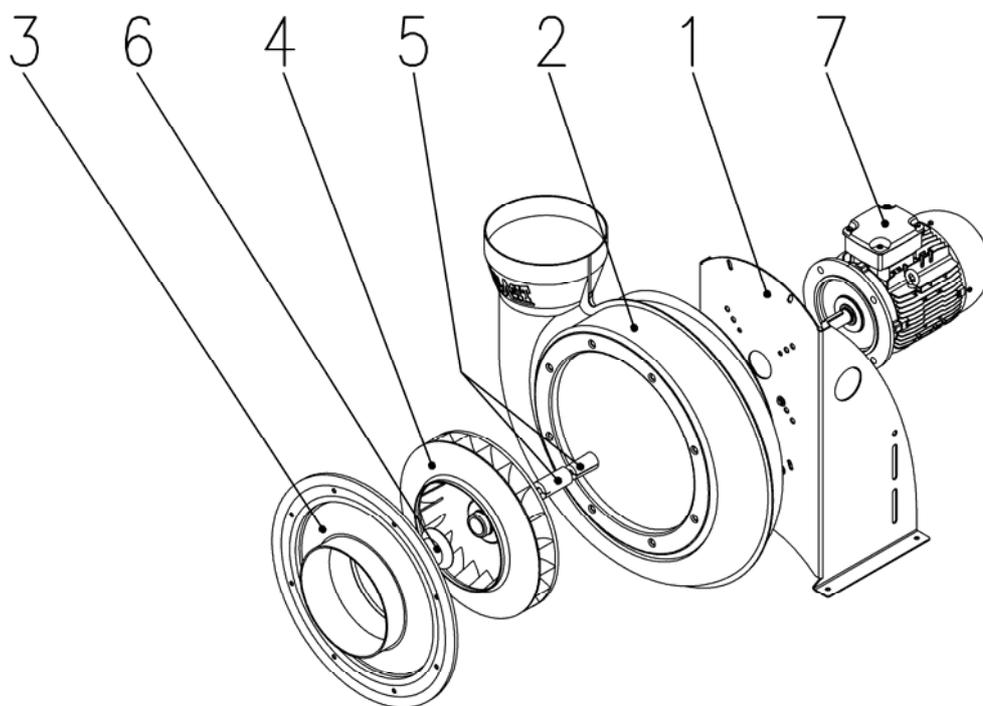


7. Adjust impeller, tighten clamp adapter set  
Mount hub cap. Mount V-belt protection

Dismantling in the same way but in reverse order

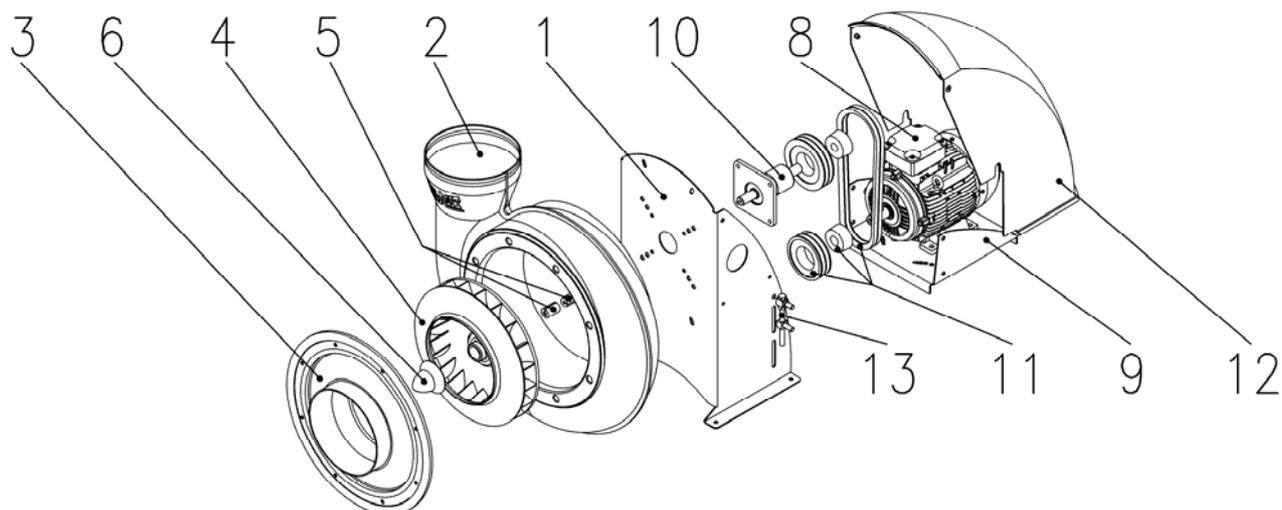
## 18 Spare parts lists

### 18.1 Spare parts list for CMVeco 125 – 400 with direct drive



- 1 Support
- 2 Casing
- 3 Inlet section
- 4 Impeller
- 5 Clamp adapter set
- 6 Hub cap
- 7 Flange motor

## 18.2 Spare parts list for CMVeco 125 – 400 with V-belt drive



- |   |                   |    |                          |
|---|-------------------|----|--------------------------|
| 1 | Support           | 8  | Feet motor               |
| 2 | Casing            | 9  | Motor plate with bracket |
| 3 | Inlet section     | 10 | Flange bearing unit      |
| 4 | Impeller          | 11 | V-belt                   |
| 5 | Clamp adapter set | 12 | V-belt protection        |
| 6 | Hub cap           | 13 | Setting screw            |

# Part 3: Certification

## 19 Certifications

### 19.1 CE Manufacturer's declaration

**EG-Konformitätserklärung**  
 CE Déclaration de conformité  
 EC Declaration of conformity

Wir  
 Nous  
 We

COLASIT AG  
 Postfach 85  
 CH-3700 Spiez

erklären in alleiniger Verantwortung, dass das Produkt  
 déclarons de notre seule responsabilité que le produit  
 bearing sole responsibility, hereby declare that the product

**Kunststoff-Industrieventilator**  
**Ventilateur industriel en plastique**  
**Plastic industrial fan**  
**CMVeco 125-400**

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen  
 Dokumenten übereinstimmt:

auquel se rapporte la présente déclaration est conforme aux normes ou aux documents normatifs  
 suivants:  
 referred to by this declaration is in conformity with the following standards or normative documents:

Bestimmungen der Richtlinie Désignation de la directive Provisions of the directive	Titel und/oder Nummer sowie Ausgabedatum der Norm(en): Titre et/ou numéro ainsi que date d'émission de la/des norme(s): Title and/or number and date of issue of the standard(s):	
2006/42/EG: Maschinensicherheit 2006/42/CE: Sécurité des machines 2006/42/EC: Machinery safety	EN ISO 12100-1: 2004 EN ISO 12100-2: 2004 EN ISO 14121-1: 2007 EN ISO 13857: 2008 EN 60204-1: 2006	
2004/108/EG: Elektromagnetische Verträglichkeit 2004/108/CE: Compatibilité électromagnétique 2004/108/EC: Electromagnetic compatibility	EN 61000-6-2: 2005	
Name und Adresse des Dokumentationsverantwortlichen: Nom et adresse de la personne responsable de la documentation: Name and address of the person authorised to compile the relevant technical documentation:	Urs Wenger COLASIT AG Faulenbachweg 63 CH-3700 Spiez	
<b>Bei Verwendung im Ex-Bereich</b> Pour utilisation dans zone Ex For use in Ex zones		
94/9 EG: Geräte und Schutzsysteme zur bestimmungsgemässen Verwendung in explosionsgefährdeten Bereichen 94/9 CE: Appareils et système de protection destinés à une utilisation correcte en atmosphère explosibles 94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres	EN 1127-1: 2008 EN 13463-1: 2009 EN 13463-5: 2005 EN 14986: 2007	
Ex-Kennzeichnung: Marquage Ex: Ex Marking:		II 3/- G II 3/3 G II 2/3 G II 2/2 G c T4 c T4 c T4 c T4

Spiez, 23.12.2010

  
 U. Wenger (Leiter Technik/Responsable dép. technique/Chief technical officer)

## 19.2 ATEX-Declaration of Conformity

### ATEX-Declaration of Conformity

Equipment, components and protection systems for use for their intended purpose in explosion protected zones – **Directive RL 94/9/EC (ATEX)**

Document number : **TD-000 744**  
Product designation: Medium pressure radial fan CMVeco 125-400 ATEX  
Hersteller: COLASIT AG  
Postfach 85  
3700 Spiez  
Product description: Plastic industrial fan for the conveyance of chemically aggressive gases, vapour or correspondingly contaminated air.

The conformity assessment process was conducted in compliance with Directive 94/9/EC (ATEX). The results are recorded in the confidential **Test Report TD-T586-21-3**. All related documents are kept at the centres named below:

QS Zürich AG, named centre CE 1254  
Wehntalerstrasse 3  
CH-8057 Zürich

COLASIT hereby certifies compliance with the basic health and safety requirements for the design and manufacture of equipment and protection systems for use for their intended purpose in explosive atmospheres in compliance with Annex II of the Directive.

The following harmonised standards were applied:

EN 1127-1: Explosive atmospheres – Explosion protection, Part 1, 2008  
EN 13463-1: Non-electrical equipment for potentially explosive atmospheres, Part 1, 2009  
EN 13463-5: Non-electrical equipment for potentially explosive atmospheres, Part 5, 2005  
EN 14986: Design of fans working in potentially explosive atmospheres, 2007

The marking on the appliance must comprise the following information:

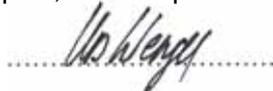
 II 3/- G c T4 (conveyed medium Zone 2, site of installation no zone)  
 II 3/3 G c T4 (conveyed medium Zone 2, site of installation no Zone 2)  
 II 2/3 G c T4 (conveyed medium Zone 1, site of installation no Zone 2)  
 II 2/2 G c T4 (conveyed medium Zone 1, site of installation no Zone 1)

The associated operating instructions contain important safety instructions and regulations for putting the named equipment into operation in compliance with Directive 94/9/EC (ATEX).

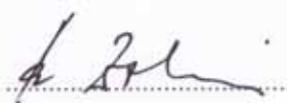
Changes to the named equipment are prohibited except with the manufacturer's express approval in writing.

If the named equipment is built into a higher level machine, the new risks ensuing from the integration must be assessed by the manufacturer of the new machine.

Spiez, 21st. September 2009



Der ATEX-Officer



On behalf of the executive management

## Enclosure

### Declaration of Conformity No. TD-000 744

#### Description of appliance or protective system

The radial fans CMVeco 125-400 ATEX with direct drive and V-belt drive extract room air or process exhaust air. They are directly or indirectly driven by electric motors via V-belts.

Special conditions : If the fans are operated within explosive atmospheres in Zone 1 or 2, they may only be driven by motors for which an appropriate approval (EC type test certificate) has already been issued.

Temperature Class T4: If the site of installation is Zone 1/2, an explosion proof motor with temperature class T4 must be fitted. If an explosion proof motor with temperature class T3 is used, temperature class T3 shall apply to the entire fan

Ambient temperature: T 0-40°C  
Maximum temperature of intake medium: 60°C

The minimum flow velocity through the fan has to be minimum 3m/s.

On versions with V-belt drive, only V-belts may be used if they conform with the requirements of EN 13463-5 Chap. 7.2 and possess an appropriate factory certificate in compliance with EN 10204-2.1.

All service and repair work must be carried out by trained service personnel.

Additional information: The radial fans of Equipment Category 3 may only be used to extract gases where the frequency of occurrence of combustible or explosive atmospheres is equivalent to Ex-Zone 2.

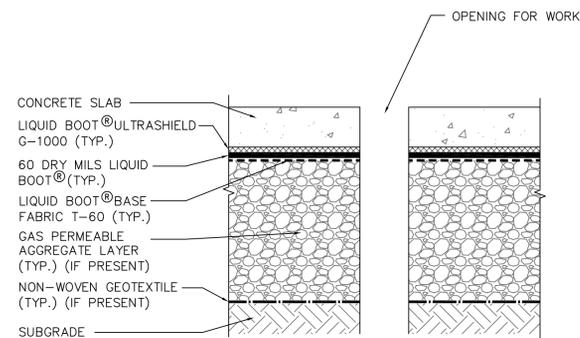
#### Basic safety and health requirements:

Fulfilled by standards.

This certificate may only be copied in full without any changes.

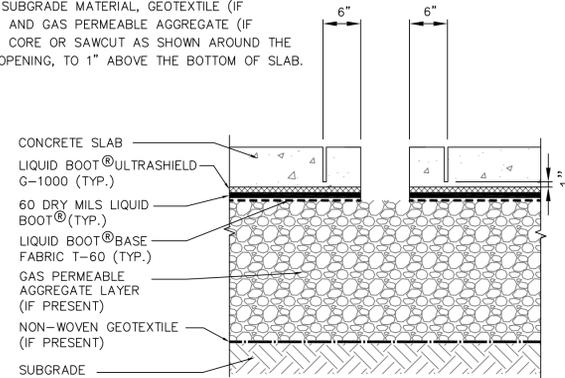
**STEP 1:**

REMOVE FLOOR COVERINGS, CONCRETE SLAB, AND SUB-GRADE MATERIALS REQUIRED TO PERFORM THE WORK. MEASURE THE SLAB THICKNESS.



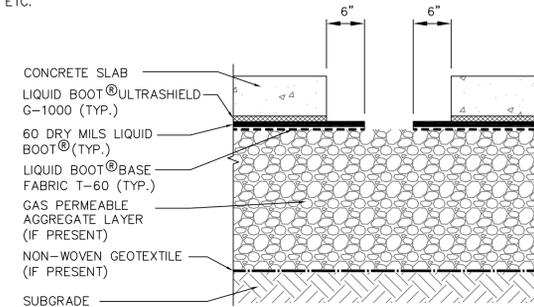
**STEP 2:**

AFTER INTRUSIVE ACTIVITIES ARE COMPLETE, REPLACE REMOVED SUBGRADE MATERIAL, GEOTEXTILE (IF PRESENT), AND GAS PERMEABLE AGGREGATE (IF PRESENT). CORE OR SAWCUT AS SHOWN AROUND THE EXISTING OPENING, TO 1" ABOVE THE BOTTOM OF SLAB.



**STEP 3:**

USE A CHIPPING HAMMER TO CAREFULLY REMOVE CONCRETE AS SHOWN. EXPOSE EXISTING LIQUID BOOT® MEMBRANE. CAREFULLY REMOVE EXPOSED LIQUID BOOT® G-1000 ULTRASHIELD WHILE LEAVING THE 60 DRY MILS OF LIQUID BOOT AND LIQUID BOOT® BASE FABRIC INTACT. CLEAN THE EXPOSED LIQUID BOOT® TO ENSURE MEMBRANE IS FREE OF ALL DUST, DIRT, GREASE, CURING COMPOUNDS, AND RELEASING AGENTS, ETC.

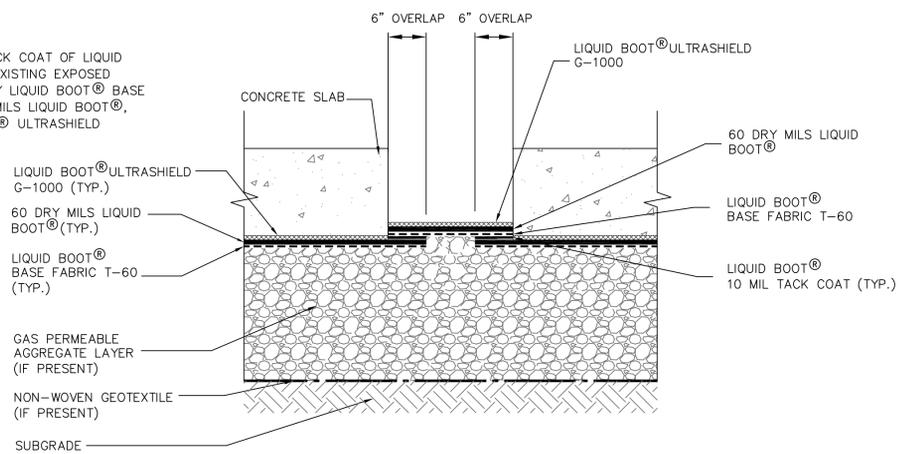


**NOTES:**

1. DETAILS SHOW TYPICAL CONDITIONS. ACTUAL CONDITIONS MAY VARY. PRIOR TO MOBILIZING CONSULT WITH IEH DIVISION OF THE AUTHORITY REGARDING SITE SPECIFIC REQUIREMENTS.
2. RELATIVE THICKNESS OF GAS VAPOR BARRIER SHOWN IS EXAGGERATED FOR ILLUSTRATIVE PURPOSES.
3. DRAWING NOT TO BE USED FOR STRUCTURAL, ARCHITECTURAL OR OTHER REFERENCE EXCEPT FOR GAS VAPOR BARRIER DETAILS.
4. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO AUTHORITY FOR APPROVAL.
5. ALL GAS VAPOR BARRIER WORK MUST BE COMPLETED BY A MANUFACTURER-CERTIFIED CONTRACTOR.
6. THE IEH DIVISION OF THE AUTHORITY MUST BE NOTIFIED FIVE (5) BUSINESS DAYS PRIOR TO START OF WORK.
7. DO NOT USE FOR INSTALLATION OF NEW PENETRATIONS (SUCH AS PIPING OR CONDUIT) THROUGH FLOOR SLAB.
8. FOR HORIZONTAL SURFACES ONLY.

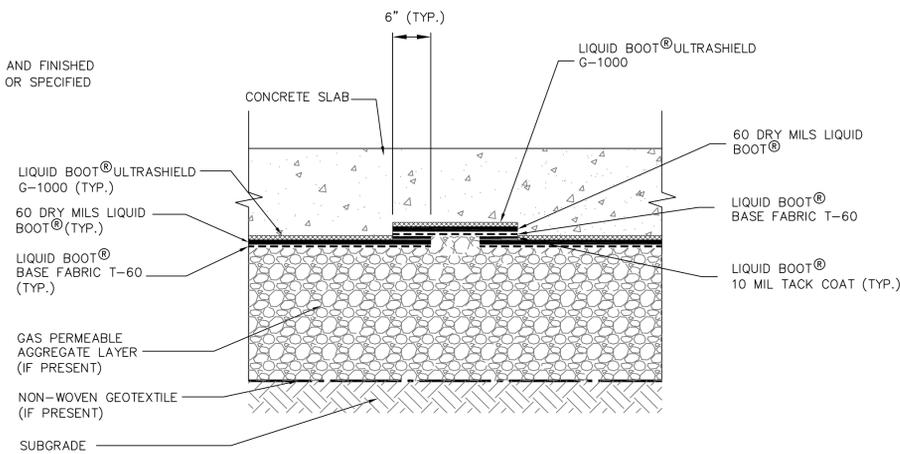
**STEP 4:**

APPLY 10 MIL TACK COAT OF LIQUID BOOT® TO THE EXISTING EXPOSED MEMBRANE. APPLY LIQUID BOOT® BASE FABRIC, 60 DRY MILS LIQUID BOOT®, AND LIQUID BOOT® ULTRASHIELD G-1000.



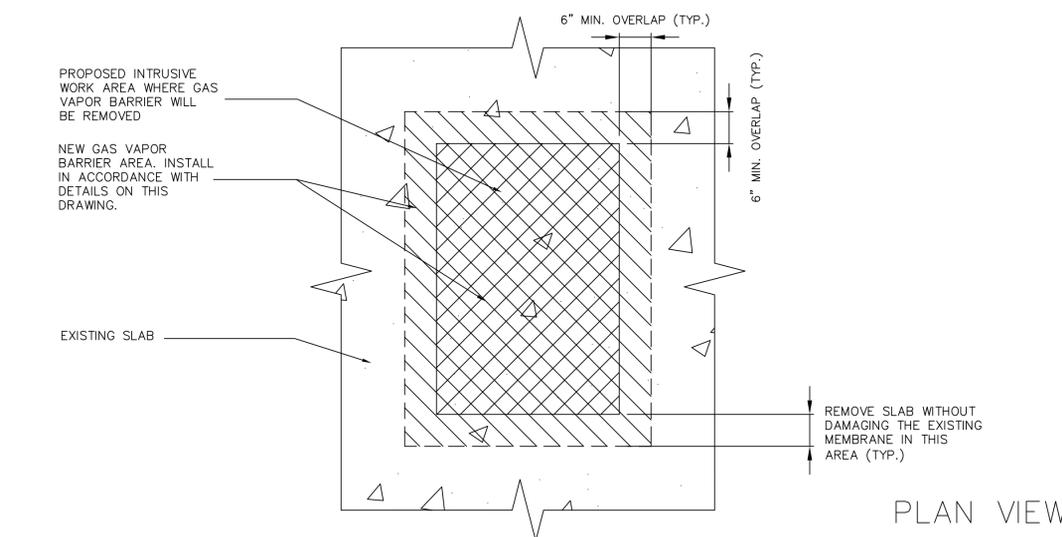
**STEP 5:**

RESTORE CONCRETE AND FINISHED FLOOR TO ORIGINAL OR SPECIFIED CONDITIONS.



**LIQUID BOOT REPAIR – PRODUCT LIST:**

1. LIQUID BOOT (FLUID APPLIED)
2. LIQUID BOOT ULTRASHIELD G-1000
3. LIQUID BOOT BASE FABRIC T-60



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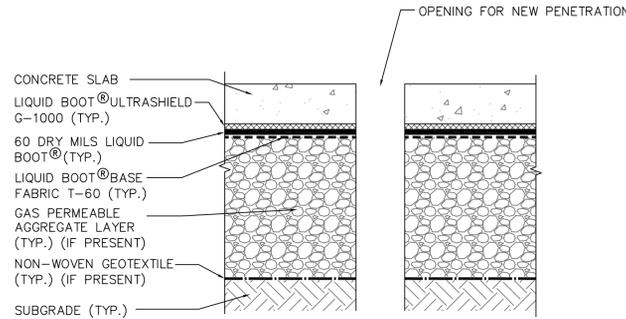
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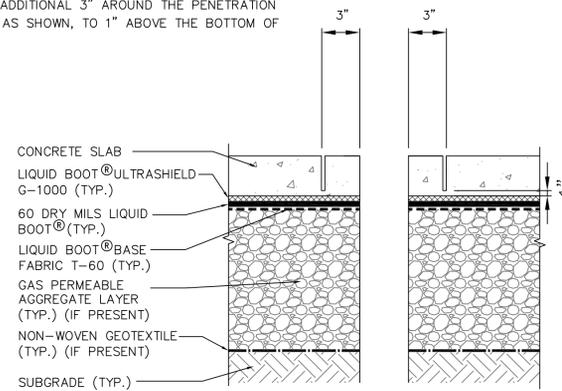
**STEP 1:**

REMOVE FLOOR COVERINGS AND CORE TO DIMENSION REQUIRED FOR INSTALLATION OF THE PENETRATION. REMOVE SUB-GRADE MATERIAL REQUIRED TO PERFORM THE WORK. MEASURE THE SLAB THICKNESS.



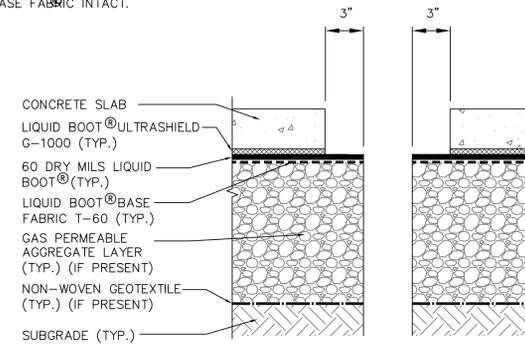
**STEP 2:**

CORE AN ADDITIONAL 3" AROUND THE PENETRATION DIAMETER AS SHOWN, TO 1" ABOVE THE BOTTOM OF SLAB.



**STEP 3:**

USE A CHIPPING HAMMER TO CAREFULLY REMOVE AN ADDITIONAL 3" RING OF CONCRETE. EXPOSE EXISTING LIQUID BOOT MEMBRANE. CAREFULLY REMOVE EXPOSED LIQUID BOOT G-1000 ULTRASHIELD WHILE LEAVING THE 60 DRY MILS OF LIQUID BOOT AND LIQUID BOOT® BASE FABRIC INTACT.

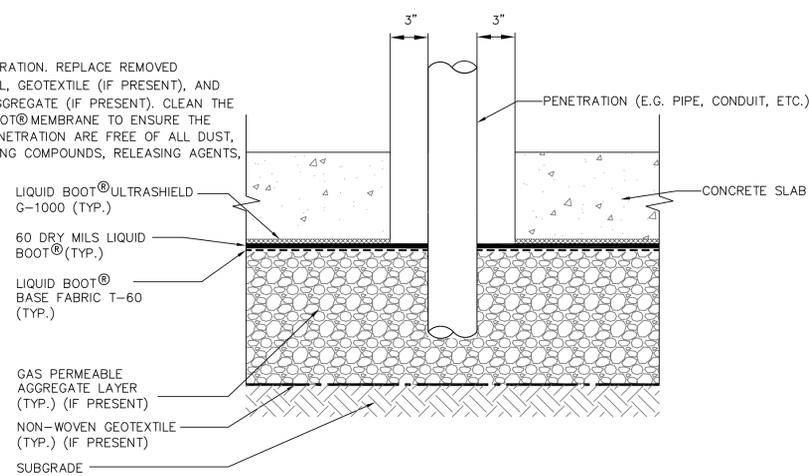


**NOTES:**

1. DETAILS SHOW TYPICAL CONDITIONS. ACTUAL CONDITIONS MAY VARY. PRIOR TO MOBILIZING CONSULT WITH IEH DIVISION OF THE AUTHORITY REGARDING SITE SPECIFIC REQUIREMENTS.
2. RELATIVE THICKNESS OF GAS VAPOR BARRIER SHOWN IS EXAGGERATED FOR ILLUSTRATIVE PURPOSES.
3. DRAWING NOT TO BE USED FOR STRUCTURAL, ARCHITECTURAL OR OTHER REFERENCE EXCEPT FOR GAS VAPOR BARRIER DETAILS.
4. SUBMIT DETAIL OF ANY VAPOR BARRIER PENETRATIONS NOT SHOWN TO AUTHORITY FOR APPROVAL.
5. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO AUTHORITY FOR APPROVAL.
6. ALL GAS VAPOR BARRIER WORK MUST BE COMPLETED BY A MANUFACTURER-CERTIFIED CONTRACTOR.
7. THE IEH DIVISION OF THE AUTHORITY MUST BE NOTIFIED FIVE (5) BUSINESS DAYS PRIOR TO START OF WORK.
8. FOR PENETRATIONS THROUGH HORIZONTAL SURFACES ONLY.

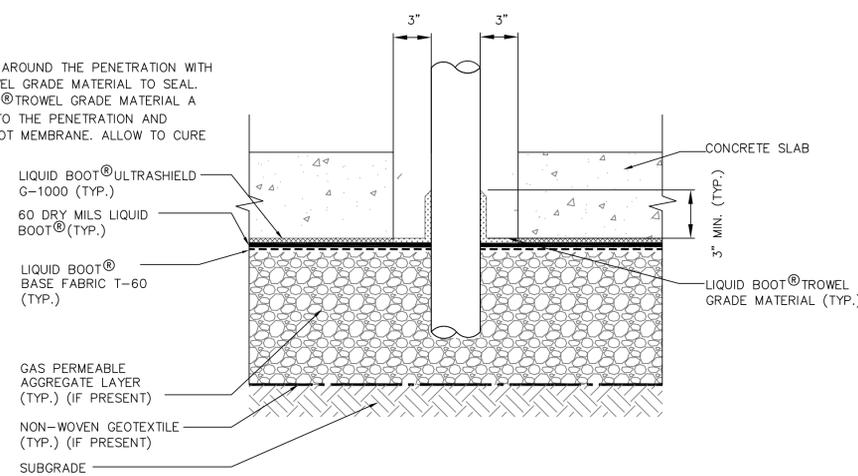
**STEP 4:**

INSTALL THE PENETRATION. REPLACE REMOVED SUBGRADE MATERIAL, GEOTEXTILE (IF PRESENT), AND GAS PERMEABLE AGGREGATE (IF PRESENT). CLEAN THE EXPOSED LIQUID BOOT® MEMBRANE TO ENSURE THE MEMBRANE AND PENETRATION ARE FREE OF ALL DUST, DIRT, GREASE, CURING COMPOUNDS, RELEASING AGENTS, ETC.



**STEP 5:**

FILL IN ALL SPACE AROUND THE PENETRATION WITH LIQUID BOOT® TROWEL GRADE MATERIAL TO SEAL. APPLY LIQUID BOOT® TROWEL GRADE MATERIAL A MINIMUM OF 3" ONTO THE PENETRATION AND EXISTING LIQUID BOOT MEMBRANE. ALLOW TO CURE OVERNIGHT.

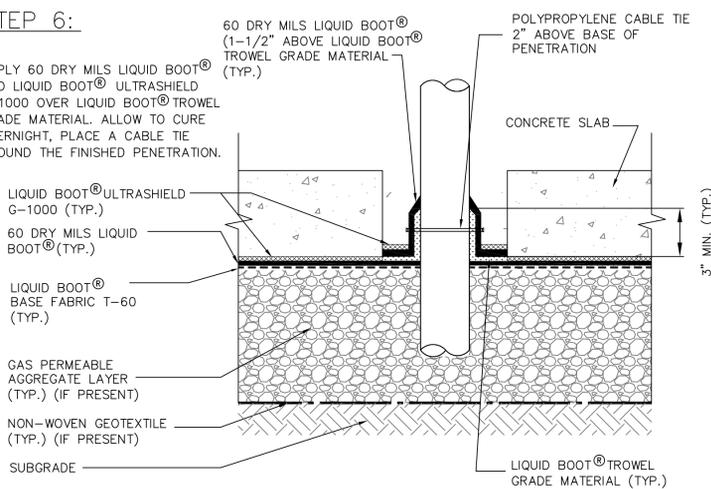


**LIQUID BOOT REPAIR – PRODUCT LIST:**

1. LIQUID BOOT (FLUID APPLIED)
2. LIQUID BOOT (TROWEL-GRADE)
3. LIQUID BOOT ULTRASHIELD G-1000
4. LIQUID BOOT BASE FABRIC T-60

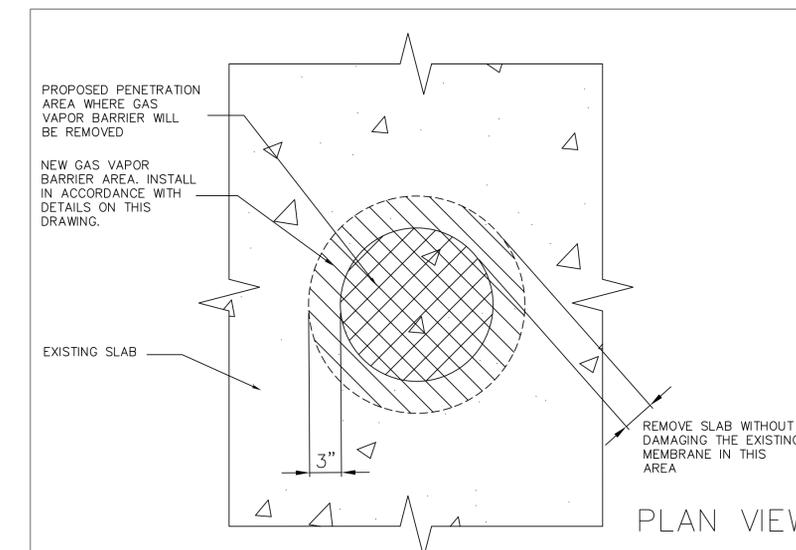
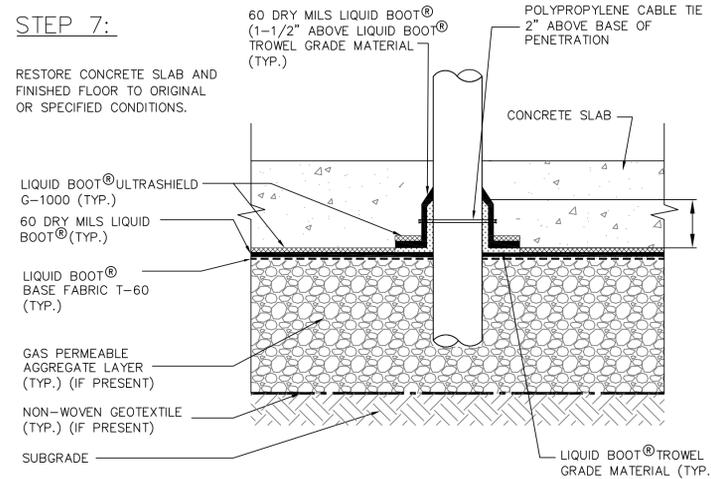
**STEP 6:**

APPLY 60 DRY MILS LIQUID BOOT® AND LIQUID BOOT® ULTRASHIELD G-1000 OVER LIQUID BOOT® TROWEL GRADE MATERIAL. ALLOW TO CURE OVERNIGHT, PLACE A CABLE TIE AROUND THE FINISHED PENETRATION.



**STEP 7:**

RESTORE CONCRETE SLAB AND FINISHED FLOOR TO ORIGINAL OR SPECIFIED CONDITIONS.



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PAPER SIZE: 24" x 36"



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DRAWN BY: HD
CHECKED BY: KB
DATE: MAY 2012
SCALE: NOT TO SCALE
PROJECT NUMBER: 191151.0000.0000

PROJECT NAME:	
DRAWING TITLE:	TYPICAL LIQUID BOOT PENETRATION REPAIR DETAILS

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002