2350 FIFTH AVENUE

NEW YORK, NEW YORK

Remedial Action Work Plan – Phase 2

NYSDEC Site Number: 2-31-004

Prepared for:
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Prepared by:

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SEPTEMBER 2013

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CERTIFICATION

I, Michelle Lapin, certify that I am currently a NYS registered Professional Engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10). I have primary direct responsibility for implementation of the remedial program for the 2350 Fifth Avenue Site (NYSDEC Site No. 2-31-004).

I certify that the Site description presented in this RAWP is identical to the Site descriptions presented in the Consent Order executed July 22, 2011 for the Site.

I certify that this RAWP has a plan for transport and disposal of material removed from the property under this Plan, and that all transport and disposal will be performed in accordance with all local, State and Federal laws and requirements. All exported material will be taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that this RAWP has a plan for import of all soils and other material from off-Site and that all activities of this type will be in accordance with all local, State and Federal laws and requirements.

I certify that that this RAWP has a plan for nuisance control during the remediation and all invasive development work, including a dust and odor suppression plan and that such plan is sufficient to control dust and odors and will prevent nuisances from occurring.

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

9-17-13

NYS Professional Engineer #073934-1 Date Signature

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

LIST OF ACRONYMS

AKRF – AKRF Engineering, P.C. or AKRF, Inc.

C&D – Construction and Demolition

CAMP – Community Air Monitoring Plan

CB – Community Board

CFM – Cubic feet per minute

CFR – Code of Federal Regulations

CGI – Combustible Gas Indicator

CPP – Citizen Participation Plan

CQAP – Construction Quality Assurance Plan

DCE – Dichloroethene

DER – Department of Environmental Remediation

DUSR – Data Usability Summary Report

ECs – Engineering controls

ECL – Environmental Conservation Law

ELAP – Environmental Laboratory Accreditation Program

EPA – United States Environmental Protection Agency

FER – Final Engineering Report

FS – Feasibility Study

FWRIA – Fish and Wildlife Resources Impact Analysis

g/cm^3 – grams per cubic centimeter

GAC – Granular activated carbon

HASP – Health and Safety Plan

HVAC – Heating, Ventilation and Air Conditioning

IC – Institutional controls

inH_2O – Inches of water column

IRM – Interim Remedial Measure

ISCO – In-Situ Chemical Oxidation

LNAPL – Light Non Aqueous Phase Liquid

mg/kg – milligrams per kilogram

mg/l – milligrams per liter

MFR – Modified Fenton’s Reagent

NYC – New York City

NYCDOT – New York City Department of Transportation

NYCRR – New York Code of Rules and Regulations

NYSDEC – New York State Department of Environmental Conservation

NYSDOH – New York State Department of Health

OSHA – Occupational Safety and Health Administration

P&ID – Process and Instrumentation Diagram

PCBs – Polychlorinated biphenyls

PCE - Tetrachloroethene

PID – Photoionization detector

PPB – Parts per billion

PPE – Personal protective equipment

PM_{10} – Particulate matter less than 10 micrometers in size

PPM – Parts per million

PRAP – Proposed Remedial Action Plan

PRDWP – Pre-Remedial Design Work Plan

PRP – Potentially Responsible Party

PVC – Polyvinyl chloride

QAPP – Quality Assurance Project Plan

QA/QC – Quality Assurance/Quality Control

RAOs – Remedial Action Objectives

RAWP – Remedial Action Work Plan

RI – Remedial Investigation

RIR – Remedial Investigation Report

ROD – Record of Decision

ROI – Radius of influence

SCGs – Standards, Criteria, and Guidance

SCOs – Soil Cleanup Objectives

SEQRA – State Environmental Quality Review Act

SMP – Site Management Plan

SSDS – Sub-Slab Depressurization System

SVE – Soil Vapor Extraction

SVOCs – Semivolatile organic compounds

SWPPP – Storm Water Pollution Prevention Plan

TCE – Trichloroethene

TCL – Target Compound List

TICs – Tentatively identified compounds

µg/l – Micrograms per liter

µg/m^3 – Micrograms per cubic meter

µg/kg – Micrograms per kilogram

USGS – United States Geological Survey

UST – Underground storage tank

VOCs – Volatile organic compounds

WC – Water column

XFR – Activated sodium persulfate

EXECUTIVE SUMMARY

Site Description

The 2350 Fifth Avenue Corp. entered into Orders on Consent with the New York State Department of Environmental Conservation (NYSDEC) in July 1997, March 2001, and July 2011, to investigate and remediate a 1.58-acre property located at 2350 Fifth Avenue in the Borough of Manhattan, New York (the "Site"). The surrounding properties include the 369th Regiment Armory building to the north of the Site, an 1,800-square foot memorial park and Harlem River Drive to the east, Delano Village residential complex to the south, and a garage and paved parking area to the west.

The Site is categorized as a Class 2 site (Site ID #231004) by the NYSDEC under the Inactive Hazardous Waste Disposal Site Remedial Program. The Remedial Investigation (RI) and Feasibility Study (FS) have been completed and NYSDEC approved a remedy in a March 2011 Record of Decision (ROD). Further investigation of the Site was performed under the NYSDEC-approved Pre-Remedial Design Work Plan (PRDWP) from November 2011 to December 2011. The Remedial Action Work Plan (RAWP) for Phase 1 of the remediation was prepared by AKRF Engineering P.C., in February 2012 and approved by NYSDEC on February 27, 2012. This RAWP for Phase 2 of the remedy provides details for implementation of the remainder of the NYSDEC-approved remedial action.

Site History

The existing Site building was originally constructed as an ice cream factory in 1923 with additions around 1930 and 1950. The latter addition improved the structure with multiple layers of insulation (largely cork and styrofoam) installed beneath the floor slab and, in some cases, layered between multiple concrete floor slabs to accommodate the refrigeration needs of the ice cream factory. The building was then occupied by a commercial laundry from 1970 to 1994. The majority of tetrachloroethene (PCE) released at the Site was likely to have occurred between 1970 and 1984, when the commercial laundry operations used first-generation washing, drying, and extracting machines with PCE as a cleaning solvent.

Summary of the Remedial Investigation and Pre-Remedial Design Activities

Initial investigations and a preliminary site assessment were performed from 1996 to 2002, the Remedial Investigation (RI) was performed from 2002 to 2009, and the supplemental investigation as part of pre-remedial design was performed in November 2011. The field-sampling program performed under the RI included work at the project Site, on the north-adjacent property, and along adjacent sidewalks. Work performed under the RI from 2002 to 2009 consisted of the following:

- Installation and sampling of 40 soil borings;
- Installation and sampling of eight deep and four shallow groundwater monitoring wells and sampling of 12 previously installed wells;
- Installation and sampling of 20 soil vapor sampling points, three temporary sub-slab vapor sampling points, and sampling of four previously installed soil vapor points;
- Collection of four indoor air samples from the north-adjacent property;
- Collection of five on-Site indoor air samples on a quarterly basis since 1997, gradually increasing to 10 locations, which have been sampled since October 2008; and
- Advancement of 17 sub-slab insulation cores and sampling of material from 13 cores.

Work performed under the Pre-Remedial Design Work Plan (PRDWP) in November and December 2011 consisted of the following:

- Installation of three soil vapor sampling points in the southwest-adjacent property and sampling of these and four existing sampling points to delineate soil vapor concentrations around SG-28;
- An obstruction investigation (geophysical survey and test pits) in the 142nd Street loading dock;
- Installation and testing of 9 soil vapor extraction (SVE) wells in the northwestern portion of the site to provide site-specific data for remedial design; and
- Installation and testing of 44 sub-slab depressurization (SSDS) pits throughout the Site building to provide site-specific data for remedial design.

Geology and Hydrogeology

U.S. Geological survey studies show bedrock at an elevation of approximately -40 feet (approximately 50 feet below grade) at the eastern end of the Site and at elevation -20 feet (approximately 30 feet below grade) at the western end of the Site in reference to the National Geodetic Vertical Datum of 1929, an approximation of mean sea level. An 8 to 14 feet thick fill layer comprising silty sand intermixed with demolition debris (brick, concrete, and wood fragments), ash, and coal fragments was encountered beneath the Site and surrounding area. A layer of organic material (consisting or organic silt and clay and fibrous peat) was located beneath the fill, which varied from approximately 1 to 12 feet thick.

Groundwater in the vicinity of the Site is divided into two confined aquifers, separated by an organic clay layer acting as an aquitard/aquiclude between the shallow and deep aquifers. The measurements of groundwater elevation indicated that groundwater flow in the shallow aquifer was generally towards the northeast beneath the Site, and towards the south-southeast on the north-adjacent block. The groundwater flow in the deep aquifer was towards the east beneath the project Site with a more northeasterly flow observed beneath the north-adjacent block. The groundwater surface in the shallow aquifer was irregular and approximately 6 to 12 feet below sidewalk grade, with the exception of 3.7 feet below grade at one location (M-10s). In summary, it appears that local groundwater flow may be influenced by the presence of building foundations and utilities, and variations in the fill material.

Contamination Conditions

PCE and its decomposition products (trichloroethene (TCE), cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride) were detected at elevated levels in soil, groundwater, and sub-slab insulation samples collected from the northwestern portion of the Site, which is believed to be the former PCE source area. The following samples collected during the RI from 2002 to 2009 had concentrations exceeding their respective Standards, Criteria and Guidance (SCGs):

- Fourteen of 128 soil samples collected had concentrations of PCE and its decomposition products above Part 375 Soil Cleanup Objectives (SCOs) for Unrestricted Use;
- Nine of 44 groundwater samples collected in two sampling events from 23 monitoring wells had concentrations of PCE and its decomposition products above Class GA (Drinking Water) Standards. One additional well was identified with light non-aqueous phase liquid (LNAPL) during both sampling events;
- Detection of PCE in 40 soil vapor samples (during multiple sampling events) collected from 24 soil vapor points and 3 sub-slab vapor points (note: quantitative SCGs have not been developed for soil vapor alone); and
- Three of 13 sub-slab insulation samples had a PCE concentration greater than 5 milligrams per kilogram (mg/kg).

Qualitative Human Health Exposure Assessment

A qualitative human health exposure assessment evaluated potential exposure pathways for completeness between on-Site contaminated media and potential receptors on-Site and off-Site. New York City prohibits the use of groundwater in Manhattan for potable purposes; therefore, the exposure pathway *Groundwater ingestion by current or future building users or off-Site populations* is not complete.

Potential theoretically complete pathways included the *off-Site fish ingestion, surface water ingestion and dermal contact*, and *inhalation of vapors by off-Site populations*. The absence of detectable VOCs in groundwater samples from wells M-4s/d, M-5s/d, M-6s/d, M-8, and M-12d, which are all downgradient of the Site's source area, and detected indoor air concentrations below the NYSDOH air guidance values for PCE and TCE indicate, at most, an insignificant exposure through the potential theoretically complete pathways.

Three exposure pathways: *inhalation of vapors by building users; soil, groundwater and insulation material dermal contact, ingestion and inhalation by on-Site environmental workers during remediation;* and *soil, groundwater, and insulation material dermal contact and ingestion by building users (following remediation) and off-Site populations*, were determined to be complete. Exposures via these pathways have been addressed on an interim basis by the interim remedial measures described below, will be mitigated during construction by implementation of a Site-specific Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) and mitigated long-term by the planned remedial activities and implementation of a Site Management Plan (SMP).

Summary of Interim Remedial Measures

Initial interim remedial measures (IRM), performed in 1997, were aimed at preventing impacts to the air quality within the building. The IRM consisted of three measures: removal of contaminated insulation material from beneath the slab in a portion of the building; installation of a shallow intra-slab vapor extraction system in the northwestern portion of the building; and sealing penetrations through the slab.

Summary of the Remedy Under this RAWP for Phase 2

Contamination in soil, groundwater, soil vapor, and sub-slab insulation material will be addressed in the remedial action outlined in the NYSDEC ROD. Phase 1 of the remediation, specified in a separate RAWP dated February 2012, consists of the partial removal of the sub-slab insulation material beneath an area of approximately 1,000-square feet located in the northwestern portion of the Site. Phase 2 of the remediation, specified in this RAWP, includes the following:

- Soil vapor extraction (SVE) system – A soil vapor extraction system will be installed comprising the following vapor extraction points: nine additional SVE wells installed under the PRDWP, one pre-existing SVE well, one pre-existing groundwater monitoring well, and four proposed SVE wells to be installed during implementation of the remedy. These extraction points will be connected to a blower to extract contaminated soil vapor from the vadose zone in an approximate 8,000-square foot area in the northwestern portion of the site. The extracted vapors would be directed to a vapor treatment system and subsequently discharged to the atmosphere in accordance with 6 NYCRR Part 212. Any proposed design and/or operational changes to the system would be submitted to NYSDEC and NYSDOH for review and approval.
- In-situ treatment of soil and groundwater – In-situ chemical oxidation treatment utilizing extra free radical enhanced modified Fenton's reagent (MFR) and activated sodium persulfate (XFR) will be applied to treat the unsaturated soils, saturated soils and groundwater at the site.

- Light non-aqueous phase liquid (LNAPL) recovery – The petroleum LNAPL observed in monitoring well M-12s will be delineated and removed using passive or active recovery methods to the extent practicable.
- Sub-slab depressurization system (SSDS) will comprise two separate systems, designated for low vacuum and high vacuum applications. The following vacuum points will be connected to the two systems–
    - Low vacuum, high air flow rate: Six void space vacuum points and four SSDS points installed under the PRDWP, and six additional points from the existing intra-slab SVE system.
    - High vacuum, low air flow rate: Thirty SSDS pits installed under the PRDWP.

  All SSDS points will be connected to one of three fans to apply negative pressure to an approximate 45,000-square foot area comprising the portions of the site untreated by the SVE system. The recovered vapors would be directed to a vapor treatment system and subsequently discharged to the atmosphere.
- Closure in-place of an underground storage tank (UST) – A 20,000-gallon UST formerly containing No. 6 fuel oil, encountered during test-pitting for the pre-design investigation, will be cleaned and closed in-place. Although not explicitly part of the remedial action outlined in the ROD, tank closure is a general DEC requirement and is therefore included in this RAWP.
- Maintenance of the existing composite cover consisting of asphalt or concrete.
- Institutional controls – Upon completion of the above remedial activities, an Environmental Easement will be filed and a Site Management Plan will be prepared and implemented to ensure the remedy remains protective of the public health and the environment.

1.0 INTRODUCTION

The 2350 Fifth Avenue Corp. entered into Orders on Consent with the New York State Department of Environmental Conservation (NYSDEC) in July 1997, March 2001 and July 2011 (Index Nos. W2-0792-97-05, W2-0792-98-07 and W2-0792-11-04), to investigate and remediate a 1.58-acre property located at 2350 Fifth Avenue in the Borough of Manhattan, New York (the "Site"). The Site is categorized as a Class 2 site (Site ID #2-31-004) by the NYSDEC under its Inactive Hazardous Waste Disposal Site Remedial Program.

The remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria and guidance, as well as the following documents:

- Feasibility Study prepared by AKRF dated March 2011;
- Proposed Remedial Action Plan (PRAP) prepared by the NYSDEC dated February 2011; and
- Record of Decision prepared by NYSDEC dated March 2011.

As with the RAWP for Phase 1 of the remediation dated February 2012, this Remedial Action Work Plan (RAWP) – Phase 2 summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed between 2002 and 2009, as documented in the NYSDEC-approved Remedial Investigation Report prepared by AKRF dated June 2010. This RAWP provides details for implementation of Phase 2 of the remedy which consists of:

- Installation of a soil vapor extraction (SVE) system equipped with activated carbon treatment (or other air treatment as applicable) beneath the building in the northwestern portion of the Site;
- Injections of a chemical oxidation product beneath the building for in-situ soil and groundwater treatment in the northwestern portion of the Site;
- Removal of light non-aqueous phase liquid (LNAPL) around existing groundwater well MW-12s to the extent practicable; and
- Installation of a sub-slab depressurization system (SSDS) throughout the existing site building;
- Closure in-place of an underground storage tank (UST) located beneath the loading dock in the northwestern portion of the Site;
- Maintenance of the existing composite cover consisting of asphalt or concrete; and
- Imposition of institutional controls in the form of an environmental easement and Site Management Plan (SMP).

Remedial design elements are presented in the RAWP for Phase 2. Upon RAWP approval, specifications will be prepared and submitted for NYSDEC review.

The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC has listed the Site as a Class 2 Site, which is a site that has been found to present a "significant threat to public health or environment – action required." The FS for this Site did not identify fish and wildlife resources and as such, a Fish and Wildlife Resources Impact Analysis (FWRIA) was not required by NYSDEC and was not performed for this project.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located in the County of New York, Borough of Manhattan, New York and is identified as Block 1739, Lot 33 and a portion of Lot 22 on the Borough of Manhattan, New York, New York Tax Map. A United States Geological Survey (USGS) topographical quadrangle map, 7.5-minute series of Central Park (Figure 1) shows the Site location. The Site is situated on an approximately 1.58-acre area bounded by West 142nd Street to the north, West 141st Street to the south, Fifth Avenue to the east, and a garage and paved parking area to the west (see Figure 2). The 1.58-acre property is fully described in Appendix A – Metes and Bounds, which includes a survey map.

1.2 CONTEMPLATED USE

The Remedial Action to be performed under the RAWP is intended to make the Site protective of public health and the environment over the long term, consistent with reasonably foreseeable uses. No significant demolition and/or development are currently planned for the Site. For purposes of this RAWP, reasonable foreseeable future land uses are limited to those that would be permitted (without variances or waivers) under the Site's current zoning and approvals, which may include industrial, commercial and certain institutional uses, including but not limited to a self-storage facility, art studio space, church and/or school. A proposal to allow a use requiring a change in zoning or variances/waivers may require review under NYC's City Environmental Quality Review (CEQR) requirements, a process in which NYSDEC would be able to address the appropriateness of such a use given any contamination and associated exposure pathways remaining following implementation of remediation.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site's adjacent properties include the 369th Regiment Armory building located across West 142nd Street to the north of the Site, an 1,800-square foot memorial park and Harlem River Drive located across Fifth Avenue to the east, Delano Village residential complex located across West 141st Street to the south, and a garage and paved parking area to the west. A land use map has been included as Figure 3.

A sensitive receptor survey was completed for the Site as part of the RI, including all sensitive receptors downgradient of the contamination identified at the subject property. Sensitive receptors are people or other organisms that may have a significantly increased sensitivity or exposure to contaminants by virtue of their age and health (e.g., schools, day care centers, hospitals, nursing homes), status (e.g., sensitive or endangered species), proximity to the contamination, dwelling construction (e.g., basement), or the facilities they use (e.g., water supply well). The location of sensitive receptors was identified in order to evaluate the potential impact of the contamination on public health and the environment.

There were no United States Geological Survey (USGS) groundwater site inventory wells (GWSI), NYSDEC public supply wells, NYSDEC well registration sites, beaches or wetlands identified within a ¼-mile radius of the Site. One NYSDOH well, 20 day care facilities, one school, one hospital, one adult nursing home, three churches, and three parks were identified within a ¼-mile radius of the Site. However, none of the identified receptors are downgradient of the Site based on the presumed groundwater flow direction. The Harlem River is located approximately 200 to 300 feet east of the Site. Groundwater in New York County is not used as a source of potable water and no water supply wells are located in the area.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated in accordance with the scope of work presented in the NYSDEC-approved Remedial Investigation (RI) Work Plan dated July 2007 and the Focused Remedial Investigation Work Plan in March 2001. The investigation activities under the July 2007 RIWP were conducted between

December 11, 2007 and December 29, 2009. The Remedial Investigation Report was submitted to NYSDEC on June 18, 2010 and subsequently approved by NYSDEC. Supplemental soil vapor analyses were performed at NYSDEC's request as part of the PRDWP. The discussion below summarizes the findings of the remedial investigation work and pre-remedial design work performed since 2002; it does not include the findings of the preliminary site assessment (PSA) and prior investigations performed by others.

2.1 SUMMARY REMEDIAL INVESTIGATIONS PERFORMED

The field-sampling program consisted of the advancement and sampling of 40 soil borings, 30 sub-slab insulation cores, installation and sampling of eight deep and four shallow groundwater monitoring wells, three temporary sub-slab vapor monitoring points, and 23 soil vapor sampling points, including the re-installation of a damaged soil vapor sampling point (SG-5), at the Site, on the north-adjacent property, or along adjacent sidewalks. Twelve previously installed groundwater monitoring wells and four previously installed soil vapor points were also sampled.

2.1.1 Borings and Wells

Installation details of the soil borings, shallow sub-slab cores, groundwater monitoring wells, and soil vapor monitoring points are presented in Tables 1a through 1d.

2.1.2 Samples Collected

During the remedial investigation field activities, the following samples were collected from on-Site, on the north-adjacent property, and on adjacent sidewalks:

- 128 soil samples were collected from 40 soil borings and six monitoring well borings;
- 44 groundwater samples were collected from 23 groundwater monitoring wells over two sampling events;
- One light non-aqueous phase liquid (LNAPL) sample was collected from one groundwater monitoring well;
- Forty-five soil vapor samples, three sub-slab vapor samples, three duplicate soil vapor samples, and five QA/QC ambient air samples were collected from 27 permanent soil vapor monitoring points and three temporary sub-slab vapor points over three sampling events;
- Four indoor air samples from the north-adjacent property;
- Indoor air samples collected on-Site on a quarterly basis from 5 locations in 1997, which gradually increased to 10 locations, which have been sampled since October 2008;
- Thirteen sub-slab insulation samples were collected from 16 shallow sub-slab cores in 2009 (insulation was not encountered in the remaining 3 cores).

2.1.3 Chemical Analytical Work Performed

A table summarizing all samples collected and the corresponding sample matrices, analytes, and sample numbers is attached as Tables 2a through 2e. Soil, groundwater, soil vapor and insulation samples were analyzed at Alpha Analytical (Alpha) of Westboro, Massachusetts, or TestAmerica Connecticut Laboratories (TestAmerica) of Shelton, Connecticut. Both laboratories hold NYSDOH ELAP-certifications and performed all analyses following NYSDEC ASP Category B deliverables. Soil, groundwater, and sub-slab insulation samples were analyzed for VOCs by EPA Method 8260, soil vapor samples were analyzed for VOCs by EPA Method TO-15 plus tentatively identified compounds (TICs), and indoor air samples were analyzed for six chlorinated VOCs (PCE and its breakdown products: TCE, trans-1,2-dichloroethene (DCE), cis-1,2-DCE and vinyl chloride) by EPA Method TO-15. Selected groundwater samples collected in December 2009 were also analyzed for additional compounds for natural attenuation analysis as follows: sulfate by EPA Method 9056, nitrate by EPA Method 9056, sulfide by EPA Method SM 4500 S2 E, reduced iron by EPA Method 6010B, reduced manganese by EPA Method 6010B, methane by EPA Method RSK-175, and alkalinity by EPA Method 2320B.

2.1.4 Documentation

The Remedial Investigation findings are discussed throughout Section 2.0 of this RAWP. A map depicting the locations of all sampling performed at the Site under the various phases of Site investigation is included as Figure 4. Maps of sample locations and summary tables are provided for each media, as discussed in Section 2.5.

2.2 SIGNIFICANT THREAT

As a result of identified contamination, the NYSDEC listed the Site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in July 1998. A Class 2 site is a Site where hazardous waste presents a significant threat to the public health or the environment and action is required. The remedial program is being performed by 2350 Fifth Avenue Corporation as a Potentially Responsible Party (PRP).

2.3 SITE HISTORY

The Site is located in the Harlem section of Manhattan. The current Site building was constructed in 1923 for use as an ice cream factory with construction additions in 1932 and 1950 as depicted on 1939 and 1951 Sanborn Maps. The latter addition improved the structure with multiple layers of insulation (largely cork and styrofoam) installed beneath the floor slab and, in some cases, layered between multiple concrete floor slabs to accommodate the refrigeration needs of the ice cream factory. In 1970, the Site use changed to a commercial laundry with an on-Site dry cleaning operation that utilized tetrachloroethene (PCE) as a cleaning solvent. The dry cleaning operation was located in the northwestern portion of the Site, west-adjacent of the 142nd Street loading dock. First generation dry cleaning equipment was used on-Site until 1984, when the equipment was upgraded to single units that performed the washing, extraction, and drying. The majority of PCE released was likely to have occurred between 1970 and 1984, when PCE was utilized on-Site, but with separate washing, extraction, and drying units.

2.3.1 Past Uses and Ownership

The existing building was originally constructed in 1923 as an ice cream factory by the Bordens Ice Cream Company as a three-story building. Building improvements included the construction of a two-story addition in 1932, and a one-story addition in 1950. Following its use as an ice cream factory, the building was occupied by a commercial laundry from 1970 to 1994. The laundry operated under a variety of names including Budge-Wood Service, Bluebird Laundry, and Swiss-American Laundry. The facility included a dry cleaning operation utilizing PCE as a cleaning solvent. In 1995-1996, most of the ground floor of the building, with the exception of the far western portion, was renovated for use as a New York City public school. This portion of the building was occupied as a school in the fall of 1997 and was later used by a church for services, offices, and classes. The church left the building in December 2004. The remainder of the building was renovated in 2001 for use as a self-storage facility. An office was constructed next to the West 141st Street loading docks and storage units were constructed in the western portion of the ground floor and on the second and third floors. In February 2006, the self-storage facility expanded into the former school portion of the building; however, this space was primarily used for art studios.

2.3.2 Previous Environmental Reports

Environmental investigation and reporting at the Site was initiated by Roy F. Weston, Inc., on behalf of the New York City School Construction Authority in October 1996. During this investigation, indoor air samples collected at multiple locations on the ground floor detected PCE at concentrations ranging from 17 to 71 parts per billion (ppb). Riverpoint, Inc. was then retained to investigate the source of PCE vapors within the Site building and conducted air testing activities from December 1996 through February 1997. Air Recon was then retained to perform on-Site air analyses using a portable gas chromatograph with electron capture detector, which determined that the highest PCE concentrations were present in and near floor drains and other penetrations of the floor slab. Levels of PCE in air that ranged from 13,000 to 22,000 ppb were measured within a penetration of the floor slab near the northern end of the Site building. AKRF then performed the Preliminary Site Assessment (PSA) and Remedial Investigation Phase I (RI PI) in January 1998 and February 2002, respectively. Twenty-three soil samples from six borings and ten groundwater samples from eight monitoring wells were collected and analyzed as part of the PSA and RI PI, and were discussed in the RIR and FS dated June 2010 and March 2011, respectively.

2.3.3 Sanborn Maps

Representative Sanborn Maps available for the Site were reviewed as part of the remedial investigation prior to preparation of the RAWP. Historical Sanborn Maps for the Site and surrounding area are included in Appendix B. The Site and most of the surrounding area was vacant in 1893 until 1909, when the 142nd Street portion of the Site was used as a stone yard with the surrounding area constructed with stables. The current Site building was constructed in 1923 for use as an ice cream factory with construction additions in 1932 and 1950 depicted on the 1939 and 1951 maps.

2.4 GEOLOGICAL CONDITIONS

Based on the U.S. Geological Survey Central Park Quadrangle map, the Site lies at an elevation of approximately 10 feet or less above the National Geodetic Vertical Datum of 1929, an approximation of mean sea level. U.S. Geological survey studies show bedrock at an elevation of approximately -40 feet in reference to the National Geodetic Vertical Datum of 1929 (approximately 50 feet below grade) at the eastern end of the Site and at elevation -20 feet (30 feet below grade) at the western end of the Site. The RI and previous investigations completed at the Site indicated that there is a fill layer beneath the Site and the surrounding area that varies in thickness from approximately 8 to 14 feet thick. The fill comprised silty sand intermixed with demolition debris (brick, concrete, and wood fragments), ash, and coal. A layer of organic material (consisting of organic silt and clay and fibrous peat) was located beneath the fill, which varied from approximately 1 to 12 feet thick. In general, the organic layer was thickest near Fifth Avenue and tapered to a foot or two thick towards the western end of the Site. Native brown silty sand was identified beneath the organic layer and bedrock was not encountered throughout the history of the investigations completed at the Site, which reached maximum depths of 35 feet below grade.

Geologic sections are shown in Figures 5a, 5b, and 5c. Figure 5a is a plan view depicting two cross-sections completed for the Site. Figure 5b depicts a cross-section of subsurface conditions along the northern portion of the Site, specifically along the sidewalk adjacent to West 142nd Street. The cross-section on Figure 5c bisects the Site in a north-south direction and depicts subsurface conditions of the Site and the area immediately north of the Site.

The Harlem River is located approximately 200 to 300 feet east of the Site. Groundwater in New York County is not used as a source of potable water and no water supply wells are located in the area. Groundwater levels were measured in all wells as part of the RI and were compared to well elevations surveyed by Montrose Surveying Company, LLP. Measured groundwater levels are included in Table 3 and groundwater flow maps are shown in Figures 6a for shallow wells and Figure 6b for deep wells at the Site. Groundwater in the vicinity of the Site is divided into two confined aquifers, separated by an organic clay layer of varying thickness acting as an aquitard/aquiclude between the shallow and deep aquifers. The installation of shallow/deep cluster wells make it possible to describe the horizontal component of flow in both aquifers, as well as the vertical flow component between the shallow and deep aquifers.

The groundwater surface in the shallow aquifer was irregular and approximately 6 to 12 feet below sidewalk grade, with the exception of 3.7 feet below grade at M-10s. The measurements of groundwater elevation indicated that there were multiple horizontal flow directions. The observations from shallow monitoring wells indicate that the Site groundwater flow in the shallow aquifer was generally north towards West 142nd Street and eastward along 142nd Street towards the Harlem River. Thus the flow direction in the shallow aquifer on the Site was generally towards the northeast, and the flow direction on the north-adjacent block was to the south-southeast. Groundwater flow in the deep aquifer exhibits a slight west to east gradient in the direction of the Harlem River; however, the flow pattern exhibits almost no gradient in the center of the Site. Groundwater in the deep aquifer on the north-adjacent block exhibits more of a northeasterly flow. The vertical flow component between the two aquifers was determined by the difference in head between wells screened within the shallow and deep aquifers. The groundwater elevations indicate that throughout the Site, groundwater is flowing upward from the deep aquifer to the shallow aquifer; however, the groundwater measurements collected from the cluster wells along West 143rd Street, north of the Site, indicate a downward vertical flow component. In summary, it appears that local groundwater flow may be influenced by the presence of building foundations and utilities, and variations in the fill material.

2.5 CONTAMINATION CONDITIONS

Multiple investigations have been performed to identify and evaluate contamination conditions on-Site, around the source area, and off-Site. The source area is located in the northwestern portion of the Site. A summary of the investigations performed and contamination conditions that were identified is presented below.

2.5.1 Conceptual Model of Site Contamination

PCE and decomposition products were detected in soil, groundwater, and sub-slab insulation samples collected from the northwestern portion of the Site, which is believed to be the former PCE source area. Over 85 percent of soil samples collected from October 2007 to December 2009 contained less than 1 milligrams per kilogram (mg/kg) of PCE with only seven samples near the source area containing PCE levels exceeding Part 375 SCOs for Unrestricted Use.

The highest chlorinated VOC levels detected in groundwater samples were present in M-11s, located on the West 142nd Street sidewalk, just north of the source area. No PCE or decomposition products were detected from M-11d, the deep well at this location. PCE and decomposition products were detected in an additional 6 of the 24 groundwater monitoring wells in 2007 and 2009.

PCE was detected in all the soil vapor samples collected from 2007 to 2009, with the highest level, 332,000 micrograms per cubic meter (µg/m^3), at SG-7, located on the West 142nd Street sidewalk near the old loading dock entrance. Levels of PCE in other soil vapor samples were much lower, and decrease with distance from the source area.

Insulation material was primarily brown cork, 3 to 12 inches thick, at depths ranging from 6 inches to 3.5 feet below grade. PCE concentrations in the insulation ranged from 900 micrograms per kilogram (µg/kg) to 560,000 µg/kg. Levels of PCE greater than 5,000 µg/kg were situated in the former cafeteria (Room 122) and north-adjacent hallway with lesser concentrations present beneath the kitchen, and in the insulation material east of the cafeteria, below Room 141. (Note: The comparison value of 5,000 µg/kg of PCE in insulation material was arbitrarily chosen so that a 95% or greater mass reduction of PCE would be achieved by removal of insulation with PCE concentrations of 5,000 µg/kg and above.)

2.5.2 Description of Areas of Concern

The following areas of concern were identified for this Site during the remedial investigation:

- One 5,000-gallon UST was closed-removed and one 20,000-gallon UST was closed-in-place. Both USTs were listed under PBS #2-600447 with Budge-Wood Laundry Service Inc. as the listed site name. The 20,000-gallon closed-in-place UST that reportedly held #6 fuel oil is currently buried underneath the West 142nd Street loading dock, immediately east of the former dry cleaning area. The 5,000-gallon closed-removed tank reportedly held diesel and was located beneath the north side of the building, east of the loading dock. The 5,000-gallon closed-removed tank may have contributed to the LNAPL observed in M-12s, along the northeastern Site boundary.
- Soil contamination at the Site is primarily PCE and breakdown products (trichloroethene, cis-1,2-dichloroethene, trans-1,2- dichloroethene, and vinyl chloride). Of the 128 soil samples collected as part of the RI, 14 samples contained one or more compounds of concern (PCE and breakdown products) at a concentration greater than the 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use. VOCs exceeding SCOs for Unrestricted Use, although confined to the northwestern portion of the Site, were encountered in discrete areas (both horizontally and vertically), separated by samples with concentrations below their respective SCO. Depths of the samples with VOCs above SCOs for Unrestricted Use were also in horizontally inconsistent, isolated areas, ranging from 4 to 18 feet below grade.
- Groundwater samples collected in the two most recent comprehensive sampling events (2007 and 2009) from 23 groundwater monitoring wells contained PCE and its decomposition products at levels that exceeded Class GA (Drinking Water) Ambient Water Quality Standards and Guidelines in 6 NYCRR Section 703.5 in nine of 44 samples. The highest levels were reported from the sample from well M-11s, located

on the West 142nd Street sidewalk, just north of the source area. No chlorinated VOCs (i.e., PCE and its decomposition products) were detected in 18 of 23 wells sampled in 2009. One monitoring well was identified with LNAPL during both sampling events.

- Soil vapor samples collected during the RI all contained PCE, except for sub-slab vapor point SG-34. The highest level of PCE, 332,000 $\mu g/m^3$, was detected in a sample at SG-7, located on the West 142nd Street sidewalk near the old loading dock. This is also the area where the highest soil and groundwater contaminant levels were found. Levels of PCE in other soil vapor samples were much lower and decreased with distance from the source area.
- After IRM implementation in 1997 (see Section 2.7), elevated concentrations of PCE and TCE were sporadically detected in quarterly indoor air samples collected from the northern part of the building. Concentrations greater than the NYSDOH air guideline values were not routinely identified, and are most often detected in the old boiler room and in Locker 1454, both of which are closed, unventilated, unoccupied spaces. See indoor air sampling results in Tables 7a and 7b.
- Of 16 cores of the building slab(s), four were found to have no insulation material and three of 12 remaining cores had sub-slab insulation material with a PCE concentration greater than 5 mg/kg. Sub-slab insulation material contaminated with PCE was identified in the northwestern portion of the Site. The portion of the Site with elevated concentrations was used for the dry cleaning operation from 1970 to 1994, and was near the area that housed washing, extracting, and drying machines. The majority of PCE released at the Site is believed to have occurred in this area from 1970 to 1984, when first generation washing and drying machines were used.

Following field investigations of the subsurface soil, groundwater, insulation and soil vapor, and indoor air, it was evident that the majority of samples from the various media with elevated concentrations were mainly localized in the source area in the northwestern portion of the building.

2.5.3 Identification of Standards, Criteria and Guidance

The applicable Standards, Criteria and Guidance (SCGs) for specific media at the Site were established in the FS and PRAP, and confirmed by NYSDEC in Section 5.1.1 of the March 2011 ROD. The SCGs serve as the target cleanup objectives for contaminants at the Site.

2.5.4 Soil/Fill Contamination

Seventeen of the 128 soil samples collected during the RI had one or more VOCs at a concentration greater than the SCGs for soil. Fourteen of the 128 soil samples had a concentration of PCE and/or its decomposition products at a concentration greater than the SCO for Unrestricted Use. VOCs exceeding the SCGs, although confined to the northwestern portion of the Site, were encountered in discrete areas (both horizontally and vertically) separated by samples with VOC concentrations below the SCGs. Laboratory results for soil samples collected at the Site are discussed below.

2.5.4.1. Summary of Soil/Fill Data

Of the 17 soil samples collected during the RI with one or more VOCs at a concentration greater than SCO for Unrestricted Use, 14 samples contained tetrachloroethene (PCE) or associated PCE decomposition products at concentrations above the SCO. The remaining three soil samples contained petroleum-related hydrocarbons above the 6 NYCRR Part 376 SCOs for Unrestricted Use. The Protection of Groundwater and Unrestricted Use SCOs are identical for PCE and its decomposition products. PCE was detected in soil samples at concentrations that ranged from 6.3 mg/kg to 920 mg/kg with breakdown products cis-1,2-DCE, and vinyl chloride detected at 0.3 to 81 mg/kg, and 0.021 to 31 mg/kg, respectively. TCE was detected in one sample above the RAO at 44 mg/kg. Petroleum-related hydrocarbons detected in soil samples were 2-butanone at 0.12 and 0.13 mg/kg, and n-propylbenzene at 5.9 mg/kg.

2.5.4.2. Comparison of Soil/Fill with SCGs

Reported concentrations exceeding Part 375 SCOs for Unrestricted Use were present in soil borings SB-8, 10, 15, 21, 23, 30, 33, 34, 35, 37 and 39, and in soil borings advanced during the installment of groundwater monitoring wells M-2, M-3, and M-11d. The recorded depths to samples with concentrations exceeding SCOs ranged from 0.5 to 19 feet below grade with an average depth to contamination of 10.5 feet below grade. Of the 23 soil samples with compounds detected above the SCOs, 20 samples contained PCE or its breakdown products; the remaining three soil samples exceeded SCOs for petroleum-related hydrocarbons. Over 85 percent of soil samples collected from October 2007 to December 2009 had PCE levels less than 1 mg/kg.

All soil samples with concentrations exceeding SCOs, with the exception of SB-30, were situated in the northwestern portion of the Site, which was formerly used for dry cleaning operations when the building operated as a commercial laundry. The soil sample collected from SB-30 was situated in the northern portion of the Site, east of the former dry cleaning area, and only contained n-propylbenzene at concentrations exceeding the SCO. A possible source of the hydrocarbon contamination was a former diesel tank reportedly located under the north side of the building. Table 4 shows exceedances from Unrestricted Use SCOs for all soil at the Site. Figure 7 is a spider map that shows the locations and summarizes exceedances from Unrestricted Use SCOs for soil.

2.5.5 On-Site and Off-Site Groundwater Contamination

A network of 24 on-Site and off-Site groundwater monitoring wells with screened intervals positioned within the shallow or deep aquifers have been installed during several investigation phases since 1998. As evident in Table 1c, six monitoring wells were installed in 1998, two monitoring wells were installed in 2002, four monitoring wells were installed in 2006, nine monitoring wells were installed in 2007 and the remaining two wells were installed in December 2009. The current groundwater monitoring network includes wells located within the building footprint, on adjacent sidewalks, within the north-adjacent property, and along sidewalks north-adjacent to the north-adjacent property. Groundwater sample results were compared to Class GA (Drinking Water) Ambient Water Quality Standards and Guidance in 6 NYCRR Section 703.5 as the applicable SCG, presented in Table 5. PCE and its decomposition products were detected in groundwater samples at concentrations above the SCGs in seven of 24 monitoring wells since 1998.

2.5.5.1. Summary of Groundwater Data

In the December 2009 groundwater sampling event, chlorinated VOCs were detected at levels exceeding the SCGs in samples from five of the 24 monitoring wells (M-1, 3d, 7, 11s, and 14d), and included exceedances for the compounds PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. The detected concentrations exceeding SCGs ranged from 7.9 to 90 µg/l for PCE, 6.3 to 1,800 µg/l for cis-1,2-DCE, and 12 to 580 µg/l for vinyl chloride. TCE levels exceeded the SCG only in M-11s at a concentration of 79 µg/l and the level of trans-1,2-DCE exceeded the SCG only in M-7 at 7.9 µg/l. No chlorinated VOCs were detected in the remaining 19 wells sampled in 2009. Approximately 1 inch of light non-aqueous phase liquid (LNAPL) was measured in monitoring well M-12s from 2007 to 2009. The LNAPL from M-12s was sampled in December 2009 for petroleum fingerprint analysis. The concentrations of chlorinated VOCs have decreased significantly from 2002 to 2009, as shown on Figures 8a and 8b, for shallow and deep groundwater wells, respectively.

The subsurface capacity for natural biodegradation of chlorinated solvents was evaluated near the source area by sampling for natural attenuation indicator parameters (byproducts of bacterial dehalogenation of chlorinated solvents). Based on these results, the subsurface environment is generally reducing at all natural attenuation sampling locations (M-1, M-2, M-3, M-3d, M-7, M-11s, M-11d, M-12d, M-14s, and M-14d). The subsurface environment is highly reducing [Oxidation Reduction Potential (ORP) < -80 millivolts (mV)] in all of these locations except for M-3 and M-12d, where moderately reducing conditions are present. Elevated levels of the natural attenuation indicator parameters Mn2+, Fe2+, and methane were detected in eight of the ten samples collected and indicated the presence of iron-reducing bacteria in the vicinity of M-3, and a more methanogenic presence towards the north, in the vicinity of M-11. The biodegradation of chlorinated solvents is most efficient through methanogenic bacteria.

Concentrations of PCE and decomposition products over a one-year period were reduced by an order of magnitude or more in groundwater at monitoring wells M-2, M-3, M-3d, and M-7. The presence of PCE daughter compounds, decreased concentrations of PCE, elevated concentrations of Fe2+, and highly reducing ORP are indications of active microbial breakdown of PCE. The LNAPL detected in M-12s during the 2007 and 2009 groundwater sampling events was sampled in December 2009, and analyzed by EPA Method 8015B for petroleum fingerprint analysis. The LNAPL isolated from M-12s was reported by the laboratory to be consistent with motor oil.

2.5.5.2. Comparison of Groundwater with SCGs

Nine of 44 groundwater samples collected in two sampling events in 2007 and 2009 from 23 monitoring wells had concentrations of PCE and its decomposition products above Class GA (Drinking Water) Standards. The highest chlorinated VOC levels were present in M-11s, located on the West 142nd Street sidewalk, just north of the source area. The primary contaminants at this location were cis-1,2-DCE and vinyl chloride. No PCE or decomposition products were detected in the sample from M-11d, the deep well at this location. PCE and decomposition products were detected at M-1, M-2, M-3, and M-3d, near the original dry cleaning area, with PCE concentrations exceeding the SCG in M-1, M-3, and M-3d. PCE decomposition compounds cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride were detected in M-7, across the street from M-11 on the north sidewalk of West 142nd Street, at levels that exceeded the SCG. No VOCs were detected in wells M-4, 4d, 5, 5d, 6, 6d, 8, 9s, 9d, 10s, 10d, 11d, 12d, 13s, 13d, and 14s during the 2007 and 2009 sampling events. Chlorinated VOC concentrations in groundwater samples from monitoring wells M-2, 3, 3d, and 7, all within the presumed source area, have decreased significantly from 2007 to 2009.

A table that indicates exceedances from GA groundwater standards in monitor wells prior to the remedy is shown in Table 5. Spider maps that indicate the locations and concentrations exceeding Class GA groundwater standards prior to the remedy are shown in Figures 8a and 8b.

2.5.6 On-Site and Off-Site Soil Vapor and Indoor Air Contamination

From 2006 to 2011, 45 soil vapor samples, three sub-slab vapor samples, three duplicate soil vapor samples, and five QA/QC ambient air samples were collected from 24 permanent soil vapor monitoring points and three temporary sub-slab vapor points located on-Site, on adjacent sidewalks, and on the north-adjacent property. All samples collected from soil vapor probes in and around the Site during the RI contained VOCs, primarily PCE, TCE, and cis-1,2-DCE. PCE was detected in each of the soil vapor samples analyzed ranging from 0.66 $\mu g/m^3$ to 332,000 $\mu g/m^3$, with the highest concentration observed in SG-7. TCE was detected in ten of the soil vapor samples (SG-1, SG-4, SG-6, SG-7, SG-8, SG-9, SG-10, SG-13, SG-22, and SG-24) at concentrations ranging from 85 $\mu g/m^3$ in SG-10 to 370,000 $\mu g/m^3$ in SG-6. Higher concentrations were detected in soil vapor samples collected from the northwestern portion of the Site in the presumed source area. Soil vapor sample analytical results are included in Table 6 and PCE concentrations in soil vapor are shown on Figure 9.

Indoor air samples have been collected at the Site from five locations since 1997, which gradually increased to 10 locations that have been sampled since October 2008 (plus a duplicate sample collected from the boiler room/basement). Indoor air sample analytical results are included in Tables 7a and 7b and indoor air sample locations are shown on Figure 9.

For soil vapor beneath the floor slab of buildings, the NYSDOH has finalized two guidance matrices within the NYSDOH document entitled *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006). Guidance is derived from Matrix 1 for TCE results and Matrix 2 for PCE results. These matrices use the comparison of sub-slab soil vapor concentrations with indoor air concentrations of PCE and TCE to provide actions to be taken; soil vapor samples collected form sidewalk locations were not applicable to these matrices. Sub-slab soil vapor concentrations of PCE greater than 100 $\mu g/m^3$ meet the NYSDOH "Monitor" requirement and sub-slab vapor concentration of PCE greater than 1,000 $\mu g/m^3$ meets the "Mitigate" requirement.

Of the 45 soil vapor and sub-slab vapor samples analyzed from 2006 to 2011, PCE was detected in 10 samples above the maximum sub-slab vapor concentration listed in Matrix 2 for PCE of 1,000 $\mu g/m^3$; three of these samples (SG-6, SG-8, and SG-13) were located within the Site building. TCE was detected in two samples (SG-6 and SG-7) above the maximum sub-slab vapor concentration listed in Matrix 1 for TCE of 250 $\mu g/m^3$. Of the 17 soil vapor points sampled more than once from 2006 to 2011, nine locations (SG-2, SG-4, SG-7, SG-8, SG-11, SG-12, and SG-13, SG-27 and SG-28) showed a decrease in PCE concentrations and the remaining seven locations (SG-1, SG-3, SG-5, SG-6, SG-9, SG-10, SG-14 and SG-29) showed an increase in PCE concentrations. An increase in TCE from 2006 to 2009 was observed in SG-6 (located in the storage locker area) and a decrease was observed in SG-7 (located in the West 142nd Street sidewalk). A table of soil vapor data collected between August 2006 and November 2011 is shown in Table 6. A spider map that indicates the locations and concentrations of PCE and its breakdown products in soil vapor between August 2006 and November 2011 is shown in Figure 9.

2.5.6.1. On-Site Soil Vapor Summary

After IRM implementation in 1997 (see Section 2.7), elevated concentrations of PCE and TCE were sporadically detected in quarterly indoor air samples collected from the northern part of the building. Concentrations greater than the NYSDOH air guideline values were not consistently identified, and were most often detected in the old boiler room and in Locker 1454, both of which are closed, unventilated, unoccupied spaces. Indoor air sample results for samples collected between August 1997 and February 2013 is provided as Tables 7a and 7b.

Using the data collected from 2006 to 2009, soil vapor and indoor air concentrations of both PCE and TCE below the "No Further Action" guidance concentrations in Matrices 1 and 2 (shown in Section 2.5.3.3) were present in 5 of 11 sampling locations evaluated. Additional indoor air samples were collected, but cannot be applied to NYSDOH Matrices 1 and 2 due to the lack of a nearby corresponding soil vapor samples. However, based on isoconcentration lines of soil vapor concentrations (as shown on Figure 15 of the RIR), about 55% of the Site building would be within the NYSDOH "Mitigate" action, 25% would be within the "Monitor" action, and the remaining 20% would be "No Further Action".

2.5.6.2. Off-Site Soil Vapor Summary

The findings of the soil vapor survey performed in November 2011 indicated that levels of PCE in excess of 100 $\mu g/m^3$ was detected at two of the seven locations: SG-13, located on-site, and SG-35, located in the lawn of the off-site property to the south. The soil vapor sample closest to the off-site building, SG-36, had a PCE concentration of 56 $\mu g/m^3$, well below the NYSDOH level to "Monitor". Because the subgrade space for the adjacent building was less than 4 feet below grade, the soil vapor sampling points installed in November 2011 were screened from 3.5 to 4 feet below grade.

As part of on-site remedial activates, the potential source of the detected vapors is being mitigated. Source removal is being addressed through both physical removal of most contaminated sub-slab insulation material and through in situ treatment of soil and groundwater. These seven soil vapor points will be analyzed again in a confirmatory sampling event after remediation is complete under the Site Management Plan.

2.5.7 On-Site Sub-Slab Insulation Contamination

Core samples of sub-slab insulation were collected and analyzed in previous investigations with additional analyses in 2009 as part of the RI performed by AKRF.

2.5.7.1. Summary of Sub-Slab Insulation Data

PCE was detected in all 13 sub-slab insulation samples collected in 2009 (from 12 core samples and one soil boring) and in all 10 sub-slab insulation samples collected in 1997. The remaining 20 of the 30 cores advanced in 1997 and four of 16 cores advanced in 2009 did not encounter sub-slab insulation. The highest PCE levels from the 1997 samples were suspected to be underreported, due to the heat and disturbance associated with the use of a core drill as opposed to a geoprobe sampler for collection of the cores. Similarly, PCE levels detected below the strata with highest PCE concentrations were suspected to be overreported due to inadequate decontamination of the corer between depth intervals, which may have caused smearing of contaminated material deeper into the strata. The 1997 data was primarily useful at providing a qualitative delineation of the horizontal extent of contamination in the sub-slab insulation. The December 2009 sub-slab insulation samples contained PCE concentrations that ranged from 19 µg/kg to 560,000 µg/kg, and TCE concentrations that ranged from 11 µg/kg to 2,300 µg/kg. Additional PCE breakdown products were not detected in any of the 2009 sub-slab insulation samples except C-44(2'-3'), which contained 29 µg/kg of cis-1,2-DCE. To better understand the concentrations of PCE within the insulation material reported in 2009, two insulation samples [C-40(1.5'-2.5') and C-44(2'-3')] were selected for bulk density analysis. Bulk densities were reported at 0.09 grams per cubic centimeter (g/cm^3) in C-40 and 0.46 g/cm^3 in C-44.

2.5.7.2. Comparison of Sub-Slab Insulation with SCGs

PCE was detected in all 13 sub-slab insulation samples collected in December 2009, and at a concentration greater than 5,000 µg/kg in three samples. PCE concentrations in insulation greater than 5,000 µg/kg ranged from 16,000 µg/kg to 560,000 µg/kg and were situated in the northwestern portion of the building. The remaining ten samples contained PCE at concentrations that ranged from 19 µg/kg to 4,700 µg/kg. TCE was detected in only three samples at concentrations of 11, 59, and 2,300 µg/kg, with the highest concentration detected in C-43(1'-2'). Only one additional breakdown product of PCE was detected in any of the samples; cis-1,2-DCE was detected in C-44(2'-3') at 29 µg/kg. A Site plan with insulation sampling locations and corresponding PCE concentrations is provided as Figure 10. Analytical results for VOCs in sub-slab insulation material is presented as Table 8.

2.6 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

Potentially exposed populations and potential exposure pathways for both on-Site and off-Site contamination are evaluated in this section. Exposure can only occur if there is a complete pathway from a specific chemical of concern contained in one of the media to a receptor. The mere presence of a chemical is not in itself evidence that a complete exposure pathway will exist.

2.6.1 Qualitative Human Health Exposure Assessment

Based on results of remedial investigations performed at the Site, the contaminated media consist of soil and groundwater, soil vapor and insulation material. Exposure could involve accidental ingestion of VOC-contaminated media, inhalation of VOC-containing air, ingestion of soil particulates that contain or have VOCs on their surface, or dermal contact with soil, groundwater, vapors, or insulation material. Although contamination is present in indoor air, since it did not originate there, but rather migrated from the various subsurface media, for the purposes of the exposure assessment, indoor air is not considered a separate medium. Potential receptors include:

- On-Site and off-Site building users including maintenance/construction workers following remediation;
- On-Site specialized workers and building users during remediation;
- Off-Site residents and other nearby sensitive receptors; and
- Off-Site surface water users (including both human users and aquatic organisms).

Six potential exposure pathways included in NYSDECs *DER-10 Technical Guidance for Site Investigation and Remediation* (May 2010), Appendix 3B – *NYSDOH Qualitative Human Health Exposure Assessment* were assessed for completeness between on-Site contaminated media and the potential receptors listed above. Each pathway was evaluated and categorized as an incomplete, a potentially complete but insignificant, or a complete pathway. The six exposure pathways assessed were:

- Groundwater ingestion by current or future building users or off-Site populations;
- Off-Site fish ingestions, surface water ingestion, and dermal contact;
- Inhalation of vapors by off-Site populations;
- Inhalation of vapors by building users;
- Soil, groundwater and insulation material dermal contact, ingestion and inhalation by on-Site environmental workers during remediation; and
- Soil, groundwater and insulation material dermal contact and ingestion by building users (following remediation) and off-Site populations.

New York City prohibits the use of groundwater in Manhattan for potable purposes; therefore, the exposure pathway *Groundwater ingestion by current or future building users or off-Site populations* is not complete for any current or future on-Site or off-Site receptors. The *Off-Site fish ingestion, surface water ingestion and dermal contact* exposure pathway was potentially theoretically complete, but was considered to result in, at most, an insignificant exposure due to the absence of detectable VOCs in any groundwater wells downgradient of the Site's source area (i.e., towards the Harlem River) and due to the restrictions placed on acceptable river usage. The Harlem River (the river) is located 200 to 300 feet east of the Site and is classified by New York State as a Class I saline waterbody, suitable for secondary contact recreation, fishing, fish propagation and survival, but not suitable for swimming. In addition, limitations are in place with respect to the recommended amounts and frequency of fish consumption from the river as stated in the New York State Department of Health (NYSDOH) *2009-2010 Health Advisories: Chemicals in Sportfish and Game*; however, these advisories are not based on VOC contamination. Contaminated groundwater might eventually discharge to the river, but it would be quickly diluted by the hugely greater volume and flow of the river, which is actually a tidal strait connecting the Hudson River, East River and Long Island Sound. Therefore, the potential for any significant VOC contamination to be migrating from the Site to the river (and resulting human or ecological exposure) is negligible.

Off-Site soil vapor and indoor air was evaluated in the November-December 2009 vapor intrusion assessment, consisting of collection and laboratory analysis of sub-slab soil vapor and corresponding indoor air samples at three locations conducted at the north-adjacent armory property, across 142nd Street. One additional indoor air sample was collected to ascertain background indoor air concentrations within the property. It was noted that other potential sources of VOCs were present in the armory as evidenced by oil stains, storage cabinets marked "flammable," wet paint, various cleaning solutions, etc. Laboratory results indicated that PCE breakdown products were not detected in any samples, though PCE was detected in all four indoor air samples between 0.97 and 1.5 $\mu g/m^3$ (well below the 100 $\mu g/m^3$ NYSDOH air guidance value) and in two of the three sub-slab vapor samples at concentrations of 1.5 and 31 $\mu g/m^3$. The indoor air concentrations of PCE detected off-Site were also below the 2.5 $\mu g/m^3$ upper fence value for background concentrations of VOCs in air of fuel oil-heated homes. The NYSDOH guidance associated with these levels is "no further action," categorizing *Inhalation of* *vapors by off-Site populations* as potentially theoretically complete, but was considered to result in, at most, an insignificant exposure.

The remaining three exposure pathways: *inhalation of vapors by building users; soil, groundwater and insulation material dermal contact, ingestion and inhalation by on-Site environmental workers during remediation;* and *soil, groundwater and insulation material dermal contact and ingestion by building users (following remediation) and off-Site populations,* were determined to be complete and are accounted for in the developed remedial alternatives. VOCs detected in the subsurface media, and directly measured in the building's indoor air, indicate that inhalation, dermal, and ingestion pathways affecting building users and environmental workers during remediation are complete. The remediation involves excavation of sub-slab insulation in a specifically defined area that could result in exposure; however, this will be mitigated by implementation of a Site-specific Health and Safety Plan (HASP) including both work zone and perimeter air monitoring addressing both potential worker and other building user exposure and a Community Air Monitoring Plan (CAMP) addressing the wider community. Direct contact with these materials does not currently occur and would not be expected to occur on-Site following remediation, through the implementation of institutional controls (specified in a Site Management Plan or SMP) to address contaminated media to remain following implementation of the remedy. These institutional controls will establish mandatory procedures governing any subgrade work (e.g., utility repairs) to ensure the safety of workers and others. The population with the greatest likelihood for exposure is utility workers. Such workers have specialized training, and follow internal corporate procedures for handling contaminated materials encountered.

2.6.2 Fish & Wildlife Remedial Impact Analysis

The potential for any significant VOC contamination to be migrating from the Site to the Harlem River (and resulting human or ecological exposure) is negligible, as stated in the Qualitative Human Health Exposure Assessment. As such, a Fish and Wildlife Resources Impact Analysis (FWRIA) was not required by NYSDEC and was not performed for this project.

2.7 INTERIM REMEDIAL ACTION

Initial interim remedial measures (IRM), performed in 1997, were aimed at preventing impacts to the air quality within the building. The IRM consisted of three measures: removal of contaminated insulation material; installation of a shallow vapor extraction system; and sealing penetrations through the slab. The implementation of the IRM was described in Interim Remedial Measures Report, Intermediate School 120, 2350 Fifth Avenue, New York, New York by AKRF Engineering P.C. dated September 1997.

2.7.1 Removal of Contaminated Insulation Material

Excavation of contaminated insulation material below the slab at the western portion of the building (currently used for self-storage lockers) resulted in the removal of 12 20-cubic yard dumpster loads of concrete debris and 21 30-yard dumpster loads of contaminated insulation. The contaminated insulation material was assumed to exceed the land disposal restriction of 6 ppm (mg/kg) of PCE and, as such, the material was transported by Hazardous Transport Group Inc. (EPA ID #NJD000692061) to Michigan Disposal Inc. of Belleville, Michigan (EPA ID #MID000724831). Typical cross sections of remaining insulated floors (prior to the implementation of the RAWP for Phase 1) are provided on Figure 11, and areas where sub-slab insulation material was removed in the initial IRM, or still exists prior to implementation of the RAWP for Phase 1, is provided on Figure 12.

2.7.2 Intra-Slab Vapor Extraction System

Initial renovation of the building for use as a school included pouring a new concrete floor slab over approximately 6 inches of sand and gravel, placed over the existing floor slab. Installation of a shallow vapor extraction system in the 6-inch thick layer between the old floor slab and the post-renovation floor slab was intended to remove PCE remaining in the insulation beneath the old floor slab, and by maintaining a negative pressure in the space beneath the floor, prevent infiltration of vapors into the building. Perforated piping was installed beneath portions of the floor by cutting trenches through both the new and old floor slabs, backfilling around the piping with clean sand and gravel material, and then restoring the upper floor slab. The piping provided a direct connection through which vapors from the insulation under the old slab could diffuse upwards into the space between the old and new slabs.

A packaged vapor extraction unit consisting of a regenerative blower, inlet filter, moisture separator, and controls was installed on the former loading dock on the 142nd Street side of the building with the system exhaust connected to two granular activated carbon (GAC) units in series (Carbtrol G-2), each containing 170 pounds of GAC for treatment of the effluent prior to discharge into the atmosphere. Communications testing was then performed as a pilot test using this system, documenting a drop in the intra-slab pressure of about 0.1 inch water column (W.C.) at a distance of 30 feet from extraction wells. However, the drop in intra-slab vacuum with distance was inconsistent, apparently reflecting the non-homogeneous nature of the space between the slabs. Also, the air flow exceeded 100 cubic feet per minute (cfm), suggesting that the slab was not well sealed, and air could enter the intra-slab space relatively easily.

The intra-slab vapor extraction system was designed and constructed as shown on Figure 13. Six horizontal vapor extraction wells were installed in 1997: four extending eastward from the southeast wall of the storage locker area (boundary of insulation removal) and two extending south from the south wall of the 142nd Street loading dock. The wells extending in from the storage locker area were installed as approximately 30-foot lengths of perforated piping, whereas those extending in from the 142nd Street loading dock were approximately 15-foot lengths. The perforated piping was installed using a specially-constructed horizontal drilling rig.

The blower system was manufactured by Product Recovery Management of Durham, North Carolina, which was similar to the pilot system, but lacked a moisture separator, since no water was observed during the communications testing. In August 1998, MW-3, the well at the former dry cleaning equipment location, was attached to the vapor extraction system. This well was constructed with a screened section to just below the floor so it could serve as a vapor extraction well. A measurement taken in 1998 indicated that high levels of PCE (over 3,000,000 $\mu g/m^3$) were extracted from the well. This well was incorporated into the system as part of the IRM.

2.7.3 Sealing Penetrations

The initial indoor air investigation performed by Riverpoint found that the highest PCE concentrations were present in and near floor drains and other penetrations of the floor slab. As part of the IRM, all penetrations through the slab including utilities and spaces around floor drains or cleanouts were sealed. The IRM activities included:

- Using concrete to seal holes left by core samples collected as part of the April 1997 Site investigation;
- Using a silicone or latex sealant in spaces around floor drains and cleanouts; and
- Using concrete, silicone sealant, or latex sealant for other penetrations noted in the kitchen including spaces around water service piping and holes where former piping was installed, or was to be installed, in the kitchen west of the freezer.

2.8 REMEDIAL ACTION OBJECTIVES

Based on the results of the Remedial Investigation, Remedial Action Objectives (RAOs) for this Site were proposed in the FS and PRAP, and subsequently confirmed by NYSDEC in Exhibit B of the March 2011 ROD. The goal of the RAOs is to restore the Site to pre-disposal conditions to the extent practicable; however, the remedial action will include institutional and engineering controls to address residual contamination and practicably and feasibly ensure proper long-term protection of public health and the environment.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

Remedial action alternatives were considered in the FS and PRAP, with the recommended alternative approved by NYSDEC in the ROD. The factors considered in remedial alternative analysis included the following:

- Protection of human health and the environment;
- Compliance with standards, criteria, and guidelines (SCGs);
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community acceptance; and
- Land use.

Based on the exposure assessment and remedial action objectives presented in Sections 2.6.1 and 2.8, respectively, a range of remedial component alternatives (or technologies) for each of the four media (soil, groundwater, soil vapor and sub-slab insulation) were evaluated. These components (or technologies) were then assembled into overall alternatives that address Site-wide contamination. Action alternatives for addressing on-Site soil contamination included no further action, soil vapor extraction, in-situ chemical oxidation, and excavation and off-Site disposal.

Groundwater remediation options included no further action, in-situ treatment (chemical oxidation and/or reductive dechlorination), and LNAPL recovery. Soil vapor remediation options included no further action, HVAC operation under positive pressure, and installation of a sub-slab depressurization system (SSDS). Remedial options for sub-slab insulation material included no further action, full removal and off-Site disposal, partial removal and off-Site disposal, and the installation of an SSDS. These remedial components or technologies were assembled into five overall remedial alternatives and are summarized as follows:

- Alternative 1: No Further Action

  Alternative 1 involved conducting no further remedial activities at the Site and included the "No Further Action" remedial component alternatives for soil, groundwater, sub-slab insulation, and soil vapor remediation.

  Alternative 1 called for no further action, therefore, could be easily implemented at no cost. However, Alternative 1 did not provide overall protection of public health and the environment, as the potential for vapor intrusion of PCE and related compounds into the building was not be addressed. Soil and insulation material would be left in place at concentrations that exceed SCOs, groundwater would remain above Class GA Standards, and soil vapor and indoor air levels could potentially exceed NYSDOH guidelines in non-compliance with the SCGs present for Site contaminants. Short-term and long-term effectiveness and permanence would not be provided by Alternative 1, nor would toxicity, mobility, or volume of Site contaminants be reduced as the contaminated material would remain in the subsurface.

- Alternative 2: Exposure Reduction

  Alternative 2 consisted of the operation of the building's HVAC system under positive pressure to reduce exposures associated with soil vapor contamination. To certify the operation of the HVAC under this Alternative, the existing air handling system would be inspected and adjusted as necessary to maintain a positive pressure inside the building, remaining open penetrations would be sealed, and monitoring procedures for open windows and doors would be established. Alternative 2 consisted of the "No Further Action" remedial component alternative for soil, groundwater, and sub-slab insulation media.

  Alternative 2 provided overall protection of public health from vapor intrusion due to the adjusted HVAC operation, however, it would not comply with the SCGs, as soil and insulation materials exceeding SCOs would remain in place with the toxicity, mobility or volume of contamination unchanged. Positive pressure HVAC operation would provide short-term and long-term effectiveness and permanence by severing the pathways from the subsurface contamination to the inside of the building via vapor intrusion. Though HVAC adjustments to maintain positive pressure inside the building could be implemented, there could be limitations in an old inter-connected building, as it would entail maintaining an extensive monitoring network and may be ineffective if a window or door were inadvertently left open.

- Alternative 3: Soil and Insulation Material Removal

  Alternative 3 consisted of the excavation and off-Site disposal over an 8,000-square foot area for soil remediation and over a 7,400-square foot area for sub-slab insulation remediation, in addition to the operation of the HVAC under positive pressure that would reduce exposure to soil vapor contamination. The "No Further Action" remedial component alternative was selected for groundwater remediation. Given the presence of foundation elements and utilities at the Site, the excavation area was limited. Accordingly, the removal alternative would not achieve complete removal to allow for unrestricted use without some form of engineering and institutional controls. Alternative 3 would include an SMP for long-term management of the Site.

Alternative 3 provided overall protection of public health and the environment and compliance with SCGs through the removal of the majority, but likely not all, soil and insulation material exceeding the RAOs. Site controls (e.g., HASP) would prevent unacceptable exposure during remediation activities. Soil and insulation material removal would not directly address groundwater or soil vapor, but would be expected to lead to attenuation in groundwater over time. SCGs might not be attained in groundwater or soil vapor for many years. HVAC operation under positive pressure would prevent unacceptable exposure to building users.

- Alternative 4: Treatment and Partial Removal

  Alternative 4 consisted of installation of an expanded SVE system for soil remediation, in-situ treatment for soil and groundwater (injection of a chemical oxidation product for soil, and a reductive dechlorination enhancement product for groundwater), LNAPL recovery for groundwater remediation, excavation and off-Site disposal over a maximum 1,000-square foot area for sub-slab insulation remediation, and installation of an SSDS throughout the existing three-section building. The need for extensive excavation to remove contaminated soil would be avoided in this alternative by treating soil and groundwater contamination in-situ through a series of injections. The maximum 1,000-square foot area for insulation material removal is in the northwestern portion of the Site, where concentrations of PCE within sub-slab insulation was greater than 5 mg/kg, which would correspond to greater than 90% mass removal of PCE in the sub-slab insulation. Soil vapor exposure reduction would be accomplished through the SVE and SSDS. An SMP would be employed to ensure implementation of the institutional and engineering controls required for this alternative.

  Alternative 4 provided overall protection of public health and the environment, partially complies with SCGs, and would reduce the toxicity, mobility, and volume of contamination through the partial removal of sub-slab insulation material in the source area and the installation of LNAPL recovery wells along the northeastern Site boundary. The operation of an SVE system and SSDS would prevent residual vapors from entering the building.

- Alternative 5: Removal Plus Treatment for Unrestricted Use

  Alternative 5 consisted of excavation and off-Site disposal over an 8,000-square foot area for soil remediation and over a 7,400-square foot area for remediation of sub-slab insulation. Given the limitations that excavation close to foundation elements and utilities might not be possible, complete removal of contaminated soil would not be achieved in Alternative 5. In-situ treatment of soil and groundwater would be performed to address residual contamination in an effort to allow unrestricted use of the Site. Additional groundwater remediation would be accomplished by installation of LNAPL recovery wells in the vicinity of monitoring well M-12s. An SVE system would also be installed to reduce exposure to contaminated soil vapor under this alternative.

  Alternative 5 would attain all required RAOs for the Site, however, the significantly higher implementation and maintenance costs make this remedial option infeasible to implement.

The selected remediation approach was remedial Alternative 4. This RAWP for Phase 1 implements only the insulation removal portion of this alternative. The remaining remedial elements will be specified in a forthcoming RAWP for Phase 2 of the remedial action.

3.2 SELECTION OF THE PREFERRED REMEDY

The FS and PRAP assessed five potential response actions listed in Section 3.1 of this RAWP. The remedial alternatives considered the RI findings, current and future exposure scenarios, requirements of the Orders on Consent, and the RAOs and SCGs. The FS included tables and figures documenting the location and depth of contamination and planned excavation areas. Planned injection, SSDS, and SVE treatment areas were specified in figures included in AKRF's May 2011 Pre-Remedial Design Work Plan (PRDWP); however, as specified in the PRDWP, the exact location of SVE wells and SSDS suction pits would be determined in the field using the iterative design approach outlined in the PRDWP. The NYSDEC-approved remedial action, as stated in NYSDEC's March 2011 Record of Decision, consists of the following:

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. The remedial design will include soil vapor delineation around SG-28 to confirm the source of contaminated soil vapor in this location. [The proposed scope for this work was presented for NYSDEC review and approval in the May 2011 PRDWP.] Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and Site management of the remedy as per DER-31. The major green remediation components are as follows:
    - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    - Reducing direct and indirect greenhouse gas and other emissions;
    - Increasing energy efficiency and minimizing use of non-renewable energy;
    - Conserving and efficiently managing resources and materials;
    - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
    - Maximizing habitat value and creating habitat when possible;
    - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
    - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
2. Removal and off-Site disposal of VOC contaminated insulation material present beneath the floor slab in the northwestern portion of the Site near Room 119, to the extent practical [See maximum removal area on Figure 11].
3. Install a Soil Vapor Extraction (SVE) system to remediate the contaminated vadose zone soil beneath the building in the northwestern portion of the Site. [See planned SVE remediation area on Figure 7.] The SVE system will also be effective in preventing the off-Site migration of PCE and breakdown products in soil vapor. The VOC-contaminated air extracted from the SVE wells would be treated using activated carbon (or other air treatment as applicable).

4. Additional in-situ soil treatment will be achieved through the injection of a chemical oxidation product into the vadose zone in the northwestern portion of the Site where the soil contaminant concentrations are highest. [See planned soil chemical oxidation area on Figure 7.]

5. In-situ groundwater treatment will be achieved through injecting a product to enhance reductive dechlorination. If necessary, additional treatment to promote aerobic degradation of breakdown products will be considered. [Note: chemical oxidation products are planned for in-situ groundwater treatment as discussed in Section 8.2. See planned groundwater treatment area on Figure 8a.]

6. The petroleum LNAPL in monitoring well MW-12s will be removed using passive or active recovery methods to the extent practicable.

7. A sub-slab depressurization system [(SSDS)] will be installed throughout the existing Site building to mitigate the potential for soil vapor intrusion.

8. The existing floor slab, buildings and pavement at the Site form the Site cover; there is currently no exposed surface soil. A Site cover will be maintained as a component of any future Site development. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the Site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d).

9. The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

10. To maximize the net environmental benefit, green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including:

    - energy efficiency and green building design;
    - using renewable energy sources;
    - encouraging low carbon technologies;
    - conserving natural resources; and
    - increasing recycling and reuse of clean materials.

11. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

    (a) requires the remedial party or Site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);

    (b) land use is subject to local zoning laws, the remedy allows the use and development of the controlled property for restricted-residential, commercial or industrial use [As discussed in Section 1.2, reasonable foreseeable future land uses are those that would be permitted without variances or waivers under the Site's current zoning and approvals, which may include industrial, commercial and certain institutional uses, including but not limited to a self-storage facility, art studio space, church and/or school];

(c) restricts the use of groundwater as a source or potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or NYCDOH;

(d) prohibits agriculture or vegetable gardens on the controlled property;

(e) requires compliance with the Department-approved Site Management Plan.

12. Since the remedy results in contamination remaining at the Site that does not allow for unrestricted use, a Site Management Plan is required, which will include the following:

(a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the Site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls:

- The Environmental Easement discussed in Paragraph 11 above.

Engineering Controls:

- The soil vapor extraction system discussed in Paragraph 3 above
- The sub-slab depressurization system discussed in Paragraph 7 above.
- The Site cover discussed in Paragraph 8 above.

This plan includes, but may not be limited to:

(i) Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

(ii) descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;

(iii) a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the Site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

(iv) provisions for the management and inspection of the identified engineering controls;

(v) maintaining Site access controls and Department notification; and

(vi) the steps necessary for the periodic reviews and certification of the institutional and engineering controls.

(b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but is not to be limited to:

(i) monitoring of groundwater and indoor air to assess the performance and effectiveness of the remedy;

(ii) monitoring of soil vapor to evaluate the effectiveness of the SVE and sub-slab depressurization systems;

(iii) a schedule of monitoring and frequency of submittals to the Department; and

(iv) monitoring for vapor intrusion for any buildings occupied or developed on the Site, as may be required pursuant to item (a)(iii) above.

(c) an Operation and Maintenance Plan to assure continued operation, maintenance, monitoring, inspection, and reporting of for any mechanical or physical components of the remedy. The plan includes, but is not limited to:

(i) compliance monitoring of treatment systems to assure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;

(ii) maintaining Site access controls and Department notification; and

(iii) providing the Department access to the Site and O&M records.

The operation of the components of the remedy will continue until the RAOs are achieved, or until NYSDEC determines that continued operation is impracticable or infeasible.

The February 2012 RAWP for Phase 1 of the remediation presented a design for the removal and off-Site disposal of VOC contaminated insulation material and the restoration of the existing Site cover (concrete floor slab) to its original condition following insulation removal. The objective of this RAWP for Phase 2 of the remediation is to present the design for the remainder of the remedial action, including injections for in-situ treatment of soil and groundwater, the construction of SVE and SSDS systems, petroleum LNAPL recovery around MW-12s, and the SMP for future Site management. Details of these remedial elements are set forth in Sections 4 through 9 of this RAWP.

3.3 SUMMARY OF SELECTED REMEDIAL ACTIONS

3.3.1 Phase 1 of Remedial Action

The first phase of the selected remedy consists of the partial removal and off-site disposal of contaminated sub-slab insulation material beneath an approximately 1,000 square foot area in the northwestern portion of the building. This work is anticipated for completion in 2013-2014 will be documented in the monthly progress reports and Final Engineering Report.

3.3.2 Phase 2 of Remedial Action

The objective of this RAWP – Phase 2 is to present a design for the remedial action elements remaining after implementation of the RAWP for Phase 1 and the PRDWP. The PRDWP provided details for additional investigation (off-Site soil vapor delineation as discussed in Section 2.5.6.3, geophysical survey and test pits as discussed in Section 5.2) and initial remedial components (SVE well and SSDS pit installation and testing) to provide Site-specific data for use in remedial design as discussed in Sections 8.1 and 8.3). Work specified under the PRDWP was completed in November to December 2011.

The remedial elements for this RAWP for Phase 2 of the remedy consist of the following:

1. Installation of a SVE system to remediate the contaminated vadose zone soil beneath the building in the northwestern portion of the Site. The SVE system will also help prevent the off-site migration of PCE and breakdown products in soil by creating negative pressure below the slab. The VOC-contaminated air extracted from the SVE wells would be treated using activated carbon (or other air treatment as applicable).

2. Injection of a chemical oxidation product into the vadose zone and below the water table in the northwestern portion of the Site where the soil and groundwater contaminant concentrations are highest for additional in-situ soil treatment and groundwater treatment.
3. Removal of petroleum LNAPL in monitoring well MW-12s using passive or active recovery methods to the extent practicable.
4. Installation of a sub-slab depressurization system throughout the existing Site building to mitigate the potential for soil vapor intrusion.
5. Closure of a UST located on the northern side of the Site encountered during the PRDWP test pit excavation.
6. Maintenance of the existing composite cover consisting of asphalt or concrete;
7. Recording of an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site;
8. Development of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;
9. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.
10. Importation of materials to be used for backfill and cover to be in compliance with: (a) chemical limits and other specifications included in Table 9, (b) all Federal, State and local rules and regulations for handling and transport of material.
11. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP. All deviations from the RAWP will be promptly reported to NYSDEC for approval and fully explained in the Final Engineering Report (FER).

4.0 REMEDIAL ACTION PROGRAM

4.1 GOVERNING DOCUMENTS

All remedial activities performed under this RAWP will adhere to the following governing documents to maintain the protection of remediation workers and the public, to provide for Quality Assurance (QA), maintain Quality Control (QC), properly handle, stage and dispose of removed materials, and to keep the surrounding community informed of remedial activities conducted under the RAWP-Phase 2.

4.1.1 Site Specific Health & Safety Plan (HASP)

A HASP for the work proposed under this RAWP is provided as Appendix C. All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Owner and its consultants and contractors preparing the remedial documents submitted to the State and those performing the construction work, will be responsible for the preparation of an appropriate HASP and for the appropriate performance of work according to that plan and applicable laws.

The HASP and requirements defined in this RAWP pertain to all remedial work performed at the Site.

The Site Manager that will be responsible for on-Site implementation of the HASP be may include Gregory Baird and Stephen Grens, Jr, Resumes are included in the HASP (Appendix C) and in Appendix D.

Confined space entry, if necessary, will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.2 Quality Assurance Project Plan (QAPP)

The Quality Assurance Project Plan (QAPP) has been attached as Appendix E and includes the well installation methodology and details for sampling (frequency, analytical methods and collection methods).

4.1.3 Construction Quality Assurance Plan (CQAP)

The Construction Quality Assurance Plan (CQAP) is provided as Appendix F. The CQAP provides a detailed description of the observation and testing activities that will be used to monitor construction quality and confirm that remedy construction is in conformance with the remediation objectives and specifications. The CQAP includes:

- Responsibilities and authorities of the organizations and key personnel involved in the design and construction of the remedy.
- Qualifications of the quality assurance personnel that demonstrate that they possess the proper training and experience necessary to fulfill project-specific responsibilities.
- The observations and tests that will be used to monitor construction and the frequency of performance of such activities.
- The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for implementing corrective measures as addressed in the plans and specifications.
- Requirements for project coordination meetings between the Owner and its representatives, the remedial or environmental Contractors, and other involved parties.
- Description of the documentation and reporting requirements for quality assurance activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures documentation, and final documentation.
- Description of the final documentation retention provisions.

4.1.4 Materials Management Plan

A Materials Management Plan is provided as Section 5.4 of this RAWP and includes detailed plans for managing all soils/materials that are disturbed at the Site, including excavation, handling, storage, transport and disposal. It includes controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations.

4.1.5 Storm-Water Pollution Prevention Plan (SWPPP)

As there is less than one acre of disturbance, coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity is not required. Therefore, a Notice of Intent and SWPPP are not required. However, in the event of exposed soil or material staging outdoors, erosion and sediment controls will be implemented as necessary in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

The work areas under this RAWP are small in area and are largely indoors; as such, a SWPPP is not required. If material storage is planned outdoors, appropriate erosion control measures 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 will be made immediately.

4.1.6 Community Air Monitoring Plan (CAMP)

Community air monitoring will be performed at the perimeter of the work area(s) during intrusive work (excavation). Since continuous work zone monitoring under the HASP will be performed, community air monitoring will be performed periodically (at a minimum once per hour) on a roving basis around any active work area(s). Frequency of community air monitoring will be increased if persistent elevated readings are recorded in the work zone. Work areas may include the following: inside the building around the outside of the isolation enclosure, the negative pressure exhaust point, and/or any stockpile/staging areas outside of the enclosure. VOC and particulate monitoring equipment will consist of a photoionization detector (PID) capable of detecting the VOCs found in the insulation material and the underlying soil and groundwater and real-time aerosol or particulate monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM_{10}). VOC monitoring equipment will be calibrated, and the particulate monitoring equipment zeroed, on a daily basis and documented in a dedicated field log book. Both VOC and particulate monitoring equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the prescribed action levels.

If VOC monitoring results in the ambient air concentration of total organic vapors in excess of 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 below 5 ppm over background, work activities can resume with measures taken to reduce vapors and continue monitoring. If total organic vapor levels persist at levels in excess of 5 ppm over background, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. If the organic vapor level is repeatedly over 25 ppm above background, activities will be shut down and the engineering controls and the Site work plan re-evaluated.

If particulate monitoring results a 15-minute average concentration measurement that is between 100 $\mu g/m^3$ and 150 $\mu g/m^3$ above the background level, additional dust suppression techniques will be implemented to reduce the generation of fugitive dust and corrective action taken to protect Site personnel and reduce the potential for contaminant migration. Should dust suppression measures being utilized not lower particulates to an acceptable level (e.g., below 150 $\mu g/m^3$ above the background level, and no visible dust from the work area), work will be suspended until appropriate corrective measures are implemented to remedy the situation. Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report discussed in Section 4.4.1.

Engineering controls will also be considered based on proximity of community to the work and level of intrusiveness, as detailed in the CAMP for the work proposed under this RAWP which is provided as Appendix G.

4.1.7 Odor, Dust and Nuisance Control Plan

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

4.1.7.1. Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site, if there are residents or tenants on the property. Specific odor control methods to be used on a routine basis will include periodic walk-around monitoring to observe perceptible odor that may be a nuisance to nearby sensitive receptors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Owner's Remedial Engineer, who is responsible for certifying the Final Engineering Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) wetting removed material. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances may include: (d) direct load-out of excavated material 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; or (h) using foams to cover exposed odorous materials.

4.1.7.2. 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 an on-Site water source for wetting dusty material.
- Due to the Site work being nearly entirely within a building and the minimal nature of soil disturbance, opportunities for dust generation are limited.

4.1.8 Contractor Submittals

The Remedial Engineer will review all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and will confirm that they are in compliance with this RAWP. The Remedial Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH prior to the start of work.

4.1.9 Specifications

Remedial Design elements identified in this RAWP will be further detailed into a set of biddable quality plans and specifications. The final design submittal of these plans and specifications will be signed and stamped by a NYS licensed professional engineer. Detailed remedial construction design specifications for SVE and SSDS will be submitted to NYSDEC for approval in late 2013.

4.1.10 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during remedial activities, sampling will be performed on product, sediment and surrounding soils. Chemical analytical work will be for full scan parameters (TAL metals; TCL VOCs and SVOCs, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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. These findings will be also included in daily and periodic electronic media reports.

4.1.11 Citizen Participation Plan

Citizen participation activities have been implemented for the project, as discussed in Section 3.2.4. The approved February 2011 Citizen Participation Plan for this project and also a mailing list updated as of January 2013 is attached in Appendix H. The contact list will be updated as necessary, in consultation with NYSDEC, prior to each mailing.

A certification of mailing will be sent by the Owner to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

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

NYSDEC Region 2
Division of Environmental Remediation
47-40 21st Street
Long Island City, NY 11101-5407
Attn: Bryan Wong
Phone: (718) 482-4905
Hours: Mon. to Fri 7:30-3:30 (call for appointment)

New York Public Library - Countee Cullen Branch
104 West 136th Street
New York, NY 10030
Phone: (212) 491-2070
Hours: M-Th: 10:00 AM – 8:00 PM
F-Sat: 10:00 AM – 5:00 PM
Sun: Closed

4.2 GENERAL REMEDIAL CONSTRUCTION INFORMATION

4.2.1 Project Organization

The people responsible for Remedial Action work are detailed in the following subsections. A contact list with names and phone numbers of project personnel is provided as Table 10. Resumes of key personnel involved in the Remedial Action are included in Appendix D.

4.2.1.1. Remedial Engineer

The Remedial Engineer for this project will be Michelle Lapin P.E. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the 2350 Fifth Avenue Site (NYSDEC Inactive Hazardous Waste Disposal Site #2-31-004). The Remedial Engineer will certify in the FER that the remedial activities were observed by qualified environmental professionals under her supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

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

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this RAWP and will certify compliance in the FER, as detailed in Section 9.1.

4.2.1.2. Project Director

The project director will be responsible for the general oversight of all aspects of the project, including scheduling, budgeting, data management and decision-making regarding the field program. The project director will communicate regularly with all members of the AKRF project team, the NYSDEC, and the Owner to ensure a smooth flow of information between involved parties. Marc Godick will serve as the project director for the RAWP activities.

4.2.1.3. Project Manager

The project manager will be responsible for directing and coordinating all elements of the RAWP. She will prepare reports and participate in meetings with the Owner and/or the NYSDEC. Kate Brunner will serve as the project manager of the RAWP.

4.2.1.4. Field Team Leader

The field team leader will be responsible for supervising the daily sampling and health and safety activities in the field and will ensure adherence to the RAWP and HASP, including the community air monitoring. He/she will report to the project manager on a regular basis regarding daily progress and any deviations from the work plan.

The field team leader will be qualified to perform soil screening activities (e.g., be able to detect petroleum or chemical odors and chemical staining and be proficient in the use of monitoring equipment such as a photoionization detector and particulate monitor) and to make the distinction between potentially contaminated and non-contaminated soil based on observations made during soil screening activities.

The field team leader responsibilities will be assigned to appropriate AKRF personnel and will be established when implementation of the work is near. Field team leaders may include Gregory Baird, Stephen Grens, Jr., and Dustin Kapson.

4.2.1.5. Project Quality Assurance/Quality Control Officer

The Quality Assurance/Quality Control (QA/QC) Officer will be responsible for adherence to the QAPP. The QA/QC Officer will work with the Project Manager in reviewing the procedures with all personnel prior to commencing any fieldwork and may conduct periodic Site visits to assess implementation of the procedures. The QA/QC officer will also be responsible for interface with the third party data validator if problems arise and review the Data Usability Summary Report (DUSR), if required. Marcus Simons will serve as the QA/QC officer for the work under this RAWP.

4.2.2 Work Hours

Work hours are anticipated to be Monday through Friday from 7:00 a.m. to 5:00 p.m. The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Owner of any variances issued by the Department of Buildings.

4.2.3 Site Security

Building personnel are present during building hours at the sales desk, which overlooks the building entrance on West 141st Street. During the intrusive remedial work performed under this RAWP for Phase 2, the work area and staging area(s) will be cordoned off from public access using cones, signage, or other appropriate barriers.

4.2.4 Traffic Control

The work area for remedial activities performed under this RAWP will be located within an existing building equipped with loading docks on West 141st and West 142nd Streets with some work in the sidewalk along West 142nd Street. For work in the sidewalk, NYCDOT permits will be obtained.

Although not anticipated, if vehicle traffic control is necessary, these activities will take place in accordance with a NYCDOT-approved Maintenance and Protection of Traffic (MPT) plan and will be managed by a flag-person, as needed.

4.2.5 Contingency Plan

A contingency plan for this work proposed under this RAWP is provided as Section 4.1.10.

4.2.6 Worker Training and Monitoring

Worker training, medical monitoring, and protection will be performed as outlined in the HASP (Appendix C) and QAPP (Appendix E).

4.2.7 Permits and Agency Approvals

There are no anticipated State Environmental Quality Review Act (SEQRA) requirements for this project. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

A complete list of all local, regional and national governmental permits, certificates or other approvals or authorizations required to perform the remedial work will be provided in the FER. This list will include a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency if readily available.

No remedial work performed under this RAWP is in regulated wetlands and adjacent areas; therefore, no approvals from NYSDEC Division of Natural Resources are necessary.

4.2.8 Pre-Remediation Meeting with NYSDEC

A meeting with representatives of NYSDEC, AKRF and the contractor performing the work will be arranged prior to the start of major construction activities.

4.2.9 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in Table 10. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.10 Remedial Action Costs

The total estimated cost of the portion of the remedial action presented in this RAWP for Phase 2 (including some work already implemented under the PRDWP, is $998,000. An itemized and detailed summary of estimated costs for all remedial activities is attached as Appendix I. This will be revised based on actual costs and submitted as an Appendix to the Final Engineering Report.

4.3 SITE PREPARATION

4.3.1 Utility Marker and Easements Layout

The Owner and its contractors will be responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The Owner and its contractors will be responsible for safe execution of all invasive and other work performed under this RAWP.

The presence of utilities and easements in the vicinity of work areas will be investigated and may include additional geophysical surveys or hand digging in certain areas.

4.3.2 Sheeting and Shoring

No sheeting or shoring are anticipated as part of the planned work. However, appropriate management of the structural stability of on-Site or off-Site structures during on-Site activities is the responsibility of the Owner and its contractors. The Owner and its contractors will be responsible for safe execution of all invasive and other work performed under this Plan.

4.3.3 Equipment and Material Staging and Disposal

Designated staging areas will be determined by AKRF personnel and the contractor and will be cordoned off from building occupants using signage, cones, or other barriers as appropriate. Both potentially contaminated and uncontaminated material staging areas will be constructed by placing 6-mil plastic on the ground or using sealed containers. Material staging areas will be inspected at a minimum once each week. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

The material stockpiles and storage containers will be covered at the end of each work day. Storage containers will be labeled with the date, the source/type of waste (i.e., trench spoils, drill cuttings, decontamination water) and the name of an AKRF point-of-contact. Previous sample results may be used for waste characterization of soils as applicable; additional waste characterization soil samples will be collected, if warranted. All waste will be disposed of or treated according to applicable local, state and federal regulations.

4.3.4 Decontamination Area

A decontamination area will be established, where needed, adjacent to the work areas. The floor of the decontamination area will be covered with 6-mil plastic sheeting as necessary and bermed to prevent spreading of decontamination fluids or potential discharge to the ground surface.

All equipment in direct contact with known or potentially contaminated material will be either dedicated or decontaminated prior to handling less contaminated material or removal from the Site. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with federal, state and local regulations. Personnel performing this task will wear the proper PPE as prescribed in the HASP.

4.3.5 Site Fencing

The planned work areas will be small in nature and are nearly entirely contained within the Site building. Additional Site fencing will not be constructed; however, each individual work area will be cordoned off as mentioned in Section 4.2.3 Site Security.

4.3.6 Demobilization

Restoration of the excavation will include replacement of surficial concrete to match existing surface. Upon completion of the work, the waste materials (such as general refuse or drill cuttings), and decontamination pad will be removed from the Site and properly disposed of.

4.4 REPORTING

Copies of all daily and monthly reports will be included in the Final Engineering Report.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day of remedial work and will include:

- Work force and visitors to the Site;
- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric grid map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions;
- Apparent deviations from this RAWP;
- Weather conditions; and
- An explanation of notable Site conditions.

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

Daily reports will include a description of daily activities keyed to an alpha-numeric grid map for the Site to identify specific work areas (see Figure 14). These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

The NYSDEC assigned project number (Site #2-31-004) will appear on all reports.

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period and will include:

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

4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be submitted to NYSDEC on CD or other acceptable electronic media and will be sent to NYSDEC's Project Manager (2 copies) and to NYSDOH's Project Manager (1 copy). CDs will have a label and a general file inventory structure that separates photos into directories and sub-directories according to logical Remedial Action components. A photo log keyed to photo file ID numbers will be prepared to provide explanation for all representative photos. Photos will be submitted on a monthly basis or another agreed upon time interval.

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

4.4.4 Complaint Management Plan

Complaints from the public regarding Site remedial activities will be communicated to NYSDEC Project Manager immediately. The response action to the complaint will be coordinated in conjunction with NYSDEC and NYSDOH input, as appropriate.

4.4.5 Deviations from the Remedial Action Work Plan

Any material deviations from the NYSDEC-approved RAWP will be communicated to NYSDEC Project Manager including:

- Reasons for deviating from the approved RAWP; and
- Effect of the deviations on overall remedy.

NYSDEC approval will be sought prior to proceeding with work deviating materially from the RAWP. In the event of an emergency change to the work plan, NYSDEC Project Manager will be consulted immediately.

5.0 REMEDIAL ACTION: REMOVAL FROM SITE

This section addresses tank closure and LNAPL removal. The portion of the remedy SVE system, in-situ chemical oxidation for soil treatment, reductive dechlorination for groundwater treatment and the SSDS are detailed under the engineering controls in Section 8.0.

5.1 LNAPL RECOVERY

About 1 inch of LNAPL was measured in monitoring well M-12s from 2007 to 2009. The LNAPL was sampled in December 2009 for petroleum fingerprint analysis and was reported to be consistent with motor oil. Based on the location of M-12s and the type of product identified, this LNAPL is not attributed to the tank discussed in Section 5.2. Note that LNAPL has not been detected in any of the remaining site monitoring wells. There were no compounds exceeding Class GA standards in the groundwater samples from monitoring well M-8 (30 feet downgradient of M-12s) in 2007 and 2009.

5.1.1 Groundwater Monitoring

To assess potential dissolved phase contamination in the vicinity of M-12s, additional groundwater samples will be collected from the two located in close proximity to M-12s: M-8, and M-12d. Groundwater samples will be collected using low-flow sampling techniques and analyzed for TCL VOCs by EPA Method 8260, and SVOC Base Neutrals by EPA Method 8270. If LNAPL is not observed in monitoring well M-12s, an additional groundwater sample will be collected from this well.

5.1.2 LNAPL Recovery

The extent of the LNAPL observed in well M-12s will be evaluated by the installation of additional monitoring and/or recovery wells on-site. As part of LNAPL delineation, two recovery wells will be installed at the approximate locations shown on Figure 15. The recovery wells will be constructed of 4-inch diameter PVC with 10-foot long well screens that intersect the water table. Additional delineation or recovery wells may be added based on the field observations in two recovery wells and monitoring well M-12s.

Oil-absorbent socks or similar absorbent materials will be used to remove the LNAPL from the water table surface. If the thickness of the LNAPL is adequate for pumping, skimmer pumps or other active recovery methods may be used. The LNAPL and spent oil absorbent materials will be containerized and disposed of off-site. Recovery wells will be monitored on a weekly basis for the first month after installation. After the first month of observation, the monitoring schedule will be adjusted based on the LNAPL observations and recovery rates.

5.2 TANK CLOSURE

A 20,000-gallon UST is located in the northern loading dock. A geophysical survey and test pits excavated in the loading dock in November 2011 indicated the top of the tank is approximately 2 feet below grade. The tank is approximately 13 feet wide by 40 feet long and is present beneath the majority of the loading dock, as shown on Figure 16. This tank was reportedly previously cleaned and is registered as closed in place; however, the tank was observed to contain some liquid during the PRDWP activities. An updated tank closure will be performed and the tank will be closed in-place by filling the tank. The UST closure will, at a minimum, conform to criteria defined in DER-10.

Typical tank closure procedures are summarized as follows:

1. Open fill cap or vent pipe and measure for product.
2. If access is not available, hand excavate the tanks to access the top of the tank. Disconnect the fill, gauge, and product lines. Flush fill, vent, and product lines with water. Cap or plug open ends of lines which are not to be used. Remove all piping and accessories that are accessible at grade level.
3. Vacuum liquid tank contents and pumpable tank bottom residue.
4. An access hole will be cut in the tank, if needed, and the tank will be thoroughly cleaned of residual liquids and sludges. Continuously monitor the worker breathing zone for the presence of flammable, toxic or oxygen deficient atmosphere with a photoionization detector (PID), a combustible gas indicator (CGI), and an oxygen meter.
5. Entry of the tank, if necessary, will be conducted in conformance with OSHA confined space requirements.
6. The tank interior will be cleaned with a high pressure rinse using as little water as possible to remove loose scale, corrosion and residual product. Remaining fuels, loose slurry, sludge materials and wastewater will be vacuumed for off-site disposal or collected in Department of Transportation (DOT)-approved drums for subsequent off-site disposal.
7. A visual observation of the interior of the tank will be made.
8. A suitable, solid, inert material will be introduced through the hole in the top of the tank until full. The Contractor should use concrete slurry or foam approved by the Owner or his/her designated representative, NYSDEC, and NYC Fire and Building Departments, as appropriate.
9. The vent lines, tank gauges and pumps will be disconnected and removed.
10. Since the tank is already registered as closed and samples were collected in the vicinity as part of the remedial investigation, no additional soil or groundwater samples will be collected as part of this tank closure. The tank registration will be updated with NYSDEC.
11. The access point, manway and fill port will be properly plugged and sealed. In locations where the concrete is disturbed, concrete will be replaced.
12. All procedures will be photo documented and the procedures recorded in a bound field notebook.
13. Copies of any permits and affidavits, manifests, and bills of lading for disposal of residual product, sludge, or other waste(s) generated will be maintained and presented in the FER.

5.3 MATERIALS MANAGEMENT PLAN

The purpose of the materials management plan is to establish a protocol outlining the handling of Site soils and other subsurface materials, including the sub-slab insulation materials and tank sludge, during removal, screening, staging/storage, loading, and off-Site disposal. Although no excavation removal action is included with this RAWP, remedial activities will include other activities which will involve intrusive work (such as drilling, LNAPL recovery, installation of subgrade piping). Intrusive construction work will be conducted in accordance with the procedures defined in the HASP and CAMP attached as Appendices C and G, respectively.

Any future intrusive work that will disturb the residual insulation material left in place beneath the concrete floor will be managed under a Site Management Plan to be prepared under the RAWP for Phase 2.

5.3.1 Materials Load Out

The personnel under the supervision of the Remedial Engineer or a qualified environmental professional will oversee all invasive work and the load-out of all removed material. The Owner and its contractors will be 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 Remedial Engineer prior to intrusive activities. It will be determined whether a risk or impediment to the planned work under this Remedial Action Work Plan is posed by utilities or easements on the Site.

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

The Owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings) to the extent practicable.

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the Final Engineering Report.

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.

Truck transport routes are anticipated to be as follows: Trucks will travel to and from the Site via West 141st and 142nd Streets. Arriving trucks will proceed to the Site from the Major Deegan Expressway (I-87), entering Manhattan via the 145th Street Bridge. Arriving trucks will proceed west on West 145th Street, south on Adam Clayton Powell Jr. Boulevard, and east on West 142nd Street to the Site. Depending on the final destination, trucks departing the Site will travel from the Site to southbound Fifth Avenue, west on 139th Street to northbound Adam Clayton Powell Jr. Boulevard, and east on 145th Street to the northbound or southbound Major Deegan Expressway (I-87) via the 145th Street Bridge. All trucks loaded with Site materials will exit the vicinity of the Site using these truck routes; however, the truck route is subject to change depending on destination facility, available truck routes at the time of the work and trucking company input related to the allowable truck routes. Proposed in-bound and out-bound truck routes to the Site are shown in Figure 17.

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

Since there is no planned excavation, a truck wash will not be constructed. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation.

Materials Disposal Off-Site

Disposal locations will be established at a later date and will be reported to the NYSDEC Project Manager prior to removal of material from the Site.

Minimal quantities of material are expected to be disposed off-Site as part of this RAWP for Phase 2 of remediation. Waste streams may include soil generated from drill cuttings, soil from excavation of subgrade pipe runs, liquid and/or sludge from the tank closure, and LNAPL or petroleum-contaminated water.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be 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 disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Unrestricted Use SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or Owner to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2.

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Solid & Hazardous Materials (DSHM) in NYSDEC to be Construction and Demolition (C&D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DSHM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DSHM, special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

Hazardous wastes derived from on-Site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from this Site and will be in full compliance with all applicable local, State and Federal regulations.

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the FER. All data available for soil/material to be disposed at a given facility will be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.3.2 Materials Reuse On-Site

Chemical criteria for on-Site reuse of material has been approved by NYSDEC. This criteria is listed in Table 9. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site.

Soil or fill material proposed for reuse will be sampled in a manner consistent with DER-10 Section 5.4(e)10. The sampling will be conducted at a frequency of one discrete VOC sample for every 50 cubic yards and one composite sample to be analyzed for SVOCs, TAL metals, and PCBs/Pesticides for every 300 cubic yards. An additional two VOC samples and one composite sample will be collected and analyzed for each additional 1,000 cubic yards of like material. The composite samples will comprise a three to five point composite. Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos.

Concrete crushing or processing on-Site is prohibited. Note: DEC will consider the use of specially designed devices that are self-contained and capable of providing misting for dust control. DEC approval must be obtained. If dust-free operations are not achieved with such devices, this exception will be revoked.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

5.3.3 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site.

Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Since some residual contaminated insulation material soil, groundwater and soil vapor] will exist beneath the Site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site specific Site Management Plan (SMP) that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have three primary EC systems to manage residual contamination. These are: (1) a composite cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs; (2) a sub-slab depressurization system; and (3) an SVE system.

The FER will report residual contamination on the Site in tabular and map form.

7.0 ENGINEERING CONTROLS: COMPOSITE COVER SYSTEM

7.1 COMPOSITE COVER SYSTEM

A composite cover system composed of concrete is currently in place across the entire Site. Exposure to residual contamination will be prevented by a composite cover system composed of replacing the concrete where removed. The remedial activities included in this RAWP consist of drilling or cutting holes in the concrete for such purposes as wells, borings or extraction piping. The surficial concrete will be restored using minimum 6-inch thick concrete.

A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of this composite cover system will be described in the Site Management Plan.

8.0 ENGINEERING CONTROLS: TREATMENT SYSTEMS

8.1 SOIL VAPOR EXTRACTION SYSTEM

A Soil Vapor Extraction (SVE) system will be installed to remediate the contaminated vadose zone soil beneath the building in the northwestern portion of the Site. See planned SVE remediation area on Figure 7. The SVE system will also be effective in helping prevent the off-Site migration of PCE and breakdown products in soil vapor. The VOC-contaminated air extracted from the SVE wells will be treated using activated carbon (or other air treatment as applicable) and discharged to the atmosphere in accordance with 6NYCRR Part 212.

8.1.1 Treatment Area

The target area for the SVE system is the vadose zone soil (above the water table) in an approximately 8,000 square foot area located in the northwestern portion of the site, where soil concentrations were greater than the SCOs for Protection of Groundwater, as shown on Figure 18. Extraction wells will be connected through a network of piping to a regenerative blower, which will apply a vacuum to draw off the contaminant vapors through the well screens. The application of negative pressure to the subsurface will also help reduce the potential for off-site migration of contaminated soil vapor. The contaminated vapors would be directed through a vapor treatment system, comprising granular activated carbon (GAC), and subsequently discharged to the atmosphere.

8.1.2 Pilot Test

An SVE pilot test was performed in 2009, and additional confirmatory data was collected as part of the pre-remedial design activities in November and December 2011 to confirm the observed zone of influence for each extraction well and evaluate appropriate blower sizing and effluent treatment. Pilot test results indicated that the site subsurface is generally more conducive for SVE in the northeastern and southern portions of the treatment area, with diminishing influence in the central and western portions of the treatment area. A figure showing the existing SVE wells and induced vacuum is provided as Figure 19. Pilot test data and SVE design documentation is summarized in Appendix J.

The SVE pilot test consisted of a vacuum step test conducted at each SVE well, with induced vacuum measured at monitoring wells located at varying distances away from the SVE well. The applied vacuum was then increased by approximate increments of 10 inches of water (inH_2O) and the monitoring repeated. Applied vacuum typically ranged from 10 to 40 inH_2O, with the exception of one SVE well which required greater vacuum application to achieve the desired induced vacuum.

Though 0.1 inH_2O was the target value for induced vacuum at the extent of an SVE wells radius of influence (ROI), the pilot test results showed that this value was not consistently achieved, with an average induced vacuum of closer to approximately 0.05 inH_2O. These induced vacuums were typically achieved at the 75% or 100% step tests, corresponding to applied vacuums of approximately 30 or 40 inH_2O, air flow rates of approximately 85 cubic feet per minute (CFM), and at monitoring wells located approximately 20 feet from the SVE well. Induced vacuum greater than or equal to 0.1 inH_2O was noted at SVE wells SVE-2, SVE-3, and SVE-4 at an average of 17 feet from each SVE well.

Piloting at SVE wells SVE-7, SVE-8, SVE-9, SVE-10, and SVE-11 resulted in slightly diminished induced vacuums ranging between 0.015 and 0.030 inH_2O during the 75% or 100% step tests. A relatively high applied vacuum of 65 inH_2O was required at SVE-11 to achieve acceptable induced vacuums during the pilot test. Relatively low radii of influence of approximately 5 and 8 feet were noted during the SVE-6 and SVE-7 step tests, respectively.

The diminished induced vacuum in the central and western portions of the treatment area, the diminished radius of influence at SVE-6 and SVE-7, and the increased applied vacuum at SVE-11 will reduce the area covered by the SVE system and the efficiency of the system in areas it does cover. As such, a total of five additional SVE wells are proposed in the central, southern and southeastern portions of the treatment area, as shown on Figure 19. The installation of one additional SVE well, SVE-12, is proposed to provide additional coverage in the central portion of the treatment area. The installation of two additional SVE wells, SVE-13 and SVE-14, are proposed to provide additional coverage in the southern portion of the treatment area. SVE-15 is proposed to be installed east of SVE-02, to extend the SVE system coverage in the southeastern corner of the treatment area. Existing monitoring well M-3 will also be used as an SVE well in the proposed system.

Due to the variance in test results and to limit strain on SVE equipment, the proposed SVE system will operate between three subsets of SVE wells, grouped according to applied vacuum and air flow rate results as discussed in Section 8.1.3.

8.1.3 System Performance

The overall SVE system layout is shown on Figure 18. Of the nine SVE wells installed in November 2011, six were installed inside the site building and three on the 142nd Street sidewalk. The SVE wells were installed on an approximate spacing of 25 to 30-foot centers based on expected radius of influence and site accessibility. The SVE wells were screened from 4 feet to 10 feet below the floor surface and constructed of 4-inch diameter PVC with 2-foot bottom sumps and a solid riser to grade. The wells were finished at grade with flush-mount manholes. One additional SVE well was installed in 2009, screened from 4 to 12 feet below the top floor slab and constructed using 4-inch diameter PVC with a 4-foot long riser, 8-foot long screen, and 2-foot long bottom sump.

Four of the five proposed additional SVE points will also be connected to the new SVE system, extending and reinforcing the SVE target area in the central, southern and southeastern regions. The additional wells will be installed to the specifications given in the 2011 PRDWP. Typical SVE well construction details are provided in Figure 20. Monitoring well M-3 will also be connected to the proposed SVE system.

SVE pilot testing results are summarized below. Full pilot data, collected in 2009 and 2011 under the Pilot Test Work Plan and PRDWP, are presented in Appendix J.

Table 12 – SVE Pilot Test Summary

SVE Well	Applied Vacuum	Air Flow Rate	Induced Vacuum	At Distance	At Monitoring Point
Well Name	Inches of water column	Cubic feet per minute	Inches of water column	Feet from SVE well	Well Name
SVE-2	40.0	180	0.100	15	SG-20D
SVE-3	38.5	75	0.100	18	SVE-4
SVE-4	38.0	120	0.450	18	SVE-3

SVE Well	**Applied Vacuum**	**Air Flow Rate**	**Induced Vacuum**	**At Distance**	**At Monitoring Point**
Well Name	Inches of water column	Cubic feet per minute	Inches of water column	Feet from SVE well	Well Name
SVE-5	40.0	~100	0.060	25	M-11S
SVE-6	40.0	90	0.020	8	SG-16
SVE-7	40.0	70	0.020	5	M-3
SVE-8	37.5	90	0.020	20	SVE-10
SVE-9	40.0	110	0.020	30	SVE-8
SVE-10	30.0	75	0.015	19	SVE-11
SVE-11	65.0	100	0.022	20	SVE-10
Average	**40.0**	**100**	0.042*	**18**	

* - The average induced air flow rate was calculated excluding the 0.450 reading during the SVE-4 pilot test as it is an outlier.

Based on the 2009-2011 findings, the SVE system will be capable of operating a total of an approximate maximum of five SVE points at an approximate applied vacuum of 40 inH_2O throughout the system and approximate air flow rate of 100 CFM per SVE well.

The proposed SVE blower specifications are based on applying a vacuum of approximately 40 inH_2O at the SVE well, plus an additional approximate 10 inH_2O due to frictional losses in the pipe, at an air flow rate of approximately 100 CFM. Though air flow rates of closer to 200 CFM were noted at SVE-2, based on historic data from the site it is unlikely that this is representative of future operating conditions in the remainder of the site. An All-Star RB915 regenerative blower, with maximum vacuum and air flow rate capabilities of 150 inH_2O and 850 CFM, and a Baldor E3616T 7.5 horsepower motor will be considered during the design phase.

At the 75% step test conditions, a minimum vacuum of 0.015 inH_2O was noted at an average of 18 feet from a given SVE well. Using a conservative estimate of a 20-foot radius of influence, it is anticipated that the current array of SVE wells in the northern and western portions of the treatment area will maintain a minimum of a 5-foot overlap in ROI for any two adjacent wells. The proposed additional SVE wells will create similar conditions in the areas near SVE-2, SVE-6, SVE-7, SVE-8, and SVE-11. Induced vacuum monitoring will be conducted during the installation of the additional SVE wells to determine whether further SVE wells may need to be installed.

The SVE system will operate on three discrete sets of SVE wells at two-hour intervals. Based on pilot test results, the following three zones will be operated:

- To create sufficient vacuum in the area of diminished SVE influence, SVE wells SVE-6 and SVE-7 will be operated in conjunction with M-3, SVE-8 and the proposed SVE-12 (SVE Zone 1).
- SVE wells SVE-3, SVE-4, SVE-5, SVE-9, and SVE-10, located along the northern and western perimeter of the treatment area, will be operated as a second discrete zone, given their comparable operating parameters during pilot testing (SVE Zone 2).
- The remaining SVE wells, SVE-2, SVE-11, SVE-13, SVE-14, and SVE-15, will be operated as the third and final zone (SVE Zone 3). Note that pilot test results

indicated that SVE-11 required an increased vacuum to produce acceptable induced vacuums. As such, SVE-11 is grouped with the SVE wells along the southern boundary of the treatment zone, where the increased SVE influence was noted. The pairing of SVE-11 with wells in an area of increased SVE influence will reduce strain on the SVE blower while it is operating on SVE-11.

The SVE system will operate continuously on the three zones using three dedicated blowers. Cycling of the SVE system will assist in reducing blower size, while promoting vacuum across the entire treatment area.

As part of insulation removal activities, a 15 mil vapor barrier will be placed on the bottom surface of portions of the site. In addition to minimizing the potential for exposure to soil vapor, the installation of the vapor barrier will assist the SVE system (as well as the SSDS system) in maintaining an efficient vacuum across their respective treatment areas.

8.1.4 System Location and Components

The SVE system to be installed under this RAWP consists of 15 total SVE wells comprising:

- Nine SVE wells installed in 2011 under the PRDWP;
- One existing SVE well installed in 2009;
- One existing groundwater monitoring well, and
- Four proposed SVE wells.

A plan of the SVE well locations is provided as Figure 18. A conceptual process and instrumentation diagram (P&ID), detailing the SVE system components, is provided as Figure 21. Each SVE well will be connected to the SVE system with dedicated piping. Pressure and vacuum gauges, throttling valves and sample ports will be installed on the individual lines prior to connection to the SVE blower, allowing for adjustments and monitoring of individual SVE wells. Each SVE zone will also be fitted with a motorized butterfly valve which will automate the cycling of SVE zones. The motorized valves will be connected to a control panel and system clock which will be programmed to cycle the SVE system through three SVE zones.

The individual SVE lines in each zone will then be manifolded into single line for each of the three SVE zones. These three lines will be manifolded again into a single line, leading into a moisture separator tank (approximately 120 gallons), with associated transfer pump and 55-gallon drum with high level alarm. The outlet of the moisture separator tank will be connected to a particulate filter, and dilution valve and air intake, followed by the SVE blower. Pre- and post-blower pressure gauges will be installed to monitor strain across the blower. The outlet of the SVE blower will lead directly to the influent port of the carbon treatment system. All piping will be installed and tested in accordance with the CQAP, provided as Appendix F.

The carbon treatment system will comprise two GAC units, connected in series. Influent, intermediate, and effluent sample ports and pressure gauges will be installed on the carbon system for monitoring purposes. The outlet of the second GAC unit in series will lead to an effluent stack, piped to the exterior of the building with a final discharge point located at a minimum of 12 feet above grade and at a minimum of 10 feet from any operable windows, adjoining or adjacent buildings, or HVAC intakes or supply registers.

Based on pilot test data and a history of high soil gas concentrations in certain areas of the site, total VOC concentrations ranged from 26,000 to 644,000 $\mu g/m^3$. Using an estimate of 26,000 $\mu g/m^3$ total VOCs per well based on concentrations detected in influent during the 2009 pilot test, it is expected that the SVE system will utilize approximately 2,700 pounds of carbon per month during the initial months of operation. Sample calculations are provided as Appendix J. As a result, two 3,000-pound vessels will be connected in series to form the vapor treatment system. The Tetrasolv VF-3000 is being considered during the design process. More frequent changeouts of the carbon will likely be required during the initial months following startup. However, extracted PCE concentrations are expected to reduce drastically over time following the extraction of initially higher levels of contaminated vapors.

8.1.5 System Operations and Maintenance

The SVE system will be inspected at a minimum of once a week for the first three months of operation with monthly inspections thereafter to ensure proper operation. System checks will consist of gauge readings, sample port VOC screenings and system alarm checks. Both the moisture separator tank and associated 55-gallon drum will include high level alarms which, when activated, will shut down the SVE system. The sample ports on the carbon treatment systems will be used to monitor carbon treatment efficacy and determine the need for carbon changeout. More detailed system maintenance instructions will be included in the SMP, to be provided under separate cover.

8.1.6 Confirmatory Sampling

Confirmatory extracted vapor sampling will be conducted following startup as part of a reassessment of VOC emissions calculations using field conditions. Confirmatory sampling will comprise grab samples from select individual SVE line (with the exception of existing SVE system lines which are manifolded below grade) and combined influent, intermediate and effluent samples. All vapor samples will be collected using 6-liter SUMMA canisters equipped with 6-hour flow controllers. Samples will be collected in accordance with the QAPP and analyzed for VOCs by EPA Method TO-15 plus TICs.

8.2 IN-SITU SOIL AND GROUNDWATER TREATMENT

In-situ chemical oxidation treatment utilizing extra free radical enhanced modified Fenton's reagent (MFR) and activated sodium persulfate (XFR) will be applied to treat the unsaturated soils, saturated soils and groundwater at the site. In accordance with the requirements of the USEPA Underground Injection Control Program 40 CFR Part 144, USEPA will be notified at least 30 days prior to any injections.

Although reductive dechlorination was the in-situ groundwater treatment method proposed in the FS and approved in the ROD, further evaluation of groundwater treatment options has indicated that chemical oxidation would be an effective option. Because the soil treatment involves saturation of the vadose zone soils with chemical oxidation product, it is expected that this product would reach the water table and react with contaminants in groundwater. Chemical oxidation was initially discounted as a groundwater treatment options because the naturally-occurring buried organics in soil in the saturated zone would interact with the oxidation reagent. However, an increase in the amount of reagent is expected to achieve significant contaminant destruction. Chemical oxidation effectiveness will be evaluated during the bench scale test (see Section 8.2.3) and in monitoring to be performed during and after injection.

8.2.1 Treatment Areas

The proposed treatment area includes the areas accessible for injection in an approximately 6,000 square foot (ft^2) area located in the northwestern portion of the site where soil and groundwater concentrations were highest as shown on Figure 22. The vertical treatment area is from about two feet below grade to a depth of approximately 15 feet below grade (or until depth of refusal is encountered).

8.2.2 Technology Overview

The MFR process combines proprietary chelated iron complex catalysts, mobility control agents, oxidizers, and stabilizers and employs site-specific delivery systems to ensure complete destruction of the targeted contaminants of concern and is capable of oxidizing and desorbing soil-bound contaminant mass. The process generates powerful free radicals when the catalyst reacts with hydrogen peroxide, which includes hydroxyl radicals, superoxide radicals and hydroperoxide anions, which are documented to be effective in treating a wide range of organic contaminants, including PCE and its breakdown products.

The XFR activated sodium persulfate process utilizes sodium persulfate ($Na_2S_2O_8$) oxidant activated using various methods to produce sulfate free radicals. The activators include a proprietary chelated iron catalyst, alkali [e.g., sodium hydroxide (NaOH)], heat, hydrogen peroxide or combinations of each. Persulfate reagents are designed for both solo use or in combination with other reagents (e.g., modified Fenton’s reagent, Permanganate reagent). The XFR component provides a stabilizing effect on the MFR process to help mitigate potential surfacing.

MFR+XFR will result in free radical production via three mechanisms of persulfate activation – i.e., hydrogen peroxide, iron catalyst and heat generated from the exothermic Fenton’s reaction. The co-existing oxidation-reduction reactions associated with the MFR+XFR process promotes enhanced desorption and degradation of recalcitrant compounds.

Residual sulfate is likely to survive from as few as three months to up to a year following injection. Eventual dilution from groundwater will gradually reduce the concentrations over time. However, groundwater in Manhattan is not used as a potable water source, and the nearest body of water is 300 feet from the site. Based on the experience of the remedial contractor, sulfate is not expected to migrate more than 50 to 75 feet from the injection area. The monitoring program will include monitoring for sulfate to ensure that it does not significantly affect any receptors.

Due to concerns related to injections within the noted site subsurface geology (i.e., mixed array of fill material and silty sand), MFR alone is not proposed because of the potential for preferential pathways to the surface being created by slight gas pressure from the reaction and injected reagent surfacing through portions of the site. The MFR+XFR technology includes all of the benefits of the MFR process that are necessary when treating adsorbed soil mass but also includes the addition of the XFR component which, in addition to providing a longer more persistent treatment (in-situ can last for weeks at a time), also provides a stabilizing effect on the MFR process that may help mitigate some of the surfacing issues that may occur.

The proposed reagents will be injected in a stabilized form, used at low concentrations, and injected in a controlled manner to reduce the possibility of surface breakout or subsequent migration. Caution will be exercised while injecting reagents, as the mounding effect created will raise the groundwater elevation in close proximity of the surface. Site monitoring wells in the vicinity of the injection will be monitored throughout the injection process, in addition to baseline and post-treatment monitoring. Additional measures, including injecting at low pressures or gravity feeding the reagent, decreasing oxidant concentration, reducing injection flow rates, or increasing the number of injection points and decreasing the amount of reagent injected at each point, will be evaluated as part of the injection monitoring process. In addition, sorbent pads, spill containment berms, sorbents and vacuums will be maintained on-site to address potential surfacing issues, if they occur.

8.2.3 Bench Scale Test

Samples of site soil and groundwater will be collected for a laboratory treatability study to evaluate the effectiveness of the anticipated products and determine the catalyst/oxidant mixture and site-specific stoichiometry. Based upon the laboratory study, full-scale remediation presented in Section 8.2.5 may be adjusted pending further site-specific design. Therefore, the details in Section 8.2.5 are subject to change in consultation with the NYSDEC. A summary of the results and details regarding any adjustments to the design will be provided in a Bench Scale Study Report submitted to NYSDEC within 30 days after receipt of the bench scale study results from the third-party contractor.

8.2.4 Baseline Monitoring

Existing soil and groundwater analytical data have been used in the initial treatment design; however, additional groundwater sampling is proposed to provide updated baseline conditions. Additional soil sampling is not proposed as the previous sampling rounds have provided adequate data coverage. Laboratory analytical results from borings M-2, SB-10, SB-23, SB-33 and SB-37 will be used as the baseline data points for comparison to subsequent post-injection analyses discussed in Section 8.2.6.

Prior to the start of injection, additional groundwater samples will be collected from the three shallow wells located in the treatment area: M-2s, M-3s and M-11s. Groundwater samples will be collected using low-flow sampling techniques and analyzed for TCL VOCs by EPA Method 8260 and sulfate by EPA Method 9038.

8.2.5 Treatment Program

The full-scale treatment program will use the results of the bench scale test to design the injection program. In addition, the field program may be fine-tuned based on in-situ observations.

It is anticipated that the field activities for the full-scale treatment program will be performed over three or four injection events. Injection points will be installed as temporary Geoprobe direct-push injection points with stainless steel screens. If site conditions warrant, temporary or permanent PVC injection wells may also be used. The injection points would be placed in the area to be treated and screened from just below the floor slab to a depth of about 15 feet below grade, or refusal. The temporary injection points will be grouted after the predetermined reagent dose has been injected through the direct push rods and screen, and the rods would be moved to a different location to install a new injection point.

Injection is anticipated over an approximately 6,000 square foot area in the northwestern portion of the site, as shown on Figure 22. Injection within the loading dock is largely infeasible due to the presence of a UST and an elevated loading dock platform. Injection points are anticipated along the western extent of the UST and immediately north of the loading dock in the 142nd Street sidewalk. However, following the closure in-place of the UST (See Section 5.2), the feasibility of additional injection wells in the loading dock will be reevaluated. Additional measures, comprising passive and active venting, to address environmental conditions in the loading dock are discussed in Section 8.4.

The horizontal target treatment area covers the unsaturated soil, saturated soil and shallow groundwater intervals. Based on the soil/fill type observed in soil borings performed in the vicinity and precedent from previous injection sites with similar lithology, a conservative treatment radius of influence (ROI) of 6 feet is assumed, resulting in an injection point spacing of 12 feet. At this spacing, it is currently estimated that approximately 46 injection locations will be installed for the primary injection event. Notwithstanding, the injection point spacing and ROI will be verified and reevaluated based on process monitoring conducted during injection activities. General assumptions used and the design of the treatment program is as follows:

- The vertical impacted zone requiring treatment is from 2 to 15 ft bgs. A total of 46 injection points with two to three treatment interval depths per location are anticipated for treatment. These specific injection depths will be achieved by conducting the injection in steps, beginning with the maximum injection depth and proceeding to the shallower injection depths. The injection screen will be exposed specifically at the discrete injection depth and then shuttered until the probe is retracted to the shallower injection depth. In the event that this method is infeasible, the injection wells will be installed in clusters, with a dedicated well installed and screened for each injection depth interval. The varying injection depths will ensure the treatment targets a variety of depth areas to achieve the desired "flooding" of the vadose zone. Additional points may be attempted if some of the original points cannot be utilized (due to refusal, surfacing issues, clogged injection screens, etc.).
- The oxidants will be delivered into the subsurface under constant low to moderate pressure (0 to 40 psi) in an effort to distribute materials in a homogeneous fashion throughout the injection interval. Assumed reagent flow rate is 1 to 2 gallons per minute (gpm) per injection point into the subsurface. Higher injection pressures and concentrations may be required and will be evaluated during the treatment program. The proposed reagents will be injected in a stabilized form, used at low concentrations, and injected in a controlled manner to reduce the possibility of surface breakout or subsequent migration. Caution will be exercised while injecting reagents.
- Treatment volume reagent requirements are between 200-300 gallons per injection location to be equally injected over the two (2) proposed primary injection rounds. Reagent volume will be applied in a 1:1:1 volumetric ratio of chelated iron catalyst, 10% sodium persulfate and 10% stabilized hydrogen peroxide. Volumes are based on calculations of expected permeability and contaminant mass determined from remedial investigation and experience of the third-party contractor consulted for design. The injection program may be adjusted following results obtained from the

bench-scale study, which would be presented in the Bench Scale Study Report, submitted to NYSDEC for review and approval.

- The treatment program will be performed over 2 primary injection events spaced 4 to 6 weeks apart to allow for complete oxidant consumption and aquifer equilibration between injection intervals. The interval between events will also help reduce the potential for super saturation, which will in turn reduce surfacing issues, limit oxidant waste, and allow for additional assessment and adjustment of the reagent volumes and injection rates.
- The direct push injection point location for each subsequent injection event will be laterally and centrally offset from previous injection event locations to achieve better overlapping effect and minimize missed impacts.
- Wells within the treatment area will be monitored periodically during injection activities and between injection events for process parameters which includes water/fluid level, pressure (as appropriate), pH, total dissolved solids (TDS), conductivity, redox potential (ORP), temperature, hydrogen peroxide (H_2O_2), persulfate sulfate, and iron. The parameters measured, frequency of monitoring and potential response actions (see Section 8.2.2) will be adjusted based on the observed results.
- Work zone and community air monitoring will be performed during injection in accordance with the HASP and CAMP (attached as Appendices C and G, respectively).
- Post-treatment monitoring of treatment effectiveness will be performed as outlined in Section 8.2.6.
- The SVE wells and SSDS trenches that are accessible during injection will be connected to carbon drums to passively vent the injection area and treat vented vapors. No blowers or fans will be operated due to the potential for injected reagents to flood extraction system components.

The rate at which the oxidant flow can be injected into the subsurface is initially determined by the soil/aquifer characteristics, or possible premature stoppage due to oxidant material seeping up from monitoring well seals or injection points. Field decisions regarding injection volumes will be based on the subsurface intake, radial effects noted during injection, and the distance of the injection point from the nearest monitoring point. If it becomes impossible to inject the proposed volume, reagent concentrations may be increased, with volumes decreasing, to meet treatment goals. The extent of remediation is preliminary during the initial injections and may vary plus/minus pending site subsurface characteristics.

8.2.6 Post-Treatment Monitoring

About 12 weeks after the second injection round, confirmatory soil and groundwater samples will be collected to evaluate the effectiveness of chemical oxidation treatment. Five soil samples and three groundwater samples will be collected.

Soil samples will be collected from five direct push soil borings collected from locations targeted within one foot of the previous boring locations M-2, SB-10, SB-23, SB-33 and SB-37. The post-treatment sampling locations will be targeted to within 1 foot vertically and horizontally from the baseline locations [M-2(9-11’), SB-10(8’), SB-23(14-15’), SB-

33(6-8') and SB-37(10.5-12')]. Samples will be submitted for laboratory analysis of TCL VOCs by EPA Method 8260.

Groundwater samples will be collected from the three shallow wells located in the treatment area: M-2s, M-3s and M-11s. Groundwater samples will be collected using low-flow sampling techniques and analyzed for TCL VOCs by EPA Method 8260. Based on post-treatment analytical results, the need and effectiveness of additional treatment would be evaluated.

8.3 SUB-SLAB DEPRESSURIZATION SYSTEM

A sub-slab depressurization system (SSDS) will be installed to mitigate the potential for soil vapor intrusion. The SSDS will be divided into two sub-systems to accommodate the variance in induced vacuum/air flow rate noted in different regions of the treatment area during pilot testing. The SSDS will be divided into a low applied vacuum, high air flow rate system and a high applied vacuum, low air flow rate system, each comprising multiple dedicated fans servicing explicit SSDS pits or points. The composite SSDS will apply negative pressure beneath the uppermost concrete slab, minimizing the potential for vapor intrusion into the site building. The VOC-contaminated air captured by the SSDS system will be treated using activated carbon prior to discharge to the atmosphere.

8.3.1 Treatment Area

The approximate layout of the SSDS pits is shown on Figure 23. The target area for the SSDS system is the space located underneath the bottom of the first two concrete slabs in an approximate 45,000 SF area located throughout the majority of the site, except in the two site loading docks and the portions of the site with a current intra-slab vapor extraction system. The target area for the SSDS design also lies beyond the portions of the Site being addressed by the SVE system.

SSDS pits will be connected through a network of piping, to fans which will apply negative pressure to the target area to capture contaminated vapors. All captured vapors will be directed through a GAC treatment system, and subsequently discharged to the atmosphere.

8.3.2 Communications Testing

SSDS communications testing was conducted on November 2011, following the installation of 40 sub-slab depressurization pits throughout the treatment area. Monitoring points were installed at varying distances from each pit to monitor the induced vacuum while a vacuum was applied to a pit.

The purposes of the communications testing included the identification of:

- Potential subsurface obstructions;
- Optimal SSDS pit placement; and
- The extent of radial air flow from each SSDS pit.

The communications testing also delineated an approximate 10,000 square foot void space in the eastern portion of the treatment area, induced vacuum and areas of limited SSDS coverage, as shown on Figure 24. Communications testing data and SSDS design documentation is summarized in Appendix K.

Forty 40 SSDS suction pits were installed - 6 SSDS pits on the eastern portion of the treatment area and 34 SSDS pits throughout the western and central portions of the treatment area. The 34 SSDS pits installed throughout the western and central portions of the site comprised 1 or 2-square foot area pits extending to the top of the second concrete slab, filled with gravel, with a 4-inch long PVC screen connected to a 4-inch radius PVC riser extending to approximately 2 feet above grade. The void points were constructed in kind with the SSDS pits except without gravel as the intra-slab area comprised a void space. No induced vacuum monitoring was conducted at the six void points after it was concluded that the subsurface comprised a void space.

A vacuum was applied at each SSDS pit using a shop vacuum (GP-501 or GP-220) and induced vacuum was measured at temporary monitoring points located at varying distances away from the SSDS pit.

In addition to induced vacuum monitoring, the SSDS pits and monitoring points were used to identify and delineate subsurface obstructions such as foundation walls and footers. The approximate locations of the identified subsurface obstructions are show in Figure 24.

Though 0.005 inH_2O was the target value for induced vacuum at the extent of an SSDS pits ROI, a cutoff of 0.004 inH_2O was a more prevalent reading during testing and was used as the minimum induced vacuum to determine ROIs. The induced vacuum was recorded at monitoring points averaging approximately 20 feet from the SSDS pit, with individual ROIs ranging from 10 to 43 feet from the SSDS pit.

Adequate communication, based on the threshold induced vacuum at monitoring points of 0.004 inH_2O or greater, was noted at most of the SSDS pits, with some exceptions. Minimal to no communication was noted for SSDS pits SSDS-21, SSDS-24, and no communications testing was conducted for SSDS-27 as the area around SSDS-27 was inaccessible at the time of testing. The minimal communications around pits SSDS-21 and SSDS-24 was likely caused by subsurface building elements and low permeability in the intra-slab soil.

The communications testing results also showed the best SSDS communication in the western portions of the treatment area, with ROIs of up to approximately 40 feet noted at pits SSDS-1 and SSDS-2. ROIs were generally smaller in the central and eastern portions of the treatment area, though this was due in large part to subsurface obstructions.

Four SSDS pits (SSDS-24, SSDS-29, SSDS-35, and SSDS-36) and six void points (V-1, V-2, V-3, V-4, V-5, and V-6) all exhibited lower applied vacuums and higher air flow rates, ranging from 1 to 3 inH_2O and 57 and 96 CFM, respectively.

Due to the variance in test results and to limit strain on SSDS equipment, the proposed SSDS system will comprise multiple SSDS fans controlling subsets of SSDS pits, grouped by applied vacuum and air flow rate results.

8.3.3 System Performance

The SSDS system to be installed under this RAWP consists of:

- Thirty of the SSDS pits installed in 2011 under the PRDWP; and
- The remaining four SSDS pits, six void points and the existing intra-slab vapor extraction system, comprising six individual legs

Based on field communication testing, the ROI for SSDS pits varied due to low permeability within the intra-slab soils and likely subsurface obstructions such as foundation walls or building footings. The communications testing results indicate that all the SSDS pits are one of two types: low vacuum with high air flow rate (indicative of a void space or otherwise permeable subsurface conditions) and high vacuum with low air flow rate (indicative of somewhat compacted soil). The following table summarizes key indicators from the communications testing.

Table 13 – SSDS Communication Testing Results

SSDS Type	Average Applied Vacuum	Average Applied Air Flow Rate	Average Induced Vacuum	Average ROI
	Inches of water column	Cubic feet per minute	Inches of water column	Feet from SSDS point
High Vacuum, Low Air Flow Rate Points (Thirty SSDS pits)	3.7	13	>0.004	21
Low Vacuum, High Air Flow Rate Points (Void points and Four outlier SSDS pits)	2.1	73.4	NA*	NA*

* - No vacuum monitoring testing was conducted at the void space points, making an accurate average inapplicable.

For the void space points, V-1 through V-6 where no vacuum monitoring testing was conducted, an air exchange calculation was used to determine the appropriate ventilation rate and its affect on the low vacuum, high air flow rate SSDS design. The void space comprises an approximate 10,000 cubic foot volume (1 foot depth, 50 feet by 200 feet area) and an air exchange rate of 2 cycles per hour was used as the minimum air exchange rate. At these conditions, an approximate minimum air flow rate of 335 CFM would be required to exhaust two volumes of void space air every hour. After applying a 25% safety factor, the required minimum air flow rate will be approximately 425 CFM. With six void space points, an air flow rate of approximately 70 CFM per point will need to be achieved to maintain the two exchanges per hour, which is comparable to the average air flow rate for the remaining low vacuum, high air flow rate points. A conservative air flow rate of 100 CFM will be used for fan selection purposes.

In addition to the SSDS points, the existing intra-slab SVE system will also be connected to this portion of the SSDS system. The intra-slab system was installed in a manner similar to the SSDS pits (i.e. vacuum points drawing from the space between the first two concrete slabs) and is likely to operate similarly as well. The intra-slab system comprises six legs, each of which will be accounted for as the equivalent of one low vacuum, high air flow rate SSDS pit. The complete low vacuum, high air flow rate SSDS system will comprise a total of 16 vacuum points.

Two fans will be used to control SSDS operations on the 16 low vacuum, high air flow rate points, with the each fan controlling eight points. The first fan will control the six void space points and two additional SSDS pits, SSDS-24 and SSDS-29, as the communications testing results indicate that there were minimal VOC detections from the eastern portion of the treatment area. The second fan will control the existing intraslab SVE system lines (equivalent to six SSDS lines) and two additional SSDS pits, SSDS-35 and SSDS-36.

Two Gast R7P3180M or equivalents will be used to control the low vacuum, high air flow rates SSDS. The GAST R7P3180M will be capable of maintaining a vacuum of approximately 30 inH_2O (6 inH_2O applied vacuum plus approximately 20 inH_2O to compensate for pressure drops in carbon units and frictional losses in system piping) at an air flow rate of 1,000 CFM (approximately 100 CFM per point, eight points maximum).

The remaining 30 SSDS pits in the central and eastern portions of the treatment area exhibited average applied vacuum and air flow rates of 3.7 inH_2O and 13 CFM, respectively. Two fans will be used to control SSDS operation on the 30 high vacuum, low air flow rate points, with each fan controlling fifteen points. The first fan will control fifteen points located in the western, central, and northern portions of the treatment zone, as shown on Figure 25. This fan will be capable of maintaining a vacuum of approximately 50 inH_2O (8 inH_2O applied vacuum plus approximately 40 inH_2O to compensate for pressure drops in carbon units and frictional losses in system piping) at an air flow rate of 400 cfm (approximately 25 cfm per point, 15 points maximum).

The second fan will control fifteen point located in the southern and eastern portions of the treatment zone, as shown on Figure 25. This fan will be capable of maintaining a vacuum of approximately 30 inH_2O (8 inH_2O applied vacuum plus approximately 20 inH_2O to compensate for pressure drops in carbon units and frictional losses in system piping) at an air flow rate of 400 cfm (approximately 25 cfm per point, 15 points maximum).

Each individual fan will be vented to a dedicated carbon system, sized based on combined air flow rates and VOC concentrations noted during the communications testing.

The vacuum capabilities of the proposed fans for the full scale SSDS are intended to surpass the requirements set forth during the communications testing. The twofold increase in applied vacuum will increase the ROI of each SSDS point, extending its influence towards the nearest adjacent ROI or subsurface obstruction, ensuring more complete SSDS coverage. It is likely that this will provide complete SSDS coverage of the treatment zone based on the current understanding of the subsurface flow inhibitors and SSDS point locations and performance.

As part of insulation removal activities, a 15 mil vapor barrier will be placed on the bottom surface of the insulation removal area. In addition to minimizing the potential for exposure to soil vapor, the installation of the vapor barrier will assist the SSDS system in maintaining an efficient vacuum in that portion of the treatment area.

The SSDS pilot data, collected under the PRDWP is presented in Appendix K.

8.3.4 System Location and Components

The layout of the entire SSDS pit network is provided as Figure 25. A conceptual P&ID, detailing the SSDS system components, is provided as Figure 26. A detail of final SSDS pit construction is provided as Figure 27. SSDS pits will consist of a vertical screen and riser, constructed with either 2- or 4-inch PVC, based on site conditions, installed in the 1 or 2-square foot pits described above. Using dedicated piping, each SSDS pit will be manifolded into one of five 12-inch diameter PVC header pipes located directly above the pit locations in the ceiling plenum. Vacuum and air flow rate gauges and a throttling valve will be installed on the dedicated portions of piping, prior to connection to the header pipes. The header pipes will lead back to the SSDS system location, with piping pitched down towards the SSDS pits to minimize accumulation of moisture within the aboveground piping.

Three SSDS trenches will also be installed in the northwestern portion of the Site, extending SSDS coverage into the SVE treatment area. A 12-inch diameter PVC header pipe will extend east-to-west across the SVE treatment area with three branched, slotted, 4-inch diameter PVC pipes (SSDS-39, SSD-40, and SSDS-41) extending north from the header, as shown on Figure 25.

The SSDS system will operate continuously to eliminate the potential for vapor intrusion. All piping will be installed and tested in accordance with the CQAP, provided as Appendix F.

The SSDS system will comprise four fans each controlling an explicit set of SSDS pits. Pre- and post-fan pressure gauges and pressure switches will be installed on each blower to monitor strain across the blower.

The SSDS system effluent lines will each be connected to carbon treatment systems as follows:

Table 14 – SSDS System Carbon Sizing Summary

SSDS Fan	**Presumed VOC concentration**	**Air Flow Rate Per Point**	**Total Points Per Fan**	**Total Air Flow Rate Per Fan**	**VOC Emissions Per Month**	**Carbon Sizing**	**Typical Unit**
Fan type	µg per cubic meter	Cubic feet per minute	Number of points	Cubic feet per minute	Pounds per month	Number of units and pounds per unit	Make and Model
Low Vacuum #1	31,000	100	11	1,100	66	2x 2,300	Tetrasolv VF-2600
Low Vacuum #2	15,000	100	8	800	33	2x 500	Tetrasolv VR-500
High Vacuum #1	31,000	25	15	375	33	2x 500	Tetrasolv VR-500
High Vacuum #2	15,000	25	15	375	16	2x 250	Tetrasolv VR-500

It is likely that more frequent changeouts of the carbon units will be required during the initial months following startup. However, extracted PCE concentrations are expected to reduce drastically over time following the extraction of initially higher levels of contaminated vapors.

8.3.5 System Operations and Maintenance

The SSDS system will be inspected at a minimum of once a month, to ensure proper operation, with weekly checks during the first month of operation. Monthly checks will consist of individual SSDS pit gauge readings, blower inspections, alarm checks, and carbon vessel VOC screenings. More detailed system maintenance instructions will be included in the SMP, discussed in Section 9.2.

Fifteen permanent sub-slab vacuum monitoring points, as shown on Figure 24, will be installed within the treatment area during implementation of the remedy and will be used to ensure that key indicator locations remain under vacuum. The points have been located based on identified subsurface obstructions and areas with low induced vacuum during the communications testing. Sub-slab vacuum monitoring will be conducted in accordance with the guidelines set forth in the SMP.

8.3.6 Confirmatory Sampling

Confirmatory communications testing will be conducted throughout the Site during implementation of the remedy and will be used to assess induced vacuum conditions and the necessity for additional SSDS pits. The confirmatory communications testing will help confirm that proper vacuums are maintained in the insulation removal area, as subsurface conditions will have changed from PRDWP SSDS testing conditions. If sub-slab vacuum is not adequately maintained in any portion of the Site, additional SSDS pits will be installed.

Confirmatory extracted vapor sampling will be conducted following startup as part of a reassessment of VOC emissions calculations using field conditions. Confirmatory sampling will comprise grab samples from select individual SSDS line and combined influent, intermediate and effluent samples. All vapor samples will be collected using 6-liter SUMMA canisters equipped with 6-hour flow controllers. Samples will be collected in accordance with the QAPP and analyzed for VOCs by EPA Method TO-15 plus TICs.

8.4 AUXILIARY SPACE VENTILATION

Based on historic information, additional measures will be taken in the former boiler room located within the partial basement of the building and the north loading dock fronting 142nd Street to further address potential indoor air quality VOC concentrations. Penetrations through the existing slab will be sealed and the room will then be actively ventilated.

8.4.1 North Loading Dock Ventilation

The north loading dock comprises an approximately 1,000-square foot space (including a small, elevated rear room beyond the southern wall in the loading dock) with an approximately 15-foot high ceiling. The majority of the northern wall is shuttered by a 10-foot by 10-foot metal roll up door and the north loading dock is, therefore, passively ventilated. Nonetheless, the rear room of the loading dock, which is intended to be used to store the SVE and SSDS blowers, will be actively ventilated to the building exterior using a 400 CFM blower, providing approximately 6 air exchanges per hour.

8.4.2 Penetration Sealing

Penetrations in the basement slab are believed to be the cause of historic elevated PCE concentrations in the former boiler room. As such, a 6-mil vapor barrier and minimum 3-inch thick concrete slab will be installed above the existing basement slab and the walls will be sealed. The addition of the vapor barrier and slab will minimize the intrusion of sub-slab vapors into the former boiler room, where indoor air concentrations of PCE and its breakdown compounds have periodically been elevated in the past.

8.4.3 Confirmatory Sampling

Prior to installation of ventilation fans (see Section 8.4.3), indoor air sampling will be conducted within the basement to confirm the effectiveness of the new concrete slab in addressing indoor air VOC concentrations. One 6-liter SUMMA canister with an 8-hour flow control will be used to collect the indoor air sample, in accordance with the QAPP. The sample will be analyzed for PCE and its breakdown products, in accordance with current indoor air sampling requirements.

Two permanent sub-slab vacuum monitoring points will be installed within the basement area during implementation of the remedy and will be used to ensure that key indicator locations remain under vacuum. Sub-slab vacuum monitoring will be conducted in accordance with the guidelines set forth in the SMP.

8.4.4 Basement Exhaust Fan

Following review of the basement indoor air samples, an exhaust fan and a fresh air intake vent will be installed in the portion of the basement wall that extends above street level. The exhaust fan will discharge indoor air to the building exterior and equipped with a shut-off alarm. This process will allow the former boiler room to be actively ventilated, minimizing the potential for sub-slab vapor accumulation within the boiler room.

8.5 CRITERIA FOR COMPLETION OF REMEDIATION (TERMINATION OF REMEDIAL SYSTEMS)

8.5.1 Composite Cover System

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

8.5.2 Sub-slab Depressurization System (SSDS)

The active SSDS 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 based on confirmatory data that justifies such request. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

8.5.3 Soil Vapor Extraction System

The SVE system will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the system may be submitted by the property owner after residual contamination concentrations in groundwater: (1) are cleaned up to levels below NYSDEC standards, (2) have become asymptotic over an extended period of time as mandated by the NYSDEC and the NYSDOH, or (3) if NYSDEC has determined that the SVE system has reached the limit of its effectiveness. This assessment will be based in part on post-remediation contaminant levels in groundwater collected from monitoring wells located throughout the Site. Systems will remain in place and operational until permission to discontinue their use is granted in writing by NYSDEC and NYSDOH. These sampling/monitoring activities will adhere to stipulations outlined in the Monitoring Plan section of the SMP.

8.5.4 Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation following implementation of the remedy will be performed under the SMP, as determined by NYSDOH and NYSDEC, until residual groundwater concentrations are found to be below NYSDEC standards or have become asymptotic over an extended period. Monitoring will continue until permission to discontinue is granted in writing by NYSDEC and NYSDOH. Monitoring activities are outlined in the Monitoring Plan of the SMP.

9.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Engineering Controls (ECs) for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan. These elements are described in this Section. As part of the approved remedy, a Site specific Environmental Easement will be recorded with New York County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

9.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. If the Site will have residual contamination after completion of all Remedial Actions then an Environmental Easement is required. The Environmental Easement will be submitted as part of the Final Engineering Report.

The Environmental Easement must be recorded with the New York County Clerk before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to the uses specified. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the Site Management Plan, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support Engineering Controls are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- A composite cover system consisting of asphalt covered driveways, concrete covered sidewalks, and concrete building slabs must be inspected, certified and maintained as required in the SMP;
- A soil vapor mitigation system consisting of a sub slab depressurization system under the building structure must be inspected, certified, operated and maintained as required by the SMP;
- A soil vapor extraction system must be inspected, certified, operated and maintained as required by the SMP.
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- On-Site environmental monitoring devices, including but not limited to, groundwater monitoring wells and soil vapor sampling points, must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP;
- Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these Institutional Controls for the Site is mandated by the Environmental Easement and will be implemented under the Site Management Plan (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the Site Management Plan;
- The Controlled Property may be used for the specified uses only, provided the long-term Engineering and Institutional Controls included in the Site Management Plan are employed;
- The Controlled Property may not be used for a higher level of use, such as Unrestricted use without an amendment or extinguishment of this Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC;

and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

9.2 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion (COC) for the Remedial Action. The SMP is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

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

To address these needs, this SMP will include 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 implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC.

The SMP in the Final Engineering Report will include a monitoring plan for groundwater at the down-gradient Site perimeter to evaluate performance of the remedy.

No exclusions for handling of residual contaminated soils will be provided in the SMP. All handling of residual contaminated material will be subject to provisions contained in the SMP.

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

10.0 FINAL ENGINEERING REPORT

An FER will be submitted to NYSDEC following implementation of the Remedial Action defined in the RAWPs of Phase 1 and Phase 2 of the remediation. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will be prepared in conformance with DER-10.

The FER will include the following:

- A comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources.
- As-built drawings for all constructed elements, certifications, manifests, bills of lading as well as the complete Site Management Plan (formerly the Operation and Maintenance Plan).
- A description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents.
- A tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action.
- Test results demonstrating that all mitigation and remedial systems are functioning properly.
- Written and photographic documentation of all remedial work performed under this remedy.
- An itemized tabular description of actual costs incurred during all aspects of the Remedial Action.
- A thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all sub-slab insulation material with PCE concentrations greater than 5 mg/kg. A table that shows such exceedances for insulation material remaining at the Site after the Remedial Action and a map that shows these locations will be included in the FER.
- An accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material will also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

Before approval of a FER, all project reports will be submitted in digital form on electronic media (PDF).

10.1 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer who is a Professional Engineer registered in New York State This certification will be appropriately signed and stamped. The certification will include the following statements:

> I, ________________________, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 2350 Fifth Avenue, New York Site (NYSDEC Site No. 2-31-004).
>
> I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Consent Order dated July 22, 2011 for the Site.
>
> I certify that the Remedial Action Work Plans dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

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

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the Owner for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

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

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

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plans.

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

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

10.2 DIGITAL DATA SUBMITTAL

Laboratory analytical data generated as part of remedial activities outlined in this RAWP will be submitted to NYSDEC in electronic format using the EQuIS electronic data deliverable (EDD) format. EQuIS submittal will be completed prior to submittal of the final FER.

11.0 SCHEDULE

Estimated dates for performance of remedial action work and deliverables are provided below:

Description	Approximate Duration
Implementation of RAWP for Phase 2 of Remediation	
Specification and Contractor Procurement	3-6 months
Site Preparation	2 months
SVE System Completion	3 months
SSDS Completion	3 months
Injection for Soil and Groundwater Treatment	2 months

Tank Closure	1 week
LNAPL Investigation (Initial Delineation)	1 month
Final Engineering Report	2 months

The schedule for completion of the overall field program is expected to be 8 to 10 months from time of NYSDEC approval of this RAWP Phase 2. The FER is expected to follow 2 months after completion of field work activities.

The actual schedule may differ depending on such factors as contractor availability and sequencing, Site constraints, complexity of data collected, and access coordination. NYSDEC Project Manager will be notified of significant changes to the schedule.

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TABLES

Table 1a
2350 Fifth Avenue
New York, NY
Soil Boring Installation Details

Soil Boring ID	Completion Depth (feet b.g.s.)	Completion Date	Location Description
SB-1	30	12/14/2007	Cafeteria-N
SB-2	24	12/15/2007	Cafeteria-W
SB-3	BORING ABANDONED DUE TO MULTIPLE REFUSALS		
SB-4	20	12/18/2007	Outside Rm. 119
SB-5	20	12/18/2007	Outside Rm. 125
SB-6	24	3/21/2008	Corridor 132
SB-7	20	1/11/2008	Locker Area - SW
SB-8	20	1/11/2008	Locker Area – SW
SB-9	20	1/11/2008	Locker Area – SE
SB-10	20	1/11/2008	Locker Area – SE
SB-11	SOIL BORING REFUSAL AT 4' b.g.s. AFTER 3 ATTEMPTS		
SB-12	24	1/11/2008	Locker Area – Center
SB-13	24	1/11/2008	Locker Area -E
SB-14	20	1/10/2008	Locker Area – Center
SB-15	20	1/10/2008	Locker Area – NE
SB-16	8	1/11/2008	142nd St. Loading Dock
SB-17	3 REFUSALS, BORING ABANDONNED		
SB-18	24	1/10/2008	Locker Area – NW
SB-19	20	1/10/2008	Locker Area - N
SB-20	20	1/10/2008	Locker Area – N
SB-21	20	1/10/2008	Locker Area – NE
SB-22	20	12/10/2007	142nd St. Sidewalk
SB-23	20	12/10/2007	142nd St. Sidewalk
SB-24	20	12/10/2007	141st St. Loading Dock
SB-25	20	12/10/2007	141st St. Loading Dock
SB-26	21	12/13/2007	Corridor 150/Rm. 148
SB-27	21	12/13/2007	Outside Rm. 152
SB-28	26	12/14/2007	Inside Rm. 141
SB-29	21	12/13/2007	Outside Rm. 156
SB-30	24	12/13/2007	Btw Rms. 131 and 133
SB-31	21	12/13/2007	Outside Rm. 107
SB-32	16	3/20/2008	East of Rm. 112
SB-33	16.3	12/9/2009	Outside Rm. 119
SB-34	4.5	12/10/2009	142nd St. Sidewalk
SB-34 Attempt 2	15	12/11/2009	142nd St. Sidewalk
SB-35	20	12/11/2009	142nd St. Sidewalk
SB-36	15	12/11/2009	142nd St. Sidewalk
SB-37	15.25	12/29/2009	Locker Area – NE
SB-38	9	12/29/2009	Locker Area – E
SB-39	15.3	12/29/2009	Locker Area – SE
SB-40	15.25	12/29/2009	Kitchen

Table 1b
2350 Fifth Avenue
New York, NY
Shallow Sub-Slab Core Installation Details

Coring ID	Completion Depth (feet b.g.s.)	Completion Date	Location Description
C-30	3.5	12/1/2009	Kitchen – NW
C-31	6	11/30/2009	Kitchen - Center
C-32	3	11/30/2009	Kitchen – S
C-33	6	12/1/2009	Outside Rm. 119
C-34	6	12/1/2009	Btw Rms. 120 and 129
C-35	3	12/2/2009	Cafeteria – SE
C-36	3.5	12/2/2009	Cafeteria – NE
C-37	2	12/3/2009	Cafeteria – SW
C-38	3.5	12/3/2009	Inside Room 143
C-39	2.5	12/4/2009	Cafeteria – NW
C-40	3	12/4/2009	Btw Cafeteria/Rm. 143
C-41	2.5	12/4/2009	Btw Cafeteria/Rm. 141
C-42A	3.5	12/8/2009	Inside Rm. 119
C-42B	3.5	12/9/2009	Inside Rm. 118
C-43	2	12/9/2009	Outside Rm. 118
C-44	3	12/7/2009	Inside Rm. 141

Table 1c
2350 Fifth Avenue
New York, NY
Groundwater Monitoring Well Installation Details

Monitoring Well	Screened Interval (feet b.g.s.)	Completion Date	Location Description
M-1	10-18	1/22/1998	Northwest Adjacent Parking Lot
M-2	10-20	1/22/1998	Storage Locker Area (On-Site, Northwest)
M-3s	12-22	1/22/1998	Inside Locker 1454 (On-Site, Northwest)
M-3d	16-21	3/24/2008	Inside 142nd St. Loading Dock (On-Site, Northwest)
M-4s	10-18	1/22/1998	141st St. Sidewalk
M-4d	19-24	10/15/2007	141st St. Sidewalk
M-5s	10-18	1/22/1998	5th Ave. Sidewalk- S
M-5d	19-24	10/17/2007	5th Ave. Sidewalk- S
M-6s	10-20	1/23/1998	5th Ave. Sidewalk- N
M-6d	29-34	10/17/2007	5th Ave. Sidewalk- N
M-7	5-20	4/8/2002	142nd Street Sidewalk (North Side)
M-8	5-20	4/8/2002	142nd Street Sidewalk (North Side)
M-9s	6.5-11.5	10/20/2006	143rd Street Sidewalk (South Side)
M-9d	15-20	10/20/2006	143rd Street Sidewalk (South Side)
M-10s	7.5-12.5	10/19/2006	143rd Street Sidewalk (South Side)
M-10d	21-26	10/19/2006	143rd Street Sidewalk (South Side)
M-11s	7-12	10/24/2007	142nd Street Sidewalk
M-11d	14-19	10/24/2007	142nd Street Sidewalk
M-12s	11-16	10/23/2007	142nd Street Sidewalk
M-12d	27-32	10/22/2007	142nd Street Sidewalk
M-13s	9-14	10/19/2007	Chisum Place Sidewalk
M-13d	15-20	10/19/2007	Chisum Place Sidewalk
M-14s	4-9	10/23/2009	North Adjacent Property
M-14d	21-31	10/23/2009	North Adjacent Property

Table 1d
2350 Fifth Avenue
New York, NY
Soil Vapor Monitoring Point Installation Details

Soil Vapor Point	Screened Interval (feet b.g.s.)	Date Instaled	Location
SG-1	5.6-6'	8/3/2006	Off-site, on West 143rd St sidewalk
SG-2	5.6-6'	8/3/2006	Off-site, on West 143rd St sidewalk
SG-3	5.6-6'	8/3/2006	Off-site, across West 142nd Street
SG-4	5.6-6'	8/3/2006	Off-site, across West 142nd Street
SG-5	5.6-6'	8/3/2006	Off-site, across West 142nd Street
SG-6	5.5-6'	2008	On-site, in storage locker room
SG-7	5.5-6'	2008	On-site, on 142nd Street sidewalk
SG-8	5.5-6'	2008	On-site, in storage building
SG-9	5.5-6'	2008	On-site, in storage building
SG-10	5.5-6'	2008	On-site, in storage building
SG-11	5.5-6'	2008	On-site, in storage building
SG-12	5.5-6'	2008	On-site, in storage building
SG-13	5.5-6'	2008	On-site, in south loading dock
SG-14	5.5-6'	2008	On-site, in south loading dock
SG-14a	5'-10'	Apr-May 2009	On-site, in north loading dock
SG-15	3.5'-8.5'	Apr-May 2009	On-site, in north loading dock
SG-16S	1.4'-2.4' (17"-29")	Apr-May 2009	On-site, in storage locker room
SG-16D	9.5'-10'	Apr-May 2009	On-site, in storage locker room
SG-17S	1'-2' (12"-24")	Apr-May 2009	On-site, in storage locker room
SG-17D	9.5'-10'	Apr-May 2009	On-site, in storage locker room
SG-18S	0.3'-0.8' (3.5"-10")	Apr-May 2009	On-site, in Room 118
SG-18I	1.3'-1.7' (16"-20.5")	Apr-May 2009	On-site, in Room 118
SG-18D	4.5'-9.5'	Apr-May 2009	On-site, in Room 118
SG-19S	0.4'-1' (5"-12")	Apr-May 2009	On-site, in Room 118
SG-19I	1.3'-1.6' (15"-19")	Apr-May 2009	On-site, in Room 118
SG-19D	9.5'-10'	Apr-May 2009	On-site, in Room 118
SG-20S	0.4'-0.7' (5"-8")	Apr-May 2009	On-site, in hallway outside Room 118
SG-20D	3.5'-8.5'	Apr-May 2009	On-site, in hallway outside Room 118
SG-21S	1.5'-4.5'	Apr-May 2009	On-site, in hallway outside Room 114
SG-21	3.5-4'	Dec-09	Off-site, across West 142nd Street
SG-22	3.5-4'	Dec-09	Off-site, across Fifth Avenue
SG-23	3.5-4'	Dec-09	Off-site, across Fifth Avenue
SG-24	3.5-4'	Dec-09	Off-site, across Fifth Avenue
SG-25	3.5-4'	Dec-09	Off-site, across West 141st Street
SG-26	3.5-4'	Dec-09	Off-site, across West 141st Street
SG-27	3.5-4'	Dec-09	Off-site, across West 141st Street
SG-28	3.5-4'	Dec-09	Off-site, across West 141st Street
SG-29	3.5-4'	Dec-09	Off-site, across Chisum Place
SG-30	3.5-4'	Dec-09	Off-site, across Chisum Place
SG-31	3.5-4'	Dec-09	Off-site, across Chisum Place
SG-32	3.5-4'	Dec-09	Off-site, inside armory across West 142nd Street
SG-33	3.5-4'	Dec-09	Off-site, inside armory across West 142nd Street
SG-34	3.5-4'	Dec-09	Off-site, inside armory across West 142nd Street
SVE-1	4'-8'	Apr-May 2009	On-site, in north loading dock
SVE-2	4'-12'	Apr-May 2009	On-site, in hallway outside Room 118

Table 2a
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Soil

Sample ID	Collection Date	Sample Matrix	Analysis
M-7(10-12')	3/26/2002	Soil	VOCs (8260)
M-7D(10-12')	3/26/2002	Soil	VOCs (8260)
M-8(10-12')	3/26/2002	Soil	VOCs (8260)
BLIND M-8(10-12')	3/26/2002	Soil	VOCs (8260)
M-11D(10-12')	10/23/2007	Soil	VOCs (8260)
M-11D(12-14')	10/23/2007	Soil	VOCs (8260)
M-12D(10-12')	10/22/2007	Soil	VOCs (8260)
M-12D(14-16')	10/22/2007	Soil	VOCs (8260)
M-14D(0-2.5')	11/23/2009	Soil	VOCs (8260)
M-14D(2.5-5')	11/23/2009	Soil	VOCs (8260)
M-14D(5-7.5')	11/23/2009	Soil	VOCs (8260)
M-14D(7.5-10')	11/23/2009	Soil	VOCs (8260)
M-14D(10-12.5')	11/23/2009	Soil	VOCs (8260)
M-14D(12.5-15')	11/23/2009	Soil	VOCs (8260)
M-14D(15-17.5')	11/23/2009	Soil	VOCs (8260)
M-14D(17.5-20')	11/23/2009	Soil	VOCs (8260)
SB-1 (18'-19')	12/14/2007	Soil	VOCs (8260)
SB-2 (16'-20')	12/17/2007	Soil	VOCs (8260)
SB-2 (21'-22')	12/17/2007	Soil	VOCs (8260)
SB-4 (14'-15')	12/18/2007	Soil	VOCs (8260)
SB-4 (16'-17')	12/18/2007	Soil	VOCs (8260)
SB-5 (15'-16')	12/18/2007	Soil	VOCs (8260)
SB-5 (16'-17')	12/18/2007	Soil	VOCs (8260)
SB-6 (22'-23')	3/21/2008	Soil	VOCs (8260)
SB-7 (15'-16')	1/11/2008	Soil	VOCs (8260)
SB-7 (18'-19')	1/11/2008	Soil	VOCs (8260)
SB-8 (10'-11')	1/11/2008	Soil	VOCs (8260)
SB-8 (15'-16')	1/11/2008	Soil	VOCs (8260)
SB-9 (3'-4')	1/11/2008	Soil	VOCs (8260)
SB-9 (14'-15')	1/11/2008	Soil	VOCs (8260)
SB-10 (8')	1/11/2008	Soil	VOCs (8260)
SB-10 (15')	1/11/2008	Soil	VOCs (8260)
SB-12 (18'-19')	1/11/2008	Soil	VOCs (8260)
SB-12 (20')	1/11/2008	Soil	VOCs (8260)
SB-13 (7'-8')	1/11/2008	Soil	VOCs (8260)
SB-13 (24')	1/11/2008	Soil	VOCs (8260)
SB-14 (12'-13')	1/10/2008	Soil	VOCs (8260)
SB-14 (16.5'-17.5')	1/10/2008	Soil	VOCs (8260)
SB-15 (17')	1/10/2008	Soil	VOCs (8260)
SB-15 (18')	1/10/2008	Soil	VOCs (8260)
SB-16 (7'-8')	1/11/2008	Soil	VOCs (8260)
SB-18 (18'-19')	1/10/2008	Soil	VOCs (8260)
SB-18 (20'-21')	1/10/2008	Soil	VOCs (8260)
SB-19 (16'-17')	1/10/2008	Soil	VOCs (8260)
SB-19 (18')	1/10/2008	Soil	VOCs (8260)
SB-20 (10'-11')	1/10/2008	Soil	VOCs (8260)
SB-20 (12'-13')	1/10/2008	Soil	VOCs (8260)
SB-20 (17'-18')	1/10/2008	Soil	VOCs (8260)

Table 2a
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Soil

Sample ID	Collection Date	Sample Matrix	Analysis
SB-21 (13'-14')	1/11/2008	Soil	VOCs (8260)
SB-21 (16'-17')	1/11/2008	Soil	VOCs (8260)
SB-22 (12'-14')	12/10/2007	Soil	VOCs (8260)
SB-22 (19'-20')	12/10/2007	Soil	VOCs (8260)
SB-23 (14'-15')	12/10/2007	Soil	VOCs (8260)
SB-24 (13'-14')	12/10/2007	Soil	VOCs (8260)
SB-24 (14'-15')	12/10/2007	Soil	VOCs (8260)
SB-25 (5'-6')	12/10/2007	Soil	VOCs (8260)
SB-25 (11'-12')	12/10/2007	Soil	VOCs (8260)
SB-26 (17'-18')	12/13/2007	Soil	VOCs (8260)
SB-27 (19'-20')	12/13/2007	Soil	VOCs (8260)
SB-27 (20'-21')	12/13/2007	Soil	VOCs (8260)
SB-28 (13'-14')	12/13/2007	Soil	VOCs (8260)
SB-28 (20'-21')	12/13/2007	Soil	VOCs (8260)
SB-29 (17'-18')	12/13/2007	Soil	VOCs (8260)
SB-29 (20'-21')	12/13/2007	Soil	VOCs (8260)
SB-30 (17'-18')	12/13/2007	Soil	VOCs (8260)
SB-30 (23'-24')	12/13/2007	Soil	VOCs (8260)
SB-31 (20'-21')	12/13/2007	Soil	VOCs (8260)
SB-32 (3'-4')	3/20/2008	Soil	VOCs (8260)
SB-32 (8'-10')	3/20/2008	Soil	VOCs (8260)
SB-33(0-2')	12/9/2009	Soil	VOCs (8260)
SB-33(2'-4')	12/9/2009	Soil	VOCs (8260)
SB-33(4'-6')	12/9/2009	Soil	VOCs (8260)
SB-33(6'-8')	12/9/2009	Soil	VOCs (8260)
SB-33(8'-10')	12/9/2009	Soil	VOCs (8260)
SB-33(10'-12')	12/9/2009	Soil	VOCs (8260)
SB-33(12'-14')	12/9/2009	Soil	VOCs (8260)
SB-33(14'-16')	12/9/2009	Soil	VOCs (8260)
SB-34(0-2.5')	12/11/2009	Soil	VOCs (8260)
SB-34(2.5'-5')	12/11/2009	Soil	VOCs (8260)
SB-34(5'-7.5')	12/11/2009	Soil	VOCs (8260)
SB-34(7.5'-10')	12/11/2009	Soil	VOCs (8260)
SB-34(10-12.5')	12/11/2009	Soil	VOCs (8260)
SB-34(12.5'-15')	12/11/2009	Soil	VOCs (8260)
SB-34(7.5'-10') DUP	12/11/2009	Soil	VOCs (8260)
SB-35(0-2.5')	12/11/2009	Soil	VOCs (8260)
SB-35(2.5'-5')	12/11/2009	Soil	VOCs (8260)
SB-35(5'-7.5')	12/11/2009	Soil	VOCs (8260)
SB-35(7.5'-10')	12/11/2009	Soil	VOCs (8260)
SB-35(10'-12.5')	12/11/2009	Soil	VOCs (8260)
SB-35(12.5'-15')	12/11/2009	Soil	VOCs (8260)
SB-35(15-17.5')	12/11/2009	Soil	VOCs (8260)
SB-35(17.5'-20')	12/11/2009	Soil	VOCs (8260)
SB-36(0-2.5')	12/11/2009	Soil	VOCs (8260)
SB-36(2.5'-5')	12/11/2009	Soil	VOCs (8260)
SB-36(5'-7.5')	12/11/2009	Soil	VOCs (8260)
SB-36(7.5'-10')	12/11/2009	Soil	VOCs (8260)
SB-36(10'-12.5')	12/11/2009	Soil	VOCs (8260)

Table 2a
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Soil

Sample ID	Collection Date	Sample Matrix	Analysis
SB-36(12.5'-15')	12/11/2009	Soil	VOCs (8260)
SB-37 (1.5-3)	12/29/2009	Soil	VOCs (8260)
SB-37 (4.5-6)	12/29/2009	Soil	VOCs (8260)
SB-37 (6-7.5)	12/29/2009	Soil	VOCs (8260)
SB-37 (7.5-9)	12/29/2009	Soil	VOCs (8260)
SB-37 (9-10.5)	12/29/2009	Soil	VOCs (8260)
SB-37 (10.5-12)	12/29/2009	Soil	VOCs (8260)
SB-37 (12-13.5)	12/29/2009	Soil	VOCs (8260)
SB-37 (13.5-15)	12/29/2009	Soil	VOCs (8260)
SB-38 (1.5-3)	12/29/2009	Soil	VOCs (8260)
SB-38 (3-4.5)	12/29/2009	Soil	VOCs (8260)
SB-38 (4.5-6)	12/29/2009	Soil	VOCs (8260)
SB-38 (6-7.5)	12/29/2009	Soil	VOCs (8260)
SB-38 (7.5-9)	12/29/2009	Soil	VOCs (8260)
SB-39 (0-1.5)	12/29/2009	Soil	VOCs (8260)
SB-39 (1.5-3)	12/29/2009	Soil	VOCs (8260)
SB-39 (3-4.5)	12/29/2009	Soil	VOCs (8260)
SB-39 (4.5-6)	12/29/2009	Soil	VOCs (8260)
SB-39 (6-7.5)	12/29/2009	Soil	VOCs (8260)
SB-39 (7.5-9)	12/29/2009	Soil	VOCs (8260)
SB-39 (9-10.5)	12/29/2009	Soil	VOCs (8260)
SB-39 (10.5-12)	12/29/2009	Soil	VOCs (8260)
SB-39 (12-13.5)	12/29/2009	Soil	VOCs (8260)
SB-39 (13.5-15)	12/29/2009	Soil	VOCs (8260)
SB-40 (0-1.5)	12/29/2009	Soil	VOCs (8260)
SB-40 (3-4.5)	12/29/2009	Soil	VOCs (8260)
SB-40 (4.5-6)	12/29/2009	Soil	VOCs (8260)
SB-40 (6-7.5)	12/29/2009	Soil	VOCs (8260)
SB-40 (7.5-9)	12/29/2009	Soil	VOCs (8260)
SB-40 (9-10.5)	12/29/2009	Soil	VOCs (8260)
SB-40 (10.5-12)	12/29/2009	Soil	VOCs (8260)
SB-40 (12-13.5)	12/29/2009	Soil	VOCs (8260)
SB-40 (13.5-15)	12/29/2009	Soil	VOCs (8260)

Table 2b
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Groundwater

			Analytes												
Sample ID	**Sampling Dates**	**Sample Matrix**	**Alkalinity**	**Chloride**	**Dissolved Iron**	**Methane**	**Nitrate**	**Reduced Fe**	**Reduced Mn**	**Sulfate**	**Sulfide**	**Total Dissolved Solids**	**Total Organic Carbon**	**Total Volatile Solids**	**VOCs (8260)**
M-1	11/7/07, 12/14/09	Groundwater	X			X	X	X	X	X	X				X
M-2	4/8/02, 11/6/07, 12/10/09	Groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X
M-3	4/8/02, 11/6/07, 12/14/09	Groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X
BLIND (M-3)	4/8/02, 12/14/09	Groundwater		X	X	X	X				X	X	X	X	X
M-3D	4/11/08, 12/14/09	Groundwater	X			X	X	X	X	X	X				X
M-4	11/5/07, 12/11/09	Groundwater													X
M-4D	11/5/07, 12/11/09	Groundwater													X
M-5	11/1/07, 12/10/09	Groundwater													X
M-5D	11/1/07, 12/11/09	Groundwater													X
M-6	11/1/07, 12/10/09	Groundwater													X
M-6D	11/1/07, 12/10/09	Groundwater													X
M-7	4/8/2002, 11/5/07, 12/14/09	Groundwater	X	X	X	X	X	X	X	X	X	X	X	X	X
M-8	4/8/2002, 11/6/07, 12/8/09	Groundwater		X	X		X				X	X	X	X	X
M-8D	4/8/02	Groundwater		X	X		X				X	X	X	X	X
M-9S	11/2/07, 12/7/09	Groundwater													X
M-9D	11/2/07, 12/7/09	Groundwater													X
M-10S	11/2/07, 12/3/09	Groundwater													X
M-10D	11/2/07, 12/3/09	Groundwater													X
M-11S	11/6/07, 12/9/09	Groundwater	X			X	X	X	X	X	X				X
M-11D	11/6/07, 12/9/09	Groundwater	X			X	X	X	X	X	X				X
M-12D	11/7/07, 12/9/09	Groundwater	X			X	X	X	X	X	X				X
M-13S	10/31/07, 12/11/09	Groundwater													X
M-13D	10/31/07, 12/11/09	Groundwater													X
M-14S	12/8/09	Groundwater	X			X	X	X	X	X	X				X
M-14D	12/7/09	Groundwater	X			X	X	X	X	X	X				X

Table 2c
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Soil Vapor

Sample ID	Collection Date	Sample Matrix	Analysis
SG-1	8/8/2006	soil vapor	VOCs (TO-15)
SG-2	8/8/2006	soil vapor	VOCs (TO-15)
SG-3	8/8/2006	soil vapor	VOCs (TO-15)
SG-4	8/8/2006	soil vapor	VOCs (TO-15)
SG-5	8/8/2006	soil vapor	VOCs (TO-15)
SG-6	1/18/2008	soil vapor	VOCs (TO-15)
SG-7	1/18/2008	soil vapor	VOCs (TO-15)
SG-8	1/17/2008	soil vapor	VOCs (TO-15)
SG-9	1/17/2008	soil vapor	VOCs (TO-15)
SG-10	1/17/2008	soil vapor	VOCs (TO-15)
SG-11	1/17/2008	soil vapor	VOCs (TO-15)
SG-12	1/17/2008	soil vapor	VOCs (TO-15)
SG-13	1/17/2008	soil vapor	VOCs (TO-15)
SG-14	1/18/2008	soil vapor	VOCs (TO-15)
SG-22	11/30/2009	soil vapor	VOCs (TO-15)
SG-23	11/30/2009	soil vapor	VOCs (TO-15)
SG-24	12/1/2009	soil vapor	VOCs (TO-15)
SG-25	11/30/2009	soil vapor	VOCs (TO-15)
SG-26	11/30/2009	soil vapor	VOCs (TO-15)
SG-27	11/30/2009	soil vapor	VOCs (TO-15)
SG-28	11/30/2009	soil vapor	VOCs (TO-15)
SG-29	11/30/2009	soil vapor	VOCs (TO-15)
SG-30	12/1/2009	soil vapor	VOCs (TO-15)
SG-31	12/1/2009	soil vapor	VOCs (TO-15)
SG-32	11/24/2009	soil vapor	VOCs (TO-15)
SG-33	11/24/2009	soil vapor	VOCs (TO-15)
SG-34	11/24/2009	soil vapor	VOCs (TO-15)

Table 2d
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Indoor Air

Sample ID	2/18/2006	8/1/2006	12/15/2006	1/26/2007	10/4/2007	3/11/2008	7/3/2008	10/8/2008	1/23/2009	6/2/2009	9/29/2009	11/24/2009	4/9/2010	7/30/2010	10/26/2010	12/7/2010	1/31/2011	4/29/2011
	Sampling Dates																	
Room 112	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X
Room 129	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Room 131	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Corridor Outside Room 118	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Cafeteria	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Old Boiler Room/Basement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Locker 1454			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Between Lockers 1130/1131								X	X	X	X	X	X	X	X		X	X
Corridor outside Room 129/130			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sales Office (Kitchen)				X			X	X	X	X	X	X	X	X	X		X	X

NOTE: All samples collected were analyzed for tetrachloroethene (PCE), trichloroethene (TCE), 1,1-Dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE,and vinyl chloride by EPA Method TO-15 (short list). All samples were collected using 6L Summa Canisters calibrated for an 8-hour sampling period.

Table 2e
2350 Fifth Avenue
New York, NY
Chemical Analysis of Sampled Media - Sub-Slab Insulation Material

Sample ID	Collection Date	Sample Matrix	Analysis
C-30(0.5-1.5')	12/1/2009	Sub-Slab Insulation	VOCs (8260)
C-32(1.5-2.5')	11/30/2009	Sub-Slab Insulation	VOCs (8260)
C-34(2-3')	12/2/2009	Sub-Slab Insulation	VOCs (8260)
C-36(1.5-2.5')	12/2/2009	Sub-Slab Insulation	VOCs (8260)
C-37(1-2')	12/3/2009	Sub-Slab Insulation	VOCs (8260)
C-39(1.5-2.5')	12/4/2009	Sub-Slab Insulation	VOCs (8260)
C-40(1.5-2.5')	12/4/2009	Sub-Slab Insulation	VOCs (8260)
C-41(1.5-2.5')	12/4/2009	Sub-Slab Insulation	VOCs (8260)
C-42A(2-2.5')	12/8/2009	Sub-Slab Insulation	VOCs (8260)
C-42B(2-2.5')	12/8/2009	Sub-Slab Insulation	VOCs (8260)
C-43(1-2')	12/9/2009	Sub-Slab Insulation	VOCs (8260)
C-44(2-3')	12/7/2009	Sub-Slab Insulation	VOCs (8260)
SB-40(1.5-3')	12/29/2009	Sub-Slab Insulation	VOCs (8260)

Table 3
2350 Fifth Avenue
New York, NY
Monitoring Well Summary and Groundwater Elevations

Wells	Top of Casing (TOC) (feet elevation)	Depth to Water (feet below TOC)				
		11/14/2006	*10/31/2007*	*4/3/2008*	*11/6/2009*	*12/1/2009 to 12/15/2009*
M-1	8.39	9.51	9.9	10.06	9.98	9.71
M-2	10.58	12.45	12.74	12.69	12.83	12.47
M-3	10.79	10.33	11.14	11.13	11.13	11.14
M-3d	--	--	--	8.45	8.67	8.49
M-4	7.28	8.57	9.21	9.14	9.2	9.3
M-4d	7.77	--	8.26	8.21	8.5	8.39
M-5	6.37	7.63	8.95	9.65	8.9	7.79
M-5d	6.43	--	15.55	8.26	7.75	8.2
M-6	6.37	7.39	8.12	8.11	8.09	7.47
M-6d	6.38	--	10.05	8.05	7.3	7.12
M-7	7.77	9.7	10.04	10.06	10.08	9.91
M-8	6.96	9.57	9.81	9.85	9.63	9.66
M-9s	7.42	7.2	7.98	8.01	8.14	7.72
M-9d	7.81	7.63	8.43	8.45	8.59	8.47
M-10s	6.26	5.53	4.55	5.62	5.05	3.7
M-10d	7.11	6.82	4.21	8	7.9	8.9
M-11s	7.83	--	10.04	10.01	9.9	9.58
M-11d	7.62	--	8.22	8.15	8.17	8.18
M-12s	7.08	--	9.52	9.81	--	8.66
M-12d	7.01	--	8.96	7.24	8.7	7.71
M-13s	9.93	--	9.88	9.67	10.06	9.78
M-13d	9.97	--	9.88	9.67	10.08	9.78
M-14s	5.49	--	--	--	--	7.49
M-14d	5.46	--	--	--	--	6.32

Notes:

All elevations refer to the Borough of Manhattan Topographical Bureau Datum, which is 2.75 feet above mean sea level at Sandy Hook N.J. as established by the U.S. Coast and Geodetic Survey in 1929.

-- = Data not available (not measured/not accessible).

TOC: Top of casing.

Table 3
2350 Fifth Avenue
New York, NY
Monitoring Well Summary and Groundwater Elevations

Wells	Top of Casing (TOC) (feet elevation)	Water Table Elevation (feet elevation)				
		11/14/2006	*10/31/2007*	*4/3/2008*	*11/6/2009*	*12/1/2009 to 12/15/2009*
M-1	8.39	-1.12	-1.51	-1.67	-1.59	-1.32
M-2	10.58	-1.87	-2.16	-2.11	-2.25	-1.89
M-3	10.79	0.46	-0.35	-0.34	-0.34	-0.35
M-3d	--	--	--	--	--	--
M-4	7.28	-1.29	-1.93	-1.86	-1.92	-2.02
M-4d	7.77	--	-0.49	-0.44	-0.73	-0.62
M-5	6.37	-1.26	-2.58	-3.28	-2.53	-1.42
M-5d	6.43	--	-9.12	-1.83	-1.32	-1.77
M-6	6.37	-1.02	-1.75	-1.74	-1.72	-1.1
M-6d	6.38	--	-3.67	-1.67	-0.92	-0.74
M-7	7.77	-1.93	-2.27	-2.29	-2.31	-2.14
M-8	6.96	-2.61	-2.85	-2.89	-2.67	-2.7
M-9s	7.42	0.22	-0.56	-0.59	-0.72	-0.3
M-9d	7.81	0.18	-0.62	-0.64	-0.78	-0.66
M-10s	6.26	0.73	1.71	0.64	1.21	2.56
M-10d	7.11	0.29	2.9	-0.89	-0.79	-1.79
M-11s	7.83	--	-2.21	-2.18	-2.07	-1.75
M-11d	7.62	--	-0.6	-0.53	-0.55	-0.56
M-12s	7.08	--	-2.44	-2.73	--	-1.58
M-12d	7.01	--	-1.95	-0.23	-1.69	-0.7
M-13s	9.93	--	0.05	0.26	-0.13	0.15
M-13d	9.97	--	0.09	0.3	-0.11	0.19
M-14s	5.49	--	--	--	--	-2
M-14d	5.46	--	--	--	--	-0.86

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-1 (18'-19') L0718726-18 12/14/2007	SB-2 (16'-20') L0718966-01 12/17/2007	SB-2 (21'-22') L0718966-02 12/17/2007	SB-4 (14'-15') L0718966-03 12/18/2007	SB-4 (16'-17') L0718966-04 12/18/2007	SB-5 (15'-16') L0718966-06 12/18/2007	SB-5 (16'-17') L0718966-05 12/18/2007
1,1,1,2-Tetrachloroethane	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,1,1-Trichloroethane	**0.68**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,1,2,2-Tetrachloroethane	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,1,2-Trichloroethane	**NS**	0.0045 U	0.0048 U	0.0049 U	0.0058 U	0.0045 U	0.0065 U	0.0046 U
1,1-Dichloroethane	**0.27**	0.0045 U	0.0048 U	0.0049 U	0.0058 U	0.0045 U	0.0065 U	0.0046 U
1,1-Dichloroethene	**0.33**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,1-Dichloropropene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2,3-Trichlorobenzene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2,4,5-Tetramethylbenzene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,2,4-Trichlorobenzene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2,4-Trimethylbenzene	**3.6**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2-Dibromo-3-chloropropane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2-Dibromoethane	**NS**	0.012 U	0.013 U	0.013 U	0.015 U	0.012 U	0.017 U	0.012 U
1,2-Dichlorobenzene	**1.1**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,2-Dichloroethane	**0.02**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
1,2-Dichloropropane	**NS**	0.01 U	0.011 U	0.012 U	0.013 U	0.01 U	0.015 U	0.011 U
1,3,5-Trimethylbenzene	**8.4**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,3-Dichlorobenzene	**2.4**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,3-Dichloropropane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,4-Dichlorobenzene	**1.8**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
1,4-Diethylbenzene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
2,2-Dichloropropane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
2-Butanone	**0.12**	0.03 U	0.032 U	0.033 U	0.072	0.03 U	0.043 U	0.031 U
2-Hexanone	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
4-Ethyltoluene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
4-Methyl-2-pentanone	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
Acetone	**0.05**	0.03 U	**0.076**	0.033 U	**0.41**	0.03 U	**0.31**	0.031 U
Benzene	**0.06**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Bromobenzene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
Bromochloromethane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
Bromodichloromethane	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Bromoform	**NS**	0.012 U	0.013 U	0.013 U	0.015 U	0.012 U	0.017 U	0.012 U
Bromomethane	**NS**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
Carbon disulfide	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
Carbon tetrachloride	**0.76**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Chlorobenzene	**1.1**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Chloroethane	**NS**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
Chloroform	**0.37**	0.0045 U	0.0048 U	0.0049 U	0.0058 U	0.0045 U	0.0065 U	0.0046 U
Chloromethane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
cis-1,2-Dichloroethene	**0.25**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
cis-1,3-Dichloropropene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Dibromochloromethane	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Dibromomethane	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
Dichlorodifluoromethane	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
Ethylbenzene	**1**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Hexachlorobutadiene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
Isopropylbenzene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Methyl tert butyl ether	**0.93**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
Methylene chloride	**0.05**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
n-Butylbenzene	**12**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
n-Propylbenzene	**3.9**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Naphthalene	**12**	0.015 U	0.016 U	0.017	0.019 U	0.015 U	0.022 U	0.015 U
o-Chlorotoluene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
o-Xylene	**1.6**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
p-Chlorotoluene	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
p-Isopropyltoluene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
p/m-Xylene	**1.6**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
sec-Butylbenzene	**11**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Styrene	**NS**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
tert-Butylbenzene	**5.9**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
Tetrachloroethene	**1.3**	0.003 U	0.0037	0.0052	0.0038 U	0.0081	0.0043 U	0.0031 U
Toluene	**0.7**	0.0045 U	0.0048 U	0.0049 U	0.0058 U	0.0045 U	0.0065 U	0.0046 U
trans-1,2-Dichloroethene	**0.19**	0.0045 U	0.0048 U	0.0049 U	0.0058 U	0.0045 U	0.0065 U	0.0046 U
trans-1,3-Dichloropropene	**NS**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Trichloroethene	**0.47**	0.003 U	0.0032 U	0.0033 U	0.0038 U	0.003 U	0.0043 U	0.0031 U
Trichlorofluoromethane	**NS**	0.015 U	0.016 U	0.016 U	0.019 U	0.015 U	0.022 U	0.015 U
Vinyl acetate	**NS**	0.03 U	0.032 U	0.033 U	0.038 U	0.03 U	0.043 U	0.031 U
Vinyl chloride	**0.02**	0.006 U	0.0064 U	0.0066 U	0.0077 U	0.006 U	0.0086 U	0.0062 U
Xylenes, Total	**1.6**	0.012 U	0.0128 U	0.0132 U	0.0154 U	0.012 U	0.0172 U	0.0124 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-6 (22'-23') L0804083-03 3/21/2008	SB-7 (15'-16') L0800656-18 1/11/2008	SB-7 (18'-19') L0800656-17 1/11/2008	SB-8 (10'-11') L0800656-28 1/11/2008	SB-8 (15'-16') L0800656-27 1/11/2008	SB-9 (3'-4') L0800656-20 1/11/2008	SB-9 (14'-15') L0800656-19 1/11/2008
1,1,1,2-Tetrachloroethane	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,1,1-Trichloroethane	0.68	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,1,2,2-Tetrachloroethane	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,1,2-Trichloroethane	NS	0.0043 U	0.0052 U	0.0044 U	0.0042 U	0.011 U	0.0044 U	0.0046 U
1,1-Dichloroethane	0.27	0.0043 U	0.0052 U	0.0044 U	0.0042 U	0.011 U	0.0044 U	0.0046 U
1,1-Dichloroethene	0.33	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,1-Dichloropropene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2,3-Trichlorobenzene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2,4,5-Tetramethylbenzene	NS	0.0028 U	0.0035 U	0.02	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,2,4-Trichlorobenzene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2,4-Trimethylbenzene	3.6	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2-Dibromo-3-chloropropane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2-Dibromoethane	NS	0.011 U	0.014 U	0.012 U	0.011 U	0.03 U	0.012 U	0.012 U
1,2-Dichlorobenzene	1.1	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,2-Dichloroethane	0.02	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
1,2-Dichloropropane	NS	0.0099 U	0.012 U	0.01 U	0.0097 U	0.026 U	0.01 U	0.011 U
1,3,5-Trimethylbenzene	8.4	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,3-Dichlorobenzene	2.4	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,3-Dichloropropane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,4-Dichlorobenzene	1.8	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
1,4-Diethylbenzene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
2,2-Dichloropropane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
2-Butanone	0.12	0.028 U	0.082	0.029 U	0.028 U	**0.13**	0.029 U	0.03 U
2-Hexanone	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
4-Ethyltoluene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
4-Methyl-2-pentanone	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
Acetone	0.05	**0.054**	**0.44**	0.045	0.028 U	**0.94**	0.029 U	**0.053**
Benzene	0.06	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Bromobenzene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
Bromochloromethane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
Bromodichloromethane	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Bromoform	NS	0.011 U	0.014 U	0.012 U	0.011 U	0.03 U	0.012 U	0.012 U
Bromomethane	NS	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
Carbon disulfide	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
Carbon tetrachloride	0.76	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Chlorobenzene	1.1	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Chloroethane	NS	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
Chloroform	0.37	0.0043 U	0.0052 U	0.0044 U	0.0042 U	0.011 U	0.0044 U	0.0046 U
Chloromethane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
cis-1,2-Dichloroethene	0.25	0.0028 U	0.0035 U	0.0029 U	0.0092	0.0075 U	0.0081	0.014
cis-1,3-Dichloropropene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Dibromochloromethane	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Dibromomethane	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
Dichlorodifluoromethane	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
Ethylbenzene	1	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Hexachlorobutadiene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
Isopropylbenzene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Methyl tert butyl ether	0.93	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
Methylene chloride	0.05	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
n-Butylbenzene	12	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
n-Propylbenzene	3.9	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Naphthalene	12	0.022	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
o-Chlorotoluene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
o-Xylene	1.6	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
p-Chlorotoluene	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
p-Isopropyltoluene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
p/m-Xylene	1.6	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
sec-Butylbenzene	11	0.0028 U	0.0035 U	0.0065	0.0028 U	0.0075 U	0.0029 U	0.003 U
Styrene	NS	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
tert-Butylbenzene	5.9	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
Tetrachloroethene	1.3	0.0028 U	0.0035 U	0.0037	0.027	0.0075 U	0.27	0.24
Toluene	0.7	0.0043 U	0.0052 U	0.0044 U	0.0042 U	0.011 U	0.0044 U	0.0046 U
trans-1,2-Dichloroethene	0.19	0.0043 U	0.0052 U	0.0044 U	0.0042 U	0.011 U	0.0044 U	0.0046 U
trans-1,3-Dichloropropene	NS	0.0028 U	0.0035 U	0.0029 U	0.0028 U	0.0075 U	0.0029 U	0.003 U
Trichloroethene	0.47	0.0028 U	0.0035 U	0.0029 U	0.022	0.0075 U	0.042	0.066
Trichlorofluoromethane	NS	0.014 U	0.017 U	0.015 U	0.014 U	0.037 U	0.015 U	0.015 U
Vinyl acetate	NS	0.028 U	0.035 U	0.029 U	0.028 U	0.075 U	0.029 U	0.03 U
Vinyl chloride	0.02	0.0057 U	0.0069 U	0.0059 U	0.0056 U	0.015 U	0.0059 U	0.0061 U
Xylenes, Total	1.6	0.0114 U	0.0138 U	0.0118 U	0.0112 U	0.03 U	0.0118 U	0.0122 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-10 (8') L0800656-25 1/11/2008	SB-10 (15') L0800656-26 1/11/2008	SB-12 (18'-19') L0800656-22 1/11/2008	SB-12 (20') L0800656-21 1/11/2008	SB-13 (7'-8') L0800656-15 1/11/2008	SB-13 (24') L0800656-13 1/11/2008	SB-14 (12'-13') L0800656-12 1/10/2008
1,1,1,2-Tetrachloroethane	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,1,1-Trichloroethane	**0.68**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,1,2,2-Tetrachloroethane	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,1,2-Trichloroethane	**NS**	0.0043 U	0.016 U	0.0045 U	0.0045 U	0.0043 U	0.0039 U	0.0042 U
1,1-Dichloroethane	**0.27**	0.0043 U	0.016 U	0.0045 U	0.0045 U	0.0043 U	0.0039 U	0.0042 U
1,1-Dichloroethene	**0.33**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,1-Dichloropropene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2,3-Trichlorobenzene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2,4,5-Tetramethylbenzene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,2,4-Trichlorobenzene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2,4-Trimethylbenzene	**3.6**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2-Dibromo-3-chloropropane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2-Dibromoethane	**NS**	0.011 U	0.042 U	0.012 U	0.012 U	0.011 U	0.01 U	0.011 U
1,2-Dichlorobenzene	**1.1**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,2-Dichloroethane	**0.02**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
1,2-Dichloropropane	**NS**	0.0099 U	0.037 U	0.01 U	0.01 U	0.0099 U	0.0092 U	0.0098 U
1,3,5-Trimethylbenzene	**8.4**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,3-Dichlorobenzene	**2.4**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,3-Dichloropropane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,4-Dichlorobenzene	**1.8**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
1,4-Diethylbenzene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
2,2-Dichloropropane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
2-Butanone	**0.12**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
2-Hexanone	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
4-Ethyltoluene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
4-Methyl-2-pentanone	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
Acetone	**0.05**	0.028 U	0.11 U	**0.068**	0.03 U	0.028 U	0.026 U	0.028 U
Benzene	**0.06**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Bromobenzene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
Bromochloromethane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
Bromodichloromethane	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Bromoform	**NS**	0.011 U	0.042 U	0.012 U	0.012 U	0.011 U	0.01 U	0.011 U
Bromomethane	**NS**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
Carbon disulfide	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
Carbon tetrachloride	**0.76**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Chlorobenzene	**1.1**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Chloroethane	**NS**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
Chloroform	**0.37**	0.0043 U	0.016 U	0.0045 U	0.0045 U	0.0043 U	0.0039 U	0.0042 U
Chloromethane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
cis-1,2-Dichloroethene	**0.25**	**0.3**	0.011 U	0.003 U	0.003 U	0.027	0.071	0.0028 U
cis-1,3-Dichloropropene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Dibromochloromethane	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Dibromomethane	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
Dichlorodifluoromethane	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
Ethylbenzene	**1**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Hexachlorobutadiene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
Isopropylbenzene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Methyl tert butyl ether	**0.93**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
Methylene chloride	**0.05**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
n-Butylbenzene	**12**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
n-Propylbenzene	**3.9**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Naphthalene	**12**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
o-Chlorotoluene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
o-Xylene	**1.6**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
p-Chlorotoluene	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
p-Isopropyltoluene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
p/m-Xylene	**1.6**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
sec-Butylbenzene	**11**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Styrene	**NS**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.0053 U	0.0056 U
tert-Butylbenzene	**5.9**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
Tetrachloroethene	**1.3**	**27**	0.76	0.066	0.003 U	0.38	0.38	0.0095
Toluene	**0.7**	0.0043 U	0.016 U	0.0045 U	0.0045 U	0.0043 U	0.0039 U	0.0042 U
trans-1,2-Dichloroethene	**0.19**	0.0043 U	0.016 U	0.0045 U	0.0045 U	0.0043 U	0.0039 U	0.0042 U
trans-1,3-Dichloropropene	**NS**	0.0028 U	0.011 U	0.003 U	0.003 U	0.0028 U	0.0026 U	0.0028 U
Trichloroethene	**0.47**	0.32	0.017	0.003 U	0.003 U	0.063	0.063	0.0028 U
Trichlorofluoromethane	**NS**	0.014 U	0.053 U	0.015 U	0.015 U	0.014 U	0.013 U	0.014 U
Vinyl acetate	**NS**	0.028 U	0.11 U	0.03 U	0.03 U	0.028 U	0.026 U	0.028 U
Vinyl chloride	**0.02**	0.0057 U	0.021 U	0.006 U	0.006 U	0.0057 U	0.012	0.0056 U
Xylenes, Total	**1.6**	0.0114 U	0.0114 U	0.012 U	0.012 U	0.0114 U	0.0106 U	0.0112 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-14 (16.5'-17.5') L0800656-11 1/10/2008	SB-15 (17') L0800656-16 1/10/2008	SB-15 (18') L0800656-14 1/10/2008	SB-16 (7'-8') L0800656-10 1/11/2008	SB-18 (18'-19') L0800656-07 1/10/2008	SB-18 (20'-21') L0800656-08 1/10/2008	SB-19 (16'-17') L0800656-06 1/10/2008
1,1,1,2-Tetrachloroethane	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,1,1-Trichloroethane	0.68	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,1,2,2-Tetrachloroethane	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,1,2-Trichloroethane	NS	0.0047 U	0.0079 U	0.0045 U	0.0046 U	0.0044 U	0.0047 U	0.0046 U
1,1-Dichloroethane	0.27	0.0047 U	0.0079 U	0.0045 U	0.0046 U	0.0044 U	0.0047 U	0.0046 U
1,1-Dichloroethene	0.33	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,1-Dichloropropene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2,3-Trichlorobenzene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2,4,5-Tetramethylbenzene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,2,4-Trichlorobenzene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2,4-Trimethylbenzene	3.6	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2-Dibromo-3-chloropropane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2-Dibromoethane	NS	0.012 U	0.021 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U
1,2-Dichlorobenzene	1.1	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,2-Dichloroethane	0.02	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
1,2-Dichloropropane	NS	0.011 U	0.018 U	0.01 U	0.011 U	0.01 U	0.011 U	0.011 U
1,3,5-Trimethylbenzene	8.4	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,3-Dichlorobenzene	2.4	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,3-Dichloropropane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,4-Dichlorobenzene	1.8	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
1,4-Diethylbenzene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
2,2-Dichloropropane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
2-Butanone	0.12	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
2-Hexanone	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
4-Ethyltoluene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
4-Methyl-2-pentanone	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
Acetone	0.05	0.031 U	0.053 U	0.05	0.03 U	0.029 U	0.031 U	0.03 U
Benzene	0.06	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Bromobenzene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
Bromochloromethane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
Bromodichloromethane	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Bromoform	NS	0.012 U	0.021 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U
Bromomethane	NS	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
Carbon disulfide	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
Carbon tetrachloride	0.76	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Chlorobenzene	1.1	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Chloroethane	NS	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
Chloroform	0.37	0.0047 U	0.0079 U	0.0045 U	0.0046 U	0.0044 U	0.0047 U	0.0046 U
Chloromethane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
cis-1,2-Dichloroethene	0.25	0.0031 U	0.03	**0.35**	0.003	0.0029 U	0.0031 U	0.003 U
cis-1,3-Dichloropropene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Dibromochloromethane	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Dibromomethane	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
Dichlorodifluoromethane	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
Ethylbenzene	1	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Hexachlorobutadiene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
Isopropylbenzene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Methyl tert butyl ether	0.93	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
Methylene chloride	0.05	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
n-Butylbenzene	12	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
n-Propylbenzene	3.9	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Naphthalene	12	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
o-Chlorotoluene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
o-Xylene	1.6	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
p-Chlorotoluene	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
p-Isopropyltoluene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
p/m-Xylene	1.6	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
sec-Butylbenzene	11	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Styrene	NS	0.0062 U	0.01 U	0.006 U	0.0061 U	0.0059 U	0.0062 U	0.0061 U
tert-Butylbenzene	5.9	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
Tetrachloroethene	1.3	0.0049	0.36	0.55	0.044	0.0042	0.0042	0.0086
Toluene	0.7	0.0047 U	0.0079 U	0.0045 U	0.0046 U	0.0044 U	0.0047 U	0.0046 U
trans-1,2-Dichloroethene	0.19	0.0047 U	0.0079 U	0.0045 U	0.0046 U	0.0044 U	0.0047 U	0.0046 U
trans-1,3-Dichloropropene	NS	0.0031 U	0.0053 U	0.003 U	0.003 U	0.0029 U	0.0031 U	0.003 U
Trichloroethene	0.47	0.0031 U	0.0084	0.015	0.003 U	0.0029 U	0.0031 U	0.003 U
Trichlorofluoromethane	NS	0.016 U	0.026 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U
Vinyl acetate	NS	0.031 U	0.053 U	0.03 U	0.03 U	0.029 U	0.031 U	0.03 U
Vinyl chloride	0.02	0.0062 U	0.01 U	**0.15**	0.0061 U	0.0059 U	0.0062 U	0.0061 U
Xylenes, Total	1.6	0.0124 U	0.02 U	0.012 U	0.0122 U	0.0118 U	0.0124 U	0.0122 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-19 (18') L0800656-05 1/10/2008	SB-20 (10'-11') L0800656-09 1/10/2008	SB-20 (12'-13') L0800656-04 1/10/2008	SB-20 (17'-18') L0800656-03 1/10/2008	SB-21 (13'-14') L0800656-24 1/11/2008	SB-21 (16'-17') L0800656-23 1/11/2008	SB-22 (12'-14') L0718726-02 12/10/2007
1,1,1,2-Tetrachloroethane	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,1,1-Trichloroethane	**0.68**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,1,2,2-Tetrachloroethane	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,1,2-Trichloroethane	**NS**	0.0046 U	0.0043 U	0.004 U	0.0043 U	0.0078 U	0.0045 U	0.0047 U
1,1-Dichloroethane	**0.27**	0.0046 U	0.0043 U	0.004 U	0.0043 U	0.0078 U	0.0045 U	0.0047 U
1,1-Dichloroethene	**0.33**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,1-Dichloropropene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2,3-Trichlorobenzene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2,4,5-Tetramethylbenzene	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,2,4-Trichlorobenzene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2,4-Trimethylbenzene	**3.6**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2-Dibromo-3-chloropropane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2-Dibromoethane	**NS**	0.012 U	0.011 U	0.011 U	0.011 U	0.021 U	0.012 U	0.012 U
1,2-Dichlorobenzene	**1.1**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,2-Dichloroethane	**0.02**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
1,2-Dichloropropane	**NS**	0.011 U	0.0099 U	0.0094 U	0.0099 U	0.018 U	0.01 U	0.011 U
1,3,5-Trimethylbenzene	**8.4**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,3-Dichlorobenzene	**2.4**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,3-Dichloropropane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,4-Dichlorobenzene	**1.8**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
1,4-Diethylbenzene	**NS**	0.0031 U	0.0054	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
2,2-Dichloropropane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
2-Butanone	**0.12**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
2-Hexanone	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
4-Ethyltoluene	**NS**	0.0031 U	0.0039	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
4-Methyl-2-pentanone	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
Acetone	**0.05**	0.031 U	0.028 U	0.027 U	0.028 U	**0.21**	0.03 U	**0.055**
Benzene	**0.06**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Bromobenzene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
Bromochloromethane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
Bromodichloromethane	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Bromoform	**NS**	0.012 U	0.011 U	0.011 U	0.011 U	0.021 U	0.012 U	0.012 U
Bromomethane	**NS**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
Carbon disulfide	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
Carbon tetrachloride	**0.76**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Chlorobenzene	**1.1**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Chloroethane	**NS**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
Chloroform	**0.37**	0.0046 U	0.0043 U	0.004 U	0.0043 U	0.0078 U	0.0045 U	0.0047 U
Chloromethane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
cis-1,2-Dichloroethene	**0.25**	0.0031 U	0.0028 U	0.0034	0.014	**0.32**	0.037	0.0031 U
cis-1,3-Dichloropropene	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Dibromochloromethane	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Dibromomethane	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
Dichlorodifluoromethane	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
Ethylbenzene	**1**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Hexachlorobutadiene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
Isopropylbenzene	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Methyl tert butyl ether	**0.93**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
Methylene chloride	**0.05**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
n-Butylbenzene	**12**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
n-Propylbenzene	**3.9**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Naphthalene	**12**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
o-Chlorotoluene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
o-Xylene	**1.6**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
p-Chlorotoluene	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
p-Isopropyltoluene	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
p/m-Xylene	**1.6**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
sec-Butylbenzene	**11**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Styrene	**NS**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	0.01 U	0.006 U	0.0062 U
tert-Butylbenzene	**5.9**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
Tetrachloroethene	**1.3**	0.0039	0.041	0.05	0.074	0.0064	0.15	0.013
Toluene	**0.7**	0.0046 U	0.0043 U	0.004 U	0.0043 U	0.0078 U	0.0045 U	0.0047 U
trans-1,2-Dichloroethene	**0.19**	0.0046 U	0.0043 U	0.004 U	0.0043 U	0.0078 U	0.0045 U	0.0047 U
trans-1,3-Dichloropropene	**NS**	0.0031 U	0.0028 U	0.0027 U	0.0028 U	0.0052 U	0.003 U	0.0031 U
Trichloroethene	**0.47**	0.0031 U	0.0028 U	0.0027 U	0.0078	0.0052 U	0.003 U	0.0031 U
Trichlorofluoromethane	**NS**	0.015 U	0.014 U	0.013 U	0.014 U	0.026 U	0.015 U	0.016 U
Vinyl acetate	**NS**	0.031 U	0.028 U	0.027 U	0.028 U	0.052 U	0.03 U	0.031 U
Vinyl chloride	**0.02**	0.0062 U	0.0057 U	0.0054 U	0.0057 U	**0.45**	0.006 U	0.0062 U
Xylenes, Total	**1.6**	0.0124 U	0.0114 U	0.0108 U	0.0114 U	0.02 U	0.012 U	0.0124 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-22 (19'-20') L0718726-01 12/10/2007	SB-23 (14'-15') L0718726-03 12/10/2007	SB-24 (13'-14') L0718726-04 12/10/2007	SB-24 (14'-15') L0718726-05 12/10/2007	SB-25 (5'-6') L0718726-07 12/10/2007	SB-25 (11'-12') L0718726-06 12/10/2007	SB-26 (17'-18') L0718726-08 12/13/2007
1,1,1,2-Tetrachloroethane	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,1,1-Trichloroethane	0.68	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,1,2,2-Tetrachloroethane	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,1,2-Trichloroethane	NS	0.0044 U	1 U	0.0043 U	0.0045 U	0.0047 U	0.0046 U	0.0045 U
1,1-Dichloroethane	0.27	0.0044 U	1 U	0.0043 U	0.0045 U	0.0047 U	0.0046 U	0.0045 U
1,1-Dichloroethene	0.33	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,1-Dichloropropene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2,3-Trichlorobenzene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2,4,5-Tetramethylbenzene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,2,4-Trichlorobenzene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2,4-Trimethylbenzene	3.6	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2-Dibromo-3-chloropropane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2-Dibromoethane	NS	0.012 U	2.8 U	0.011 U	0.012 U	0.013 U	0.012 U	0.012 U
1,2-Dichlorobenzene	1.1	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,2-Dichloroethane	0.02	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
1,2-Dichloropropane	NS	0.01 U	2.5 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.01 U
1,3,5-Trimethylbenzene	8.4	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,3-Dichlorobenzene	2.4	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,3-Dichloropropane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,4-Dichlorobenzene	1.8	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
1,4-Diethylbenzene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
2,2-Dichloropropane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
2-Butanone	0.12	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
2-Hexanone	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
4-Ethyltoluene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
4-Methyl-2-pentanone	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Acetone	0.05	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Benzene	0.06	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Bromobenzene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
Bromochloromethane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
Bromodichloromethane	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Bromoform	NS	0.012 U	2.8 U	0.011 U	0.012 U	0.013 U	0.012 U	0.012 U
Bromomethane	NS	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
Carbon disulfide	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Carbon tetrachloride	0.76	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Chlorobenzene	1.1	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Chloroethane	NS	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
Chloroform	0.37	0.0044 U	1 U	0.0043 U	0.0045 U	0.0047 U	0.0046 U	0.0045 U
Chloromethane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
cis-1,2-Dichloroethene	0.25	0.0029 U	**14**	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
cis-1,3-Dichloropropene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Dibromochloromethane	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Dibromomethane	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Dichlorodifluoromethane	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Ethylbenzene	1	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Hexachlorobutadiene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
Isopropylbenzene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Methyl tert butyl ether	0.93	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
Methylene chloride	0.05	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
n-Butylbenzene	12	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
n-Propylbenzene	3.9	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Naphthalene	12	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
o-Chlorotoluene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
o-Xylene	1.6	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
p-Chlorotoluene	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
p-Isopropyltoluene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
p/m-Xylene	1.6	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
sec-Butylbenzene	11	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Styrene	NS	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
tert-Butylbenzene	5.9	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
Tetrachloroethene	1.3	0.0029 U	**79**	0.0066	0.003 U	0.0032 U	0.0031 U	0.003 U
Toluene	0.7	0.0044 U	1 U	0.0043 U	0.0045 U	0.0047 U	0.0046 U	0.0045 U
trans-1,2-Dichloroethene	0.19	0.0044 U	1 U	0.0043 U	0.0045 U	0.0047 U	0.0046 U	0.0045 U
trans-1,3-Dichloropropene	NS	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Trichloroethene	0.47	0.0029 U	0.7 U	0.0028 U	0.003 U	0.0032 U	0.0031 U	0.003 U
Trichlorofluoromethane	NS	0.015 U	3.5 U	0.014 U	0.015 U	0.016 U	0.015 U	0.015 U
Vinyl acetate	NS	0.029 U	7 U	0.028 U	0.03 U	0.032 U	0.031 U	0.03 U
Vinyl chloride	0.02	0.0059 U	1.4 U	0.0057 U	0.006 U	0.0063 U	0.0062 U	0.006 U
Xylenes, Total	1.6	0.0118 U	2.8 U	0.0114 U	0.012 U	0.0126 U	0.0124 U	0.012 U

Table 4
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-27 (19'-20') L0718726-10 12/13/2007	SB-27 (20'-21') L0718726-09 12/13/2007	SB-28 (13'-14') L0718726-17 12/14/2007	SB-28 (20'-21') L0718726-16 12/14/2007	SB-29 (17'-18') L0718726-11 12/13/2007	SB-29 (20'-21') L0718726-12 12/13/2007	SB-30 (17'-18') L0718726-14 12/13/2007
1,1,1,2-Tetrachloroethane	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
1,1,1-Trichloroethane	**0.68**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
1,1,2,2-Tetrachloroethane	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
1,1,2-Trichloroethane	**NS**	0.0044 U	0.0045 U	0.0044 U	0.0048 U	0.0042 U	0.0044 U	1.7 U
1,1-Dichloroethane	**0.27**	0.0044 U	0.0045 U	0.0044 U	0.0048 U	0.0042 U	0.0044 U	1.7 U
1,1-Dichloroethene	**0.33**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
1,1-Dichloropropene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2,3-Trichlorobenzene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2,4,5-Tetramethylbenzene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	13
1,2,4-Trichlorobenzene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2,4-Trimethylbenzene	**3.6**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2-Dibromo-3-chloropropane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2-Dibromoethane	**NS**	0.012 U	0.012 U	0.012 U	0.013 U	0.011 U	0.012 U	4.5 U
1,2-Dichlorobenzene	**1.1**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,2-Dichloroethane	**0.02**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
1,2-Dichloropropane	**NS**	0.01 U	0.01 U	0.01 U	0.011 U	0.0097 U	0.01 U	3.9 U
1,3,5-Trimethylbenzene	**8.4**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,3-Dichlorobenzene	**2.4**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,3-Dichloropropane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,4-Dichlorobenzene	**1.8**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
1,4-Diethylbenzene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	7.2
2,2-Dichloropropane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
2-Butanone	**0.12**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
2-Hexanone	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
4-Ethyltoluene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
4-Methyl-2-pentanone	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
Acetone	**0.05**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	**0.065**	11 U
Benzene	**0.06**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Bromobenzene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
Bromochloromethane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
Bromodichloromethane	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Bromoform	**NS**	0.012 U	0.012 U	0.012 U	0.013 U	0.011 U	0.012 U	4.5 U
Bromomethane	**NS**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
Carbon disulfide	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
Carbon tetrachloride	**0.76**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Chlorobenzene	**1.1**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Chloroethane	**NS**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
Chloroform	**0.37**	0.0044 U	0.0045 U	0.0044 U	0.0048 U	0.0042 U	0.0044 U	1.7 U
Chloromethane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
cis-1,2-Dichloroethene	**0.25**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
cis-1,3-Dichloropropene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Dibromochloromethane	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Dibromomethane	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
Dichlorodifluoromethane	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
Ethylbenzene	**1**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Hexachlorobutadiene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
Isopropylbenzene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	4.2
Methyl tert butyl ether	**0.93**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
Methylene chloride	**0.05**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
n-Butylbenzene	**12**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	9
n-Propylbenzene	**3.9**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	**5.9**
Naphthalene	**12**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
o-Chlorotoluene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
o-Xylene	**1.6**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
p-Chlorotoluene	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
p-Isopropyltoluene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
p/m-Xylene	**1.6**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
sec-Butylbenzene	**11**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	6.2
Styrene	**NS**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
tert-Butylbenzene	**5.9**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
Tetrachloroethene	**1.3**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Toluene	**0.7**	0.0044 U	0.0045 U	0.0044 U	0.0048 U	0.0042 U	0.0044 U	1.7 U
trans-1,2-Dichloroethene	**0.19**	0.0044 U	0.0045 U	0.0044 U	0.0048 U	0.0042 U	0.0044 U	1.7 U
trans-1,3-Dichloropropene	**NS**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Trichloroethene	**0.47**	0.0029 U	0.003 U	0.0029 U	0.0032 U	0.0028 U	0.0029 U	1.1 U
Trichlorofluoromethane	**NS**	0.015 U	0.015 U	0.014 U	0.016 U	0.014 U	0.015 U	5.6 U
Vinyl acetate	**NS**	0.029 U	0.03 U	0.029 U	0.032 U	0.028 U	0.029 U	11 U
Vinyl chloride	**0.02**	0.0059 U	0.006 U	0.0058 U	0.0064 U	0.0056 U	0.0059 U	2.2 U
Xylenes, Total	**1.6**	0.0118 U	0.012 U	0.0116 U	0.0128 U	0.0112 U	0.0118 U	4.4 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-30 (23'-24') L0718726-13 12/13/2007	SB-31 (20'-21') L0718726-15 12/13/2007	SB-32 (3'-4') L0804083-01 3/20/2008	SB-32 (8'-10') L0804083-02 3/20/2008	SB-33(0-2') 220-10975-1 12/9/2009 1
1,1,1,2-Tetrachloroethane	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	NA
1,1,1-Trichloroethane	0.68	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00054 U H
1,1,2,2-Tetrachloroethane	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00053 U H
1,1,2-Trichloroethane	NS	0.0045 U	0.0041 U	0.022 U	0.0046 U	0.00038 U H
1,1-Dichloroethane	0.27	0.0045 U	0.0041 U	0.022 U	0.0046 U	0.00031 U H
1,1-Dichloroethene	0.33	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00059 U H
1,1-Dichloropropene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2,3-Trichlorobenzene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2,4,5-Tetramethylbenzene	NS	0.003 U	0.0027 U	0.62	0.0031 U	NA
1,2,4-Trichlorobenzene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2,4-Trimethylbenzene	3.6	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2-Dibromo-3-chloropropane	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2-Dibromoethane	NS	0.012 U	0.011 U	0.058 U	0.012 U	NA
1,2-Dichlorobenzene	1.1	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,2-Dichloroethane	0.02	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00059 U H
1,2-Dichloropropane	NS	0.01 U	0.0095 U	0.051 U	0.011 U	0.00068 U H
1,3,5-Trimethylbenzene	8.4	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,3-Dichlorobenzene	2.4	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,3-Dichloropropane	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,4-Dichlorobenzene	1.8	0.015 U	0.014 U	0.073 U	0.015 U	NA
1,4-Diethylbenzene	NS	0.003 U	0.0027 U	0.18	0.0031 U	NA
2,2-Dichloropropane	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
2-Butanone	0.12	0.03 U	0.027 U	0.14 U	0.031 U	0.0016 U H
2-Hexanone	NS	0.03 U	0.027 U	0.14 U	0.031 U	0.0012 U H
4-Ethyltoluene	NS	0.003 U	0.0027 U	0.056	0.0031 U	NA
4-Methyl-2-pentanone	NS	0.03 U	0.027 U	0.14 U	0.031 U	0.00056 U H
Acetone	0.05	**0.069**	0.027 U	0.14 U	0.036	**0.016 J H B**
Benzene	0.06	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00058 U H
Bromobenzene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
Bromochloromethane	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
Bromodichloromethane	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00031 U H
Bromoform	NS	0.012 U	0.011 U	0.058 U	0.012 U	0.00062 U H
Bromomethane	NS	0.006 U	0.0054 U	0.029 U	0.0062 U	0.0021 U H
Carbon disulfide	NS	0.03 U	0.027 U	0.14 U	0.031 U	0.00042 U H
Carbon tetrachloride	0.76	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00097 U H
Chlorobenzene	1.1	0.003 U	0.0027 U	0.019	0.0031 U	0.0006 U H
Chloroethane	NS	0.006 U	0.0054 U	0.029 U	0.0062 U	0.001 U H
Chloroform	0.37	0.0045 U	0.0041 U	0.022 U	0.0046 U	0.00035 U H
Chloromethane	NS	0.015 U	0.014 U	0.073 U	0.015 U	0.00079 U H
cis-1,2-Dichloroethene	0.25	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00038 U H
cis-1,3-Dichloropropene	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00057 U H
Dibromochloromethane	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00036 U H
Dibromomethane	NS	0.03 U	0.027 U	0.14 U	0.031 U	NA
Dichlorodifluoromethane	NS	0.03 U	0.027 U	0.14 U	0.031 U	NA
Ethylbenzene	1	0.003 U	0.0027 U	0.17	0.0031 U	0.00071 U H
Hexachlorobutadiene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
Isopropylbenzene	NS	0.003 U	0.0027 U	0.25	0.0031 U	NA
Methyl tert butyl ether	0.93	0.006 U	0.0054 U	0.029 U	0.0062 U	NA
Methylene chloride	0.05	0.03 U	0.027 U	0.14 U	0.031 U	0.0017 J H
n-Butylbenzene	12	0.003 U	0.0027 U	0.4	0.0031 U	NA
n-Propylbenzene	3.9	0.003 U	0.0027 U	0.69	0.0031 U	NA
Naphthalene	12	0.015 U	0.014 U	1.6	0.015 U	NA
o-Chlorotoluene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
o-Xylene	1.6	0.006 U	0.0054 U	0.029 U	0.0062 U	NA
p-Chlorotoluene	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
p-Isopropyltoluene	NS	0.003 U	0.0027 U	0.058	0.0031 U	NA
p/m-Xylene	1.6	0.006 U	0.0054 U	0.029 U	0.0062 U	NA
sec-Butylbenzene	11	0.003 U	0.0027 U	0.3	0.0031 U	NA
Styrene	NS	0.006 U	0.0054 U	0.029 U	0.0062 U	0.00015 U H
tert-Butylbenzene	5.9	0.015 U	0.014 U	0.073 U	0.015 U	NA
Tetrachloroethene	1.3	0.003 U	0.0027 U	0.014 U	0.0031 U	0.0021 J H
Toluene	0.7	0.0045 U	0.0041 U	0.022 U	0.0046 U	0.00091 J H B
trans-1,2-Dichloroethene	0.19	0.0045 U	0.0041 U	0.022 U	0.0046 U	0.0004 U H
trans-1,3-Dichloropropene	NS	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00027 U H
Trichloroethene	0.47	0.003 U	0.0027 U	0.014 U	0.0031 U	0.00082 U H
Trichlorofluoromethane	NS	0.015 U	0.014 U	0.073 U	0.015 U	NA
Vinyl acetate	NS	0.03 U	0.027 U	0.14 U	0.031 U	NA
Vinyl chloride	0.02	0.006 U	0.0054 U	0.029 U	0.0062 U	0.00023 U H
Xylenes, Total	1.6	0.012 U	0.0108 U	0.058 U	0.0124 U	0.0013 J H

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID	NYSDEC	SB-33(2'-4')	SB-33(4'-6')	SB-33(6'-8')		SB-33(8'-10')	SB-33(10'-12')
Lab Sample ID	Part 375 SCO for	220-10975-2	220-10975-3	220-10975-4		220-10975-5	220-10975-6
Date Sampled	Unrestricted Use	12/9/2009	12/9/2009	12/9/2009		12/9/2009	12/9/2009
Dilution	mg/kg	1	1	1	40 Medium	1	1
Analyte							
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.00065 U H	0.00055 U H	0.00061 U	2.9 U H	0.00059 U H	0.00064 U
1,1,2,2-Tetrachloroethane	NS	0.00064 U H	0.00054 U H	0.0006 U	3 U H	0.00058 U H	0.00063 U
1,1,2-Trichloroethane	NS	0.00045 U H	0.00038 U H	0.00043 U	3.1 U H	0.00041 U H	0.00044 U
1,1-Dichloroethane	0.27	0.00037 U H	0.00031 U H	0.00035 U	3.3 U H	0.00033 U H	0.00036 U
1,1-Dichloroethene	0.33	0.00071 U H	0.0006 U H	0.00067 U	3.5 U H	0.00064 U H	0.0007 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.00071 U H	0.0006 U H	0.00067 U	2.7 U H	0.00064 U H	0.0007 U
1,2-Dichloropropane	NS	0.00082 U H	0.0007 U H	0.00077 U	2.4 U H	0.00074 U H	0.00081 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0019 U H	0.0017 U H	0.0018 U	5.1 U H	0.0018 U H	0.0019 U
2-Hexanone	NS	0.0015 U H	0.0012 U H	0.0014 U	6 U H	0.0013 U H	0.0014 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.00067 U H	0.00057 U H	0.00063 U	3.8 U H	0.00061 U H	0.00066 U
Acetone	0.05	0.0027 U H	0.0052 J H B	0.0075 J	11 U H	0.0074 J H B	0.012 J
Benzene	0.06	0.0007 U H	0.00059 U H	0.00067 J	3 U H	0.00063 U H	0.00069 U
Bromobenzene	NS	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.00037 U H	0.00031 U H	0.00035 U	3.2 U H	0.00033 U H	0.00036 U
Bromoform	NS	0.00075 U H	0.00063 U H	0.0007 U	3.7 U H	0.00068 U H	0.00073 U
Bromomethane	NS	0.0025 U H	0.0022 U H	0.0024 U	4.2 U H	0.0023 U H	0.0025 U
Carbon disulfide	NS	0.0005 U H	0.00043 U H	0.00047 U	3 U H	0.00045 U H	0.00049 U
Carbon tetrachloride	0.76	0.0012 U H	0.00099 U H	0.0011 U	3.5 U H	0.0011 U H	0.0011 U
Chlorobenzene	1.1	0.00072 U H	0.00061 U H	0.00068 U	2.9 U H	0.00065 U H	0.00071 U
Chloroethane	NS	0.0012 U H	0.001 U H	0.0011 U	3.7 U H	0.0011 U H	0.0012 U
Chloroform	0.37	0.00042 U H	0.00035 U H	0.0018 J	2.9 U H	0.00038 U H	0.00041 U
Chloromethane	NS	0.00095 U H	0.00081 U H	0.0009 U	2.9 U H	0.00087 U H	0.00094 U
cis-1,2-Dichloroethene	0.25	0.00045 U H	0.00038 U H	0.046	2.8 U H	0.0019 J H	0.0086
cis-1,3-Dichloropropene	NS	0.00069 U H	0.00058 U H	0.00065 U	2.8 U H	0.00062 U H	0.00067 U
Dibromochloromethane	NS	0.00043 U H	0.00036 U H	0.0004 U	3.6 U H	0.00039 U H	0.00042 U
Dibromomethane	NS	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	0.00086 U H	0.00073 U H	0.00081 U	2.4 U H	0.00078 U H	0.00084 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.0067 J H	0.0054 J H	0.01 J	3.7 U H	0.0069 J H	0.0023 J
n-Butylbenzene	12	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA
Styrene	NS	0.00018 U H	0.00016 U H	0.00017 U	3.7 U H	0.00017 U H	0.00018 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.0045 J H	0.048 H	0.52 E	**920 H**	0.086 H	0.17
Toluene	0.7	0.00037 J H B	0.00056 J H B	0.0017 J B	3.3 U H	0.00085 J H B	0.00043 J B
trans-1,2-Dichloroethene	0.19	0.00048 U H	0.00041 U H	0.00045 U	2.4 U H	0.00043 U H	0.00047 U
trans-1,3-Dichloropropene	NS	0.00033 U H	0.00028 U H	0.00031 U	2.9 U H	0.0003 U H	0.00032 U
Trichloroethene	0.47	0.00099 U H	0.00084 U H	0.15	**5.3 J H**	0.0041 J H	0.017
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.00028 U H	0.00024 U H	0.00027 U	3.1 U H	0.00026 U H	0.00028 U
Xylenes, Total	1.6	0.00059 U H	0.00051 U H	0.00064 J	9.7 U H	0.00054 U H	0.00058 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID	NYSDEC	SB-33(12'-14')		SB-33(14'-16')		SB-34(0-2.5')	SB-34(2.5'-5')
Lab Sample ID	Part 375 SCO for	220-10975-7		220-10975-8		220-11026-3	220-11026-4
Date Sampled	Unrestricted Use	12/9/2009		12/9/2009		12/11/2009	12/11/2009
Dilution	mg/kg	4	1	5	1	1	1
Analyte			Secondary		Secondary		
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.0027 U H	0.00068 U	0.003 U H	0.0006 U	0.00064 U	0.0006 U
1,1,2,2-Tetrachloroethane	NS	0.0027 U H	0.00066 U	0.003 U H	0.00059 U	0.00063 U	0.00059 U
1,1,2-Trichloroethane	NS	0.0019 U H	0.00047 U	0.0021 U H	0.00042 U	0.00045 U	0.00042 U
1,1-Dichloroethane	0.27	0.0015 U H	0.00038 U	0.0017 U H	0.00034 U	0.00036 U	0.00034 U
1,1-Dichloroethene	0.33	0.003 U H	0.00074 U	0.0033 U H	0.00066 U	0.0007 U	0.00066 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.003 U H	0.00074 U	0.0033 U H	0.00066 U	0.0007 U	0.00066 U
1,2-Dichloropropane	NS	0.0034 U H	0.00086 U	0.0038 U H	0.00076 U	0.00081 U	0.00076 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0081 U H	0.002 U	0.0091 U H	0.031	0.0019 U *	0.0018 U *
2-Hexanone	NS	0.0061 U H	0.0015 U	0.0068 U H	0.0014 U	0.0014 U	0.0014 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.0028 U H	0.0007 U	0.0031 U H	0.00063 U	0.00066 U	0.00062 U
Acetone	0.05	**0.15 H B**	**0.12**	**0.6 H B**	**0.66 E**	0.0027 U	0.0053 J B
Benzene	0.06	0.0029 U H	0.00073 U	0.0032 U H	0.00065 U	0.00069 U	0.00064 U
Bromobenzene	NS	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.0015 U H	0.00038 U	0.0017 U H	0.00034 U	0.00036 U	0.00034 U
Bromoform	NS	0.0031 U H	0.00078 U	0.0035 U H	0.00069 U	0.00074 U	0.00069 U
Bromomethane	NS	0.011 U H	0.0027 U	0.012 U H	0.0024 U	0.0025 U	0.0024 U
Carbon disulfide	NS	0.0021 U H	0.00052 U	0.0023 U H	0.00047 U	0.0005 U	0.00046 U
Carbon tetrachloride	0.76	0.0049 U H	0.0012 U	0.0054 U H	0.0011 U	0.0011 U	0.0011 U
Chlorobenzene	1.1	0.003 U H	0.00075 U	0.0034 U H	0.00067 U	0.00071 U	0.00067 U
Chloroethane	NS	0.005 U H	0.0013 U	0.0056 U H	0.0011 U	0.0012 U	0.0011 U
Chloroform	0.37	0.0017 U H	0.00043 U	0.0019 U H	0.00039 U	0.00041 U	0.00038 U
Chloromethane	NS	0.004 U H	0.001 U	0.0044 U H	0.00089 U	0.00094 U	0.00088 U
cis-1,2-Dichloroethene	0.25	0.18 H	0.2	0.089 H	0.086	0.0053 J	0.0059
cis-1,3-Dichloropropene	NS	0.0029 U H	0.00072 U	0.0032 U H	0.00064 U	0.00068 U	0.00063 U
Dibromochloromethane	NS	0.0018 U H	0.00045 U	0.002 U H	0.0004 U	0.00042 U	0.0004 U
Dibromomethane	NS	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	0.0036 U H	0.00089 U	0.004 U H	0.0008 U	0.00085 U	0.00079 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.044 J H	0.0021 J	0.046 J H	0.0033 J	0.0044 J B	0.0022 J B
n-Butylbenzene	12	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA
Styrene	NS	0.00077 U H	0.00019 U	0.00085 U H	0.00017 U	0.00018 U	0.00017 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.8 H	0.53 E	0.088 H	0.054	0.15	0.13
Toluene	0.7	0.00076 J H B	0.00072 J B	0.0021 J H B	0.00079 J B	0.00042 J B	0.00056 J B
trans-1,2-Dichloroethene	0.19	0.0028 J H	0.003 J	0.0022 U H	0.0023 J	0.00047 U	0.00044 U
trans-1,3-Dichloropropene	NS	0.0014 U H	0.00034 U	0.0015 U H	0.00031 U	0.00033 U	0.00031 U
Trichloroethene	0.47	0.12 H	0.1	0.014 J H	0.01	0.0035 J	0.0026 J
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.0022 J H	0.0046 J	0.0025 J H	0.0042 J	0.00028 U	0.00026 U
Xylenes, Total	1.6	0.0025 U H	0.00062 U	0.0028 U H	0.00092 J	0.00059 U	0.00055 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-34(5'-7.5') 220-11026-5 12/11/2009 1	SB-34(7.5'-10') 220-11026-6 12/11/2009 1	SB-34(10-12.5') 220-11026-7 12/11/2009 1	SB-34(12.5'-15') 220-11026-8 12/11/2009 1	SB-34(7.5'-10') DUP 220-11026-15 12/11/2009 1	 1 Medium
1,1,1,2-Tetrachloroethane	**NS**	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	**0.68**	0.00057 U	0.00072 U	0.0007 U	0.00067 U	0.00072 U	0.084 U
1,1,2,2-Tetrachloroethane	**NS**	0.00056 U	0.00071 U	0.00069 U	0.00065 U	0.0007 U	0.089 U
1,1,2-Trichloroethane	**NS**	0.0004 U	0.0005 U	0.00049 U	0.00047 U	0.0005 U	0.092 U
1,1-Dichloroethane	**0.27**	0.00032 U	0.00041 U	0.0004 U	0.00038 U	0.00041 U	0.097 U
1,1-Dichloroethene	**0.33**	0.00062 U	0.00079 U	0.00077 U	0.00073 U	0.00078 U	0.1 U
1,1-Dichloropropene	**NS**	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	**3.6**	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	**NS**	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	**NS**	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	**1.1**	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	**0.02**	0.00062 U	0.00079 U	0.00077 U	0.00073 U	0.00078 U	0.08 U
1,2-Dichloropropane	**NS**	0.00072 U	0.00091 U	0.00089 U	0.00084 U	0.00091 U	0.07 U
1,3,5-Trimethylbenzene	**8.4**	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	**2.4**	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	**1.8**	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	**NS**	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA
2-Butanone	**0.12**	0.0017 U	0.014 *	0.0021 U *	0.002 U *	0.0021 U *	0.15 U *
2-Hexanone	**NS**	0.0013 U	0.0016 U	0.0016 U	0.0015 U	0.0016 U	0.18 U
4-Ethyltoluene	**NS**	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	**NS**	0.00059 U	0.00075 U	0.00073 U	0.00069 U	0.00074 U	0.11 U
Acetone	**0.05**	0.0074 J	**0.087 B**	0.012 J B	0.0098 J B	0.003 U	0.32 U *
Benzene	**0.06**	0.00061 U	0.00077 U	0.00075 U	0.00072 U	0.00077 U	0.089 U
Bromobenzene	**NS**	NA	NA	NA	NA	NA	NA
Bromochloromethane	**NS**	NA	NA	NA	NA	NA	NA
Bromodichloromethane	**NS**	0.00032 U	0.00041 U	0.0004 U	0.00038 U	0.00041 U	0.093 U
Bromoform	**NS**	0.00066 U	0.00083 U	0.00081 U	0.00077 U	0.00082 U	0.11 U
Bromomethane	**NS**	0.0022 U	0.0028 U	0.0027 U	0.0026 U	0.0028 U	0.12 U
Carbon disulfide	**NS**	0.00044 U	0.0023 J	0.00054 U	0.00052 U	0.00055 U	0.089 U
Carbon tetrachloride	**0.76**	0.001 U	0.0013 U	0.0013 U	0.0012 U	0.0013 U	0.1 U
Chlorobenzene	**1.1**	0.00063 U	0.0008 U	0.00078 U	0.00074 U	0.0008 U	0.084 U
Chloroethane	**NS**	0.0011 U	0.0013 U	0.0013 U	0.0012 U	0.0013 U	0.11 U
Chloroform	**0.37**	0.00037 U	0.00046 U	0.00045 U	0.00043 U	0.00046 U	0.084 U
Chloromethane	**NS**	0.00084 U	0.0011 U	0.001 U	0.00098 U	0.0011 U	0.086 U
cis-1,2-Dichloroethene	**0.25**	0.0004 U	0.012	0.0022 J	0.00072 J	0.03	0.16 J
cis-1,3-Dichloropropene	**NS**	0.0006 U	0.00076 U	0.00074 U	0.00071 U	0.00076 U	0.082 U
Dibromochloromethane	**NS**	0.00038 U	0.00048 U	0.00046 U	0.00044 U	0.00047 U	0.11 U
Dibromomethane	**NS**	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	**NS**	NA	NA	NA	NA	NA	NA
Ethylbenzene	**1**	0.00075 U	0.00095 U	0.00093 U	0.00088 U	0.00095 U	0.07 U
Hexachlorobutadiene	**NS**	NA	NA	NA	NA	NA	NA
Isopropylbenzene	**NS**	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	**0.93**	NA	NA	NA	NA	NA	NA
Methylene chloride	**0.05**	0.0054 J B	0.0083 J B	0.0052 J B	0.0056 J B	0.011 J B	0.31 J
n-Butylbenzene	**12**	NA	NA	NA	NA	NA	NA
n-Propylbenzene	**3.9**	NA	NA	NA	NA	NA	NA
Naphthalene	**12**	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA
o-Xylene	**1.6**	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	**NS**	NA	NA	NA	NA	NA	NA
p/m-Xylene	**1.6**	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	**11**	NA	NA	NA	NA	NA	NA
Styrene	**NS**	0.00016 U	0.0002 U	0.0002 U	0.00019 U	0.0002 U	0.11 U
tert-Butylbenzene	**5.9**	NA	NA	NA	NA	NA	NA
Tetrachloroethene	**1.3**	0.042	0.25	0.0011 U	0.0027 J	0.93 E	**8.4**
Toluene	**0.7**	0.00034 J B	0.00035 J B	0.00017 J B	0.000093 U	0.00039 J B	0.097 U
trans-1,2-Dichloroethene	**0.19**	0.00042 U	0.00053 U	0.00052 U	0.00049 U	0.00053 U	0.072 U
trans-1,3-Dichloropropene	**NS**	0.00029 U	0.00037 U	0.00036 U	0.00034 U	0.00036 U	0.084 U
Trichloroethene	**0.47**	0.00087 U	0.0044 J	0.0011 U	0.001 U	0.02	0.13 J
Trichlorofluoromethane	**NS**	NA	NA	NA	NA	NA	NA
Vinyl acetate	**NS**	NA	NA	NA	NA	NA	NA
Vinyl chloride	**0.02**	0.00025 U	0.0062 J	0.0021 J	0.00029 U	0.0019 J	0.091 U
Xylenes, Total	**1.6**	0.00052 U	0.00066 U	0.00064 U	0.00061 U	0.00066 U	0.28 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-35(0-2.5') 220-11026-9 12/11/2009 1	SB-35(2.5'-5') 220-11026-10 12/11/2009 1	SB-35(5'-7.5') 220-11026-11 12/11/2009 1	SB-35(7.5'-10') 220-11026-12 12/11/2009 1	SB-35(10'-12.5') 220-11026-13 12/11/2009 1	SB-35(12.5'-15') 220-11026-14 12/11/2009 1	 4 Medium
1,1,1,2-Tetrachloroethane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	**0.68**	0.00063 U	0.00057 U	0.00057 U	0.00062 U	0.00061 U	0.00091 U	0.43 U H
1,1,2,2-Tetrachloroethane	**NS**	0.00062 U	0.00056 U	0.00056 U	0.00061 U	0.0006 U	0.00089 U	0.45 U H
1,1,2-Trichloroethane	**NS**	0.00044 U	0.0004 U	0.0004 U	0.00043 U	0.00043 U	0.00064 U	0.47 U H
1,1-Dichloroethane	**0.27**	0.00036 U	0.00032 U	0.00032 U	0.00035 U	0.00035 U	0.00052 U	0.49 U H
1,1-Dichloroethene	**0.33**	0.00069 U	0.00062 U	0.00063 U	0.00068 U	0.00067 U	0.0042 J	0.52 U H
1,1-Dichloropropene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	**3.6**	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	**1.1**	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	**0.02**	0.00069 U	0.00062 U	0.00063 U	0.00068 U	0.00067 U	0.001 U	0.41 U H
1,2-Dichloropropane	**NS**	0.0008 U	0.00072 U	0.00072 U	0.00079 U	0.00078 U	0.0012 U	0.36 U H
1,3,5-Trimethylbenzene	**8.4**	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	**2.4**	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	**1.8**	NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
2-Butanone	**0.12**	0.0019 U *	0.0017 U *	0.0017 U *	0.0019 U *	0.0018 U *	0.031 *	0.76 U H
2-Hexanone	**NS**	0.0014 U	0.0013 U	0.0013 U	0.0014 U	0.0014 U	0.0021 U	0.89 U H
4-Ethyltoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	**NS**	0.00066 U	0.00059 U	0.00059 U	0.00065 U	0.00064 U	0.00095 U	0.56 U H
Acetone	**0.05**	0.0089 J B	0.006 J B	0.004 J B	0.0079 J B	0.022 J B	**0.25 B**	1.6 U H *
Benzene	**0.06**	0.00068 U	0.00061 U	0.00062 U	0.00067 U	0.00066 U	0.00098 U	0.45 U H
Bromobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	**NS**	0.00036 U	0.00032 U	0.00032 U	0.00035 U	0.00035 U	0.00052 U	0.47 U H
Bromoform	**NS**	0.00073 U	0.00066 U	0.00066 U	0.00072 U	0.00071 U	0.001 U	0.55 U H
Bromomethane	**NS**	0.0025 U	0.0022 U	0.0022 U	0.0024 U	0.0024 U	0.0036 U	0.63 U H
Carbon disulfide	**NS**	0.00049 U	0.00044 U	0.00044 U	0.00048 U	0.00047 U	0.011	0.45 U H
Carbon tetrachloride	**0.76**	0.0011 U	0.001 U	0.001 U	0.0011 U	0.0011 U	0.0016 U	0.53 U H
Chlorobenzene	**1.1**	0.0007 U	0.00064 U	0.00064 U	0.00069 U	0.00068 U	0.001 U	0.43 U H
Chloroethane	**NS**	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0017 U	0.55 U H *
Chloroform	**0.37**	0.00041 U	0.00037 U	0.00037 U	0.0004 U	0.00039 U	0.00058 U	0.43 U H
Chloromethane	**NS**	0.00093 U	0.00084 U	0.00084 U	0.00092 U	0.0009 U	0.0013 U	0.44 U H
cis-1,2-Dichloroethene	**0.25**	0.00044 U	0.0004 U	0.00052 J	0.00043 U	0.0045 J	**8.4 E**	**84 H**
cis-1,3-Dichloropropene	**NS**	0.00067 U	0.0006 U	0.0006 U	0.00066 U	0.00065 U	0.00096 U	0.42 U H
Dibromochloromethane	**NS**	0.00042 U	0.00038 U	0.00038 U	0.00041 U	0.0004 U	0.0006 U	0.54 U H
Dibromomethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	**1**	0.00083 U	0.00075 U	0.00076 U	0.00082 U	0.00081 U	0.0012 U	0.36 U H
Hexachlorobutadiene	**NS**	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	**0.93**	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	**0.05**	0.0082 J B	0.0058 J B	0.0082 J B	0.011 J B	0.0088 J B	0.012 J B	1.8 J H B
n-Butylbenzene	**12**	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	**3.9**	NA	NA	NA	NA	NA	NA	NA
Naphthalene	**12**	NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
o-Xylene	**1.6**	NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	**1.6**	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	**11**	NA	NA	NA	NA	NA	NA	NA
Styrene	**NS**	0.00018 U	0.00016 U	0.00016 U	0.00018 U	0.00017 U	0.00026 U	0.55 U H
tert-Butylbenzene	**5.9**	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	**1.3**	0.0049 J	0.00087 U	0.0099	0.0046 J	0.0015 J	0.002 J	0.56 U H
Toluene	**0.7**	0.0004 J B	0.00032 J B	0.00021 J B	0.00022 J B	0.00057 J B	0.0012 J B	0.49 U H
trans-1,2-Dichloroethene	**0.19**	0.00047 U	0.00042 U	0.00042 U	0.00046 U	0.00045 U	0.12	**1.5 J H**
trans-1,3-Dichloropropene	**NS**	0.00032 U	0.00029 U	0.00029 U	0.00032 U	0.00031 U	0.00046 U	0.43 U H
Trichloroethene	**0.47**	0.00097 U	0.00087 U	0.00087 U	0.00095 U	0.00094 U	0.0014 U	0.45 U H
Trichlorofluoromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	**NS**	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	**0.02**	0.00027 U	0.00025 U	0.00025 U	0.00027 U	**0.052**	**2.4 E**	**31 H**
Xylenes, Total	**1.6**	0.00058 U	0.00052 U	0.00052 U	0.00057 U	0.00056 U	0.0014 J	1.4 U H

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-35(15-17.5') 220-11057-7 12/11/2009 1	SB-35(17.5'-20') 220-11057-8 12/11/2009 1	SB-36(0-2.5') 220-11057-1 12/11/2009 1	SB-36(2.5'-5') 220-11057-2 12/11/2009 1	SB-36(5'-7.5') 220-11057-3 12/11/2009 1	SB-36(7.5'-10') 220-11057-4 12/11/2009 1
1,1,1,2-Tetrachloroethane	**NS**	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	**0.68**	0.00067 U	0.00065 U	0.00059 U	0.00062 U	0.00058 U	0.00056 U
1,1,2,2-Tetrachloroethane	**NS**	0.00066 U	0.00064 U	0.00058 U	0.00061 U	0.00057 U	0.00055 U
1,1,2-Trichloroethane	**NS**	0.00047 U	0.00046 U	0.00041 U	0.00044 U	0.0004 U	0.00039 U
1,1-Dichloroethane	**0.27**	0.00038 U	0.00037 U	0.00033 U	0.00035 U	0.00033 U	0.00032 U
1,1-Dichloroethene	**0.33**	0.00073 U	0.00071 U	0.00065 U	0.00068 U	0.00063 U	0.00061 U
1,1-Dichloropropene	**NS**	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	**3.6**	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	**NS**	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	**NS**	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	**1.1**	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	**0.02**	0.00073 U	0.00071 U	0.00065 U	0.00068 U	0.00063 U	0.00061 U
1,2-Dichloropropane	**NS**	0.00085 U	0.00083 U	0.00075 U	0.00079 U	0.00073 U	0.00071 U
1,3,5-Trimethylbenzene	**8.4**	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	**2.4**	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	**1.8**	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	**NS**	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA
2-Butanone	**0.12**	0.002 U	0.002 U	0.0018 U	0.0019 U	0.0017 U	0.0017 U
2-Hexanone	**NS**	0.0015 U	0.0015 U	0.0013 U	0.0014 U	0.0013 U	0.0013 U
4-Ethyltoluene	**NS**	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	**NS**	0.00069 U	0.00068 U	0.00061 U	0.00065 U	0.0006 U	0.00058 U
Acetone	**0.05**	0.038	0.02 J	0.0065 J B	0.014 J	0.013 J	0.0024 U
Benzene	**0.06**	0.00072 U	0.0007 U	0.00064 U	0.00067 U	0.00062 U	0.0006 U
Bromobenzene	**NS**	NA	NA	NA	NA	NA	NA
Bromochloromethane	**NS**	NA	NA	NA	NA	NA	NA
Bromodichloromethane	**NS**	0.00038 U	0.00037 U	0.00033 U	0.00035 U	0.00033 U	0.00032 U
Bromoform	**NS**	0.00077 U	0.00075 U	0.00068 U	0.00072 U	0.00066 U	0.00064 U
Bromomethane	**NS**	0.0026 U	0.0026 U	0.0023 U	0.0025 U	0.0023 U	0.0022 U
Carbon disulfide	**NS**	0.00052 U	0.0005 U	0.00046 U	0.00048 U	0.00045 U	0.00043 U
Carbon tetrachloride	**0.76**	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.001 U	0.001 U
Chlorobenzene	**1.1**	0.00074 U	0.00073 U	0.00066 U	0.0007 U	0.00064 U	0.00062 U
Chloroethane	**NS**	0.0012 U	0.0012 U	0.0011 U	0.0012 U	0.0011 U	0.001 U
Chloroform	**0.37**	0.00043 U	0.00042 U	0.00038 U	0.0004 U	0.00037 U	0.00036 U
Chloromethane	**NS**	0.00098 U	0.00096 U	0.00087 U	0.00092 U	0.00085 U	0.00082 U
cis-1,2-Dichloroethene	**0.25**	0.00047 U	0.00046 U	0.00041 U	0.00044 U	0.0004 U	0.00039 U
cis-1,3-Dichloropropene	**NS**	0.00071 U	0.00069 U	0.00062 U	0.00066 U	0.00061 U	0.00059 U
Dibromochloromethane	**NS**	0.00044 U	0.00043 U	0.00039 U	0.00041 U	0.00038 U	0.00037 U
Dibromomethane	**NS**	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	**NS**	NA	NA	NA	NA	NA	NA
Ethylbenzene	**1**	0.00088 U	0.00086 U	0.00078 U	0.00082 U	0.00076 U	0.00074 U
Hexachlorobutadiene	**NS**	NA	NA	NA	NA	NA	NA
Isopropylbenzene	**NS**	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	**0.93**	NA	NA	NA	NA	NA	NA
Methylene chloride	**0.05**	0.0032 J	0.0017 J	0.0047 J	0.002 J	0.0016 J	0.0011 U
n-Butylbenzene	**12**	NA	NA	NA	NA	NA	NA
n-Propylbenzene	**3.9**	NA	NA	NA	NA	NA	NA
Naphthalene	**12**	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA
o-Xylene	**1.6**	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	**NS**	NA	NA	NA	NA	NA	NA
p/m-Xylene	**1.6**	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	**11**	NA	NA	NA	NA	NA	NA
Styrene	**NS**	0.00019 U	0.00018 U	0.00017 U	0.00018 U	0.00016 U	0.00016 U
tert-Butylbenzene	**5.9**	NA	NA	NA	NA	NA	NA
Tetrachloroethene	**1.3**	0.001 U	0.001 U	0.0051 J	0.002 J	0.0012 J	0.00085 U
Toluene	**0.7**	0.00098 J B	0.000091 U	0.0011 J B	0.00026 J B	0.00031 J B	0.00011 J B
trans-1,2-Dichloroethene	**0.19**	0.00049 U	0.00048 U	0.00044 U	0.00046 U	0.00042 U	0.00041 U
trans-1,3-Dichloropropene	**NS**	0.00034 U	0.00033 U	0.0003 U	0.00032 U	0.00029 U	0.00028 U
Trichloroethene	**0.47**	0.001 U	0.001 U	0.0009 U	0.00095 U	0.00088 U	0.00085 U
Trichlorofluoromethane	**NS**	NA	NA	NA	NA	NA	NA
Vinyl acetate	**NS**	NA	NA	NA	NA	NA	NA
Vinyl chloride	**0.02**	0.00063 J	0.0018 J	0.00026 U	0.00027 U	0.00025 U	0.00024 U
Xylenes, Total	**1.6**	0.00061 U	0.0006 U	0.00067 J	0.00057 U	0.00055 J	0.00051 U

Table 4
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID	NYSDEC	SB-36(10'-12.5')	SB-36(12.5'-15')	SB-37 (1.5-3)	SB-37 (4.5-6)		SB-37 (6-7.5)	SB-37 (7.5-9)
Lab Sample ID	Part 375 SCO for	220-11057-5	220-11057-6	220-11210-1	220-11210-2		220-11210-3	220-11210-4
Date Sampled	Unrestricted Use	12/11/2009	12/11/2009	12/29/2009	12/29/2009		12/29/2009	12/29/2009
Dilution	mg/kg	1	1	5	5	8	5	4
				Low	Low	Medium	Low	Low
Analyte								
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.00056 U	0.00061 U	0.003 U	0.003 U	0.56 U H	0.0027 U	0.0024 U
1,1,2,2-Tetrachloroethane	NS	0.00055 U	0.00059 U	0.0029 U	0.0029 U	0.59 U H	0.0027 U	0.0024 U
1,1,2-Trichloroethane	NS	0.00039 U	0.00042 U	0.0021 U	0.0021 U	0.61 U H	0.0019 U	0.0017 U
1,1-Dichloroethane	0.27	0.00032 U	0.00034 U	0.0017 U	0.0017 U	0.65 U H	0.0015 U	0.0014 U
1,1-Dichloroethene	0.33	0.00062 U	0.00066 U	0.0032 U *	0.0032 U *	0.67 U H	0.003 U	0.0026 U *
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.00062 U	0.00066 U	0.0032 U	0.0032 U	0.53 U H	0.003 U	0.0026 U
1,2-Dichloropropane	NS	0.00071 U	0.00076 U	0.0037 U	0.0038 U	0.47 U H	0.0035 U	0.0031 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0017 U	0.0018 U	0.0089 U	0.0089 U	0.99 U H	0.0082 U	0.0072 U
2-Hexanone	NS	0.0013 U	0.0014 U	0.0067 U	0.0067 U	1.2 U H	0.0062 U	0.0055 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.00059 U	0.00063 U	0.0031 U	0.0031 U	0.74 U H	0.0028 U	0.0025 U
Acetone	0.05	0.038	0.02 J	0.012 U	0.024 J B	2.2 U H *	0.021 J *	0.012 J B
Benzene	0.06	0.00061 U	0.00065 U	0.0032 U	0.0032 U	0.59 U H	0.0029 U	0.0026 U
Bromobenzene	NS	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.00032 U	0.00034 U	0.0017 U	0.0017 U	0.62 U H	0.0015 U	0.0014 U
Bromoform	NS	0.00065 U	0.0007 U	0.0034 U	0.0034 U	0.72 U H	0.0031 U	0.0028 U
Bromomethane	NS	0.0022 U	0.0024 U	0.012 U	0.012 U	0.82 U H	0.011 U	0.0095 U
Carbon disulfide	NS	0.00044 U	0.00047 U	0.0023 U	0.0023 U	0.59 U H	0.0021 U	0.0019 U
Carbon tetrachloride	0.76	0.001 U	0.0011 U	0.0053 U	0.0053 U	0.69 U H	0.0049 U	0.0043 U
Chlorobenzene	1.1	0.00063 U	0.00067 U	0.0033 U	0.0033 U	0.56 U H	0.003 U	0.0027 U
Chloroethane	NS	0.001 U	0.0011 U	0.0055 U	0.0055 U	0.72 U H	0.0051 U	0.0045 U
Chloroform	0.37	0.00036 U	0.00039 U	0.0019 U	0.0019 U	0.56 U H	0.0018 U	0.0015 U
Chloromethane	NS	0.00083 U	0.00089 U	0.0043 U	0.0044 U	0.57 U H	0.004 U	0.0036 U
cis-1,2-Dichloroethene	0.25	0.00039 U	0.0041 J	0.0021 U	0.0026 J	0.54 U H	0.0019 U	0.0037 J
cis-1,3-Dichloropropene	NS	0.0006 U	0.00064 U	0.0031 U	0.0031 U	0.55 U H	0.0029 U	0.0026 U
Dibromochloromethane	NS	0.00037 U	0.0004 U	0.0019 U	0.002 U	0.7 U H	0.0018 U	0.0016 U
Dibromomethane	NS	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	0.00075 U	0.0008 U	0.0039 U	0.0039 U	0.47 U H	0.0036 U	0.0032 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.0016 J	0.0013 J	0.024 J B	0.019 J B	0.74 J H B	0.011 J B	0.012 J B
n-Butylbenzene	12	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA
Styrene	NS	0.00016 U	0.00017 U	0.00084 U	0.00084 U	0.72 U H	0.00077 U	0.00068 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.00086 U	0.00092 U	1	5 E	**89 H**	0.55	0.48
Toluene	0.7	0.00096 J B	0.00055 J B	0.00041 U	0.0018 J	0.65 U H	0.00038 U	0.00034 U
trans-1,2-Dichloroethene	0.19	0.00042 U	0.00045 U	0.0022 U	0.0022 U	0.48 U H	0.002 U	0.0018 U
trans-1,3-Dichloropropene	NS	0.00029 U	0.00031 U	0.0015 U	0.0015 U	0.56 U H	0.0014 U	0.0012 U
Trichloroethene	0.47	0.00086 U	0.00092 U	0.0045 U	0.0045 U	0.58 U H	0.0042 U	0.0037 U
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.00024 U	0.0017 J	0.0013 U	0.0013 U	0.6 U H	0.0012 U	0.001 U
Xylenes, Total	1.6	0.0019 J	0.00055 U	0.0027 U	0.0027 U	1.9 U H	0.0025 U	0.0022 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID	NYSDEC	SB-37 (9-10.5)	SB-37 (10.5-12)		SB-37 (12-13.5)	SB-37 (13.5-15)		SB-38 (1.5-3)
Lab Sample ID	Part 375 SCO for	220-11210-5	220-11210-6		220-11210-7	220-11210-8		220-11210-9
Date Sampled	Unrestricted Use	12/29/2009	12/29/2009		12/29/2009	12/29/2009		12/29/2009
Dilution	mg/kg	5	1	20	5	5	4	5
Analyte		Low	Low	Medium	Low	Low	Medium	Low
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.003 U	0.00071 U	1.7 U H	0.0028 U	0.0028 U	0.26 U H	0.0029 U
1,1,2,2-Tetrachloroethane	NS	0.003 U	0.0007 U	1.8 U H	0.0027 U	0.0027 U	0.28 U H	0.0029 U
1,1,2-Trichloroethane	NS	0.0021 U	0.0005 U	1.8 U H	0.0019 U	0.0019 U	0.29 U H	0.002 U
1,1-Dichloroethane	0.27	0.0017 U	0.0004 U	1.9 U H	0.0016 U	0.0016 U	0.3 U H	0.0017 U
1,1-Dichloroethene	0.33	0.0033 U	0.00078 U	2 U H	0.003 U *	0.003 U *	0.32 U H	0.0032 U *
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.0033 U	0.00078 U	1.6 U H	0.003 U	0.003 U	0.25 U H	0.0032 U
1,2-Dichloropropane	NS	0.0038 U	0.0009 U	1.4 U H	0.0035 U	0.0035 U	0.22 U H	0.0037 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0091 U	0.0021 U	2.9 U H	0.0083 U	0.0084 U	0.46 U H	0.0088 U
2-Hexanone	NS	0.0068 U	0.0016 U	3.5 U H	0.0063 U	0.0063 U	0.55 U H	0.0066 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.0031 U	0.00074 U	2.2 U H	0.0029 U	0.0029 U	0.34 U H	0.003 U
Acetone	0.05	0.029 J *	0.003 U *	6.4 U H *	0.026 J B	0.035 J B	1 U H *	0.012 U
Benzene	0.06	0.0033 U	0.00076 U	1.8 U H	0.003 U	0.003 U	0.28 U H	0.0031 U
Bromobenzene	NS	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.0017 U	0.0004 U	1.8 U H	0.0016 U	0.0016 U	0.29 U H	0.0017 U
Bromoform	NS	0.0035 U	0.00082 U	2.1 U H	0.0032 U	0.0032 U	0.34 U H	0.0034 U
Bromomethane	NS	0.012 U	0.0028 U	2.5 U H	0.011 U	0.011 U	0.39 U H	0.011 U
Carbon disulfide	NS	0.0023 U	0.00055 U	1.8 U H	0.0021 U	0.0022 U	0.28 U H	0.0023 U
Carbon tetrachloride	0.76	0.0054 U	0.0013 U	2.1 U H	0.005 U	0.005 U	0.32 U H	0.0052 U
Chlorobenzene	1.1	0.0034 U	0.00079 U	1.7 U H	0.0031 U	0.0031 U	0.26 U H	0.0033 U
Chloroethane	NS	0.0056 U	0.0013 U	2.1 U H	0.0051 U	0.0051 U	0.34 U H	0.0054 U
Chloroform	0.37	0.0019 U	0.00057 J	1.7 U H	0.0018 U	0.0018 U	0.26 U H	0.0019 U
Chloromethane	NS	0.0045 U	0.001 U	1.7 U H	0.0041 U	0.0041 U	0.27 U H	0.0043 U
cis-1,2-Dichloroethene	0.25	0.0021 U	2.8 E	**81 H**	0.013 J	0.22	2.9 H	0.002 U
cis-1,3-Dichloropropene	NS	0.0032 U	0.00075 U	1.6 U H	0.0029 U	0.0029 U	0.26 U H	0.0031 U
Dibromochloromethane	NS	0.002 U	0.00047 U	2.1 U H	0.0018 U	0.0018 U	0.33 U H	0.0019 U
Dibromomethane	NS	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	0.004 U	0.00094 U	1.4 U H	0.0037 U	0.0037 U	0.22 U H	0.0039 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.012 J B	0.0066 J B	2.4 J H B	0.026 J B	0.02 J B	0.34 U H	0.024 J B
n-Butylbenzene	12	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA
Styrene	NS	0.00086 U	0.0002 U	2.1 U H	0.00078 U	0.00079 U	0.34 U H	0.00083 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.65	0.98 E	**310 H**	0.78	2.5 E	**81 H**	1
Toluene	0.7	0.00042 U	0.00092 J	1.9 U H	0.0016 J	0.0015 J	0.3 U H	0.0021 J
trans-1,2-Dichloroethene	0.19	0.0022 U	0.064	1.7 J H	0.002 U	0.002 U	0.22 U H	0.0021 U
trans-1,3-Dichloropropene	NS	0.0015 U	0.00036 U	1.7 U H	0.0014 U	0.0014 U	0.26 U H	0.0015 U
Trichloroethene	0.47	0.0046 U	1.4 E	**44 H**	0.0042 U	0.053	1.2 J H	0.0045 U
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.0013 U	0.0051 J	1.8 U H	0.0012 U	0.019 J	0.28 U H	0.0013 U
Xylenes, Total	1.6	0.0028 U	0.00065 U	5.6 U H	0.0025 U	0.0026 U	0.88 U H	0.0027 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 4
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-38 (3-4.5) 220-11210-10 12/29/2009 1 Low	SB-38 (4.5-6) 220-11210-11 12/29/2009 5 Low	SB-38 (6-7.5) 220-11210-12 12/29/2009 2 Low	SB-38 (7.5-9) 220-11210-13 12/29/2009 1 Low	SB-39 (0-1.5) 220-11210-14 12/29/2009 1 Low	SB-39 (1.5-3) 220-11210-15 12/29/2009 1 Low	SB-39 (3-4. 220-11210- 12/29/200 1 Low
1,1,1,2-Tetrachloroethane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	**0.68**	0.00054 U	0.003 U	0.0011 U	0.00057 U	0.00055 U	0.00056 U	0.00054
1,1,2,2-Tetrachloroethane	**NS**	0.00053 U	0.0029 U	0.0011 U	0.00055 U	0.00054 U	0.00055 U	0.00053
1,1,2-Trichloroethane	**NS**	0.00038 U	0.0021 U	0.00079 U	0.00039 U	0.00039 U	0.00039 U	0.00038
1,1-Dichloroethane	**0.27**	0.00031 U	0.0017 U	0.00064 U	0.00032 U	0.00031 U	0.00032 U	0.00031
1,1-Dichloroethene	**0.33**	0.00059 U	0.0032 U *	0.0012 U *	0.00062 U *	0.0006 U	0.00062 U	0.0006
1,1-Dichloropropene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	**3.6**	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	**1.1**	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	**0.02**	0.00059 U	0.0032 U	0.0012 U	0.00062 U	0.0006 U	0.00062 U	0.0006
1,2-Dichloropropane	**NS**	0.00068 U	0.0037 U	0.0014 U	0.00071 U	0.0007 U	0.00071 U	0.00069
1,3,5-Trimethylbenzene	**8.4**	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	**2.4**	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	**1.8**	NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	**NS**	NA	NA	NA	NA	NA	NA	NA
2-Butanone	**0.12**	0.0016 U	0.0089 U	0.0034 U	0.0017 U	0.0017 U	0.0017 U	0.0016
2-Hexanone	**NS**	0.0012 U	0.0067 U	0.0025 U	0.0013 U	0.0013 U	0.0013 U	0.0012
4-Ethyltoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	**NS**	0.00056 U	0.0031 U	0.0012 U	0.00059 U	0.00057 U	0.00059 U	0.00056
Acetone	**0.05**	0.0056 J *	0.051 J B	0.017 J B	0.015 J B	0.0023 U *	0.0024 U *	0.0023
Benzene	**0.06**	0.00058 U	0.0032 U	0.0012 U	0.00061 U	0.00059 U	0.00061 U	0.00059
Bromobenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	**NS**	0.00031 U	0.0017 U	0.00064 U	0.00032 U	0.00031 U	0.00032 U	0.00031
Bromoform	**NS**	0.00062 U	0.0034 U	0.0013 U	0.00065 U	0.00064 U	0.00065 U	0.00063
Bromomethane	**NS**	0.0021 U	0.012 U	0.0044 U	0.0022 U	0.0022 U	0.0022 U	0.0021
Carbon disulfide	**NS**	0.00042 U	0.0023 U	0.00087 U	0.00044 U	0.00043 U	0.00044 U	0.00042
Carbon tetrachloride	**0.76**	0.00097 U	0.0053 U	0.002 U	0.001 U	0.00099 U	0.001 U	0.00098
Chlorobenzene	**1.1**	0.0006 U	0.0033 U	0.0013 U	0.00063 U	0.00062 U	0.00063 U	0.00061
Chloroethane	**NS**	0.001 U	0.0055 U	0.0021 U	0.001 U	0.001 U	0.001 U	0.001
Chloroform	**0.37**	0.00035 U	0.0019 U	0.00072 U	0.00036 U	0.00035 U	0.00036 U	0.00035
Chloromethane	**NS**	0.0008 U	0.0043 U	0.0017 U	0.00083 U	0.00081 U	0.00083 U	0.0008
cis-1,2-Dichloroethene	**0.25**	0.00038 U	0.0028 J	0.0013 J	0.00067 J	0.00039 U	0.00076 J	0.00038
cis-1,3-Dichloropropene	**NS**	0.00057 U	0.0031 U	0.0012 U	0.0006 U	0.00058 U	0.0006 U	0.00058
Dibromochloromethane	**NS**	0.00036 U	0.0019 U	0.00074 U	0.00037 U	0.00036 U	0.00037 U	0.00036
Dibromomethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	**1**	0.00071 U	0.0039 U	0.0015 U	0.00075 U	0.00073 U	0.00074 U	0.00072
Hexachlorobutadiene	**NS**	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	**NS**	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	**0.93**	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	**0.05**	0.0039 J B	0.013 J B	0.0086 J B	0.0035 J B	0.0056 J B	0.005 J B	0.0041
n-Butylbenzene	**12**	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	**3.9**	NA	NA	NA	NA	NA	NA	NA
Naphthalene	**12**	NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
o-Xylene	**1.6**	NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	**NS**	NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	**1.6**	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	**11**	NA	NA	NA	NA	NA	NA	NA
Styrene	**NS**	0.00015 U	0.00083 U	0.00032 U	0.00016 U	0.00016 U	0.00016 U	0.00015
tert-Butylbenzene	**5.9**	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	**1.3**	0.049	0.86	0.25	0.038	0.057	0.13	0.025
Toluene	**0.7**	0.00033 J	0.00041 U	0.00043 J	0.000079 U	0.00025 J	0.00054 J	0.00041
trans-1,2-Dichloroethene	**0.19**	0.0004 U	0.0022 U	0.00083 U	0.00042 U	0.00041 U	0.00041 U	0.0004
trans-1,3-Dichloropropene	**NS**	0.00028 U	0.0015 U	0.00057 U	0.00029 U	0.00028 U	0.00029 U	0.00028
Trichloroethene	**0.47**	0.00083 U	0.0045 U	0.0017 U	0.00086 U	0.00084 U	0.0023 J	0.00083
Trichlorofluoromethane	**NS**	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	**NS**	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	**0.02**	0.00023 U	0.0013 U	0.00049 U	0.00025 U	0.00024 U	0.00024 U	0.00024
Xylenes, Total	**1.6**	0.0005 U	0.011 J	0.0049 J	0.00052 U	0.00051 U	0.00052 U	0.0005

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID	NYSDEC	5)	SB-39 (4.5-6)	SB-39 (6-7.5)	SB-39 (7.5-9)	SB-39 (9-10.5)	SB-39 (10.5-12)	SB-39 (12-13.5)	SB-39 (13.5-15)
Lab Sample ID	Part 375 SCO for	16	220-11210-17	220-11210-18	220-11210-19	220-11210-20	220-11210-21	220-11210-22	220-11210-23
Date Sampled	Unrestricted Use	9	12/29/2009	12/29/2009	12/29/2009	12/29/2009	12/29/2009	12/29/2009	12/29/2009
Dilution	mg/kg		1	2	1	4	1	4	4
			Low	Low	Low	Low	Low	Low	Low
Analyte									
1,1,1,2-Tetrachloroethane	NS		NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	U	0.0006 U	0.0012 U	0.00059 U	0.0022 U	0.00067 U	0.0023 U	0.004 U
1,1,2,2-Tetrachloroethane	NS	U	0.00059 U	0.0011 U	0.00058 U	0.0022 U	0.00066 U	0.0023 U	0.0039 U
1,1,2-Trichloroethane	NS	U	0.00042 U	0.00082 U	0.00041 U	0.0015 U	0.00047 U	0.0016 U	0.0028 U
1,1-Dichloroethane	0.27	U	0.00034 U	0.00066 U	0.00033 U	0.0013 U	0.00038 U	0.0013 U	0.0023 U
1,1-Dichloroethene	0.33	U	0.00066 U	0.0013 U	0.00064 U	0.0024 U	0.00074 U	0.0026 U	0.0044 U
1,1-Dichloropropene	NS		NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS		NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS		NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS		NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6		NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS		NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS		NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1		NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	U	0.00066 U	0.0013 U	0.00064 U	0.0024 U	0.00074 U	0.0026 U	0.0044 U
1,2-Dichloropropane	NS	U	0.00076 U	0.0015 U	0.00074 U	0.0028 U	0.00085 U	0.003 U	0.0051 U
1,3,5-Trimethylbenzene	8.4		NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4		NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS		NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8		NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS		NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS		NA	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	U	0.0018 U	0.0035 U	0.0018 U	0.0066 U	0.002 U	0.007 U	0.12
2-Hexanone	NS	U	0.0014 U	0.0027 U	0.0013 U	0.005 U	0.0015 U	0.0053 U	0.0091 U
4-Ethyltoluene	NS		NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	U	0.00063 U	0.0012 U	0.00061 U	0.0023 U	0.0007 U	0.0024 U	0.0042 U
Acetone	0.05	U *	0.0077 J *	0.0081 J *	0.01 J *	0.014 J *	0.022 J *	0.0099 U *	**0.52 ***
Benzene	0.06	U	0.00065 U	0.0013 U	0.00063 U	0.0024 U	0.00072 U	0.0025 U	0.0043 U
Bromobenzene	NS		NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS		NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	U	0.00034 U	0.00066 U	0.00033 U	0.0013 U	0.00038 U	0.0013 U	0.0023 U
Bromoform	NS	U	0.00069 U	0.0013 U	0.00068 U	0.0025 U	0.00077 U	0.0027 U	0.0046 U
Bromomethane	NS	U	0.0024 U	0.0046 U	0.0023 U	0.0087 U	0.0026 U	0.0092 U	0.016 U
Carbon disulfide	NS	U	0.00047 U	0.00091 U	0.00045 U	0.0017 U	0.00052 U	0.0018 U	0.011 J
Carbon tetrachloride	0.76	U	0.0011 U	0.0021 U	0.0011 U	0.004 U	0.0012 U	0.0042 U	0.0072 U
Chlorobenzene	1.1	U	0.00067 U	0.0013 U	0.00065 U	0.0025 U	0.00075 U	0.0026 U	0.0045 U
Chloroethane	NS	U	0.0011 U	0.0022 U	0.0011 U	0.0041 U	0.0012 U	0.0043 U	0.0074 U
Chloroform	0.37	U	0.00039 U	0.00075 U	0.00038 U	0.0014 U	0.00043 U	0.0015 U	0.0026 U
Chloromethane	NS	U	0.00089 U	0.0017 U	0.00086 U	0.0033 U	0.00099 U	0.0034 U	0.0059 U
cis-1,2-Dichloroethene	0.25	U	0.0035 J	0.017	0.004 J	0.021 J	0.013	0.018 J	0.018 J
cis-1,3-Dichloropropene	NS	U	0.00064 U	0.0012 U	0.00062 U	0.0023 U	0.00071 U	0.0025 U	0.0043 U
Dibromochloromethane	NS	U	0.0004 U	0.00077 U	0.00039 U	0.0015 U	0.00044 U	0.0015 U	0.0027 U
Dibromomethane	NS		NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS		NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	U	0.0008 U	0.0015 U	0.00078 U	0.0029 U	0.00089 U	0.0031 U	0.0053 U
Hexachlorobutadiene	NS		NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS		NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93		NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	J B	0.0029 J B	0.0074 J B	0.0041 J B	0.02 J B	0.0037 J B	0.014 J B	0.019 J B
n-Butylbenzene	12		NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9		NA	NA	NA	NA	NA	NA	NA
Naphthalene	12		NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS		NA	NA	NA	NA	NA	NA	NA
o-Xylene	1.6		NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS		NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS		NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6		NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11		NA	NA	NA	NA	NA	NA	NA
Styrene	NS	U	0.00017 U	0.00033 U	0.00017 U	0.00063 U	0.00019 U	0.00066 U	0.0011 U
tert-Butylbenzene	5.9		NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3		0.081	0.19	0.092	0.41	0.0014 J	0.46 *	0.0097 J
Toluene	0.7	J	0.00016 J	0.00016 U	0.00024 J	0.00073 J	0.000094 U	0.00053 J	0.0048 J
trans-1,2-Dichloroethene	0.19	U	0.00044 U	0.00086 U	0.00043 U	0.0016 U	0.0005 U	0.0017 U	0.003 U
trans-1,3-Dichloropropene	NS	U	0.00031 U	0.0006 U	0.0003 U	0.0011 U	0.00034 U	0.0012 U	0.002 U
Trichloroethene	0.47	U	0.0045 J	0.018	0.0057	0.05	0.001 U	0.043	0.0061 U
Trichlorofluoromethane	NS		NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS		NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	U	0.00026 U	0.00051 U	0.00026 U	0.00096 U	**0.021**	0.001 U	0.0017 U
Xylenes, Total	1.6	U	0.00055 U	0.0011 U	0.00054 U	0.002 U	0.00062 U	0.0021 U	0.0037 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-40 (0-1.5) 220-11210-24 12/29/2009 1 Low	SB-40 (3-4.5) 220-11210-26 12/29/2009 1 Low	SB-40 (4.5-6) 220-11210-27 12/29/2009 1 Low	SB-40 (6-7.5) 220-11210-28 12/29/2009 1 Low	SB-40 (7.5-9) 220-11210-29 12/29/2009 1 Low	SB-40 (9-10.5) 220-11210-30 12/29/2009 1 Low	SB-40 (10.5-12) 220-11210-31 12/29/2009 1 Low
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.00056 U	0.00059 U	0.00059 U	0.0006 U	0.00059 U	0.00055 U	0.00058 U
1,1,2,2-Tetrachloroethane	NS	0.00055 U	0.00058 U	0.00058 U	0.00059 U	0.00058 U	0.00054 U	0.00056 U
1,1,2-Trichloroethane	NS	0.00039 U	0.00041 U	0.00041 U	0.00042 U	0.00041 U	0.00039 U	0.0004 U
1,1-Dichloroethane	0.27	0.00032 U	0.00033 U	0.00033 U	0.00034 U	0.00034 U	0.00031 U	0.00033 U
1,1-Dichloroethene	0.33	0.00061 U	0.00064 U	0.00065 U	0.00066 U	0.00065 U	0.00061 U	0.00063 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.00061 U	0.00064 U	0.00065 U	0.00066 U	0.00065 U	0.00061 U	0.00063 U
1,2-Dichloropropane	NS	0.00071 U	0.00074 U	0.00075 U	0.00076 U	0.00075 U	0.0007 U	0.00073 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0017 U	0.0018 U	0.0018 U	0.0018 U	0.0018 U	0.0017 U	0.0017 U
2-Hexanone	NS	0.0013 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U	0.0013 U	0.0013 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.00058 U	0.00061 U	0.00061 U	0.00063 U	0.00061 U	0.00057 U	0.0006 U
Acetone	0.05	0.0057 J *	0.0025 U *	0.0025 U *	0.0025 U *	0.0025 U *	0.026 *	0.0024 U *
Benzene	0.06	0.0006 U	0.00063 U	0.00063 U	0.00065 U	0.00064 U	0.00059 U	0.00062 U
Bromobenzene	NS	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.00032 U	0.00033 U	0.00033 U	0.00034 U	0.00034 U	0.00031 U	0.00033 U
Bromoform	NS	0.00065 U	0.00068 U	0.00068 U	0.00069 U	0.00068 U	0.00064 U	0.00066 U
Bromomethane	NS	0.0022 U	0.0023 U	0.0023 U	0.0024 U	0.0023 U	0.0022 U	0.0023 U
Carbon disulfide	NS	0.00043 U	0.00045 U	0.00046 U	0.00047 U	0.00046 U	0.00043 U	0.00045 U
Carbon tetrachloride	0.76	0.001 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.00099 U	0.001 U
Chlorobenzene	1.1	0.00062 U	0.00065 U	0.00066 U	0.00067 U	0.00066 U	0.00062 U	0.00064 U
Chloroethane	NS	0.001 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.001 U	0.0011 U
Chloroform	0.37	0.00036 U	0.00038 U	0.00038 U	0.00039 U	0.00038 U	0.00035 U	0.00037 U
Chloromethane	NS	0.00083 U	0.00086 U	0.00087 U	0.00089 U	0.00087 U	0.00081 U	0.00085 U
cis-1,2-Dichloroethene	0.25	0.00039 U	0.00041 U	0.00041 U	0.00042 U	0.00041 U	0.00039 U	0.0004 U
cis-1,3-Dichloropropene	NS	0.00059 U	0.00062 U	0.00062 U	0.00064 U	0.00063 U	0.00058 U	0.00061 U
Dibromochloromethane	NS	0.00037 U	0.00039 U	0.00039 U	0.0004 U	0.00039 U	0.00037 U	0.00038 U
Dibromomethane	NS	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	0.00074 U	0.00078 U	0.00078 U	0.0008 U	0.00078 U	0.00073 U	0.00076 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.0062 J B	0.0044 J B	0.0033 J B	0.0039 J B	0.0035 J B	0.0074 J B	0.0029 J B
n-Butylbenzene	12	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA	NA	NA
Styrene	NS	0.00016 U	0.00017 U	0.00017 U	0.00017 U	0.00017 U	0.00016 U	0.00016 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.022	0.064	0.11	0.12	0.05	0.027	0.025
Toluene	0.7	0.00042 J	0.00043 J	0.00036 J	0.000084 U	0.00019 J	0.00055 J	0.00008 U
trans-1,2-Dichloroethene	0.19	0.00041 U	0.00043 U	0.00043 U	0.00044 U	0.00044 U	0.00041 U	0.00042 U
trans-1,3-Dichloropropene	NS	0.00029 U	0.0003 U	0.0003 U	0.00031 U	0.0003 U	0.00028 U	0.00029 U
Trichloroethene	0.47	0.00086 U	0.0039 J	0.0052 J	0.012	0.0054 J	0.0016 J	0.0059
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.00024 U	0.00025 U	0.00026 U	0.00026 U	0.00026 U	0.00024 U	0.00025 U
Xylenes, Total	1.6	0.00051 U	0.00054 U	0.00054 U	0.00055 U	0.00054 U	0.00051 U	0.00053 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 SCO for Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	SB-40 (12-13.5) 220-11210-32 12/29/2009 1 Low	SB-40 (13.5-15) 220-11210-33 12/29/2009 1 Low
1,1,1,2-Tetrachloroethane	NS	NA	NA
1,1,1-Trichloroethane	0.68	0.00055 U	0.00055 U
1,1,2,2-Tetrachloroethane	NS	0.00054 U	0.00054 U
1,1,2-Trichloroethane	NS	0.00039 U	0.00038 U
1,1-Dichloroethane	0.27	0.00031 U	0.00031 U
1,1-Dichloroethene	0.33	0.0006 U	0.0006 U
1,1-Dichloropropene	NS	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA
1,2-Dibromoethane	NS	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA
1,2-Dichloroethane	0.02	0.0006 U	0.0006 U
1,2-Dichloropropane	NS	0.0007 U	0.0007 U
1,3,5-Trimethylbenzene	8.4	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA
1,3-Dichloropropane	NS	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA
1,4-Diethylbenzene	NS	NA	NA
2,2-Dichloropropane	NS	NA	NA
2-Butanone	0.12	0.0017 U	0.0017 U
2-Hexanone	NS	0.0013 U	0.0012 U
4-Ethyltoluene	NS	NA	NA
4-Methyl-2-pentanone	NS	0.00057 U	0.00057 U
Acetone	0.05	0.022 *	0.03 *
Benzene	0.06	0.00059 U	0.00059 U
Bromobenzene	NS	NA	NA
Bromochloromethane	NS	NA	NA
Bromodichloromethane	NS	0.00031 U	0.00031 U
Bromoform	NS	0.00064 U	0.00063 U
Bromomethane	NS	0.0022 U	0.0022 U
Carbon disulfide	NS	0.00043 U	0.00043 U
Carbon tetrachloride	0.76	0.00099 U	0.00099 U
Chlorobenzene	1.1	0.00061 U	0.00061 U
Chloroethane	NS	0.001 U	0.001 U
Chloroform	0.37	0.00035 U	0.00035 U
Chloromethane	NS	0.00081 U	0.00081 U
cis-1,2-Dichloroethene	0.25	0.00039 U	0.00038 U
cis-1,3-Dichloropropene	NS	0.00058 U	0.00058 U
Dibromochloromethane	NS	0.00036 U	0.00036 U
Dibromomethane	NS	NA	NA
Dichlorodifluoromethane	NS	NA	NA
Ethylbenzene	1	0.00073 U	0.00073 U
Hexachlorobutadiene	NS	NA	NA
Isopropylbenzene	NS	NA	NA
Methyl tert butyl ether	0.93	NA	NA
Methylene chloride	0.05	0.0093 J B	0.0086 J B
n-Butylbenzene	12	NA	NA
n-Propylbenzene	3.9	NA	NA
Naphthalene	12	NA	NA
o-Chlorotoluene	NS	NA	NA
o-Xylene	1.6	NA	NA
p-Chlorotoluene	NS	NA	NA
p-Isopropyltoluene	NS	NA	NA
p/m-Xylene	1.6	NA	NA
sec-Butylbenzene	11	NA	NA
Styrene	NS	0.00016 U	0.00016 U
tert-Butylbenzene	5.9	NA	NA
Tetrachloroethene	1.3	0.022	0.034
Toluene	0.7	0.00054 J	0.00057 J
trans-1,2-Dichloroethene	0.19	0.00041 U	0.00041 U
trans-1,3-Dichloropropene	NS	0.00028 U	0.00028 U
Trichloroethene	0.47	0.0016 J	0.0033 J
Trichlorofluoromethane	NS	NA	NA
Vinyl acetate	NS	NA	NA
Vinyl chloride	0.02	0.00024 U	0.00024 U
Xylenes, Total	1.6	0.00051 U	0.00051 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	M-7 (10-12') 200798-1 3/26/2002	M-7D (10-12') 200798-2 3/26/2002 Duplicate Sample of M-7(10-12')	M-8 (10-12') 200798-3 3/26/2002	BLIND(M-8 10-12') 200798-4 3/26/2002 Duplicate Sample of M-8 (10-12')	M-11D (10-12) L0716048-03 10/23/2007
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	0.005 U
1,1,1-Trichloroethane	0.68	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
1,1,2,2-Tetrachloroethane	NS	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U
1,1,2-Trichloroethane	NS	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0075 U
1,1-Dichloroethane	0.27	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.0075 U
1,1-Dichloroethene	0.33	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	0.025 U
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	0.025 U
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	0.025 U
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	0.11
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	0.025 U
1,2-Dibromoethane	NS	NA	NA	NA	NA	0.02 U
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	0.025 U
1,2-Dichloroethane	0.02	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
1,2-Dichloropropane	NS	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.018 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	0.079
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	0.025 U
1,3-Dichloropropane	NS	NA	NA	NA	NA	0.025 U
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	0.025 U
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	0.025 U
2-Butanone	0.12	0.009 J	0.017	0.004 U	0.004 U	0.062
2-Hexanone	NS	0.005 U	0.005 U	0.005 U	0.005 U	0.05 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.004 U	0.004 U	0.004 U	0.004 U	0.05 U
Acetone	0.05	0.034 B	0.052 B	0.035 B	0.041 B	0.23
Benzene	0.06	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
Bromobenzene	NS	NA	NA	NA	NA	0.025 U
Bromochloromethane	NS	NA	NA	NA	NA	0.025 U
Bromodichloromethane	NS	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
Bromoform	NS	0.0008 U	0.0008 U	0.0008 U	0.0008 U	0.02 U
Bromomethane	NS	0.003 U	0.003 U	0.003 U	0.003 U	0.01 U
Carbon disulfide	NS	0.005 J	0.004 J	0.0003 UB	0.005 J	0.05 U
Carbon tetrachloride	0.76	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
Chlorobenzene	1.1	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
Chloroethane	NS	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.01 U
Chloroform	0.37	0.0008 U	0.0008 U	0.0008 U	0.0008 U	0.0075 U
Chloromethane	NS	0.001 U	0.001 U	0.001 U	0.001 U	0.025 U
cis-1,2-Dichloroethene	0.25	0.0006 U	0.0006 U	0.0006 U	0.0006 U	2.7
cis-1,3-Dichloropropene	NS	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
Dibromochloromethane	NS	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
Dibromomethane	NS	NA	NA	NA	NA	0.05 U
Dichlorodifluoromethane	NS	NA	NA	NA	NA	0.05 U
Ethylbenzene	1	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	0.025 U
Isopropylbenzene	NS	NA	NA	NA	NA	0.011
Methyl tert butyl ether	0.93	NA	NA	NA	NA	0.01 U
Methylene chloride	0.05	0.002 UB	0.002 UB	0.002 U	0.002 UB	0.05 U
n-Butylbenzene	12	NA	NA	NA	NA	0.032
n-Propylbenzene	3.9	NA	NA	NA	NA	0.01
Naphthalene	12	NA	NA	NA	NA	0.035
o-Chlorotoluene	NS	NA	NA	NA	NA	0.025 U
o-Xylene	1.6	NA	NA	NA	NA	0.01 U
p-Chlorotoluene	NS	NA	NA	NA	NA	0.025 U
p-Isopropyltoluene	NS	NA	NA	NA	NA	0.17
p/m-Xylene	1.6	NA	NA	NA	NA	0.01 U
sec-Butylbenzene	11	NA	NA	NA	NA	0.032
Styrene	NS	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.01 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	0.025 U
Tetrachloroethene	1.3	0.012	0.01	0.002 J	0.02	0.009
Toluene	0.7	0.0005 J	0.0005 J	0.0006 U	0.0006 U	0.0075 U
trans-1,2-Dichloroethene	0.19	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.013
trans-1,3-Dichloropropene	NS	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.005 U
Trichloroethene	0.47	0.0006 U	0.0006 U	0.0006 U	0.0006 U	0.005 U
Trichlorofluoromethane	NS	NA	NA	NA	NA	0.025 U
Vinyl acetate	NS	0.004 U	0.004 U	0.004 U	0.004 U	0.05 U
Vinyl chloride	0.02	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.69
Xylenes, Total	1.6	0.001 U	0.001 U	0.001 U	0.001 U	0.02 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	M-11D (12-14) L0716048-04 10/23/2007	M-12D (14-16) L0716048-01 10/22/2007	M-12D (10-12) L0716048-02 10/22/2007	M-14D (0-2.5') 220-10802-1 11/23/2009	M-14D (2.5'-5') 220-10802-2 11/23/2009
1,1,1,2-Tetrachloroethane	NS	0.0032 U	0.0043 U	0.0029 U	NA	NA
1,1,1-Trichloroethane	0.68	0.0032 U	0.0043 U	0.0029 U	0.00064 U	0.00062 U
1,1,2,2-Tetrachloroethane	NS	0.0032 U	0.0043 U	0.0029 U	0.00063 U	0.00061 U
1,1,2-Trichloroethane	NS	0.0048 U	0.0065 U	0.0044 U	0.00045 U	0.00043 U
1,1-Dichloroethane	0.27	0.0048 U	0.0065 U	0.0044 U	0.00036 U	0.00035 U
1,1-Dichloroethene	0.33	0.0032 U	0.0043 U	0.0029 U	0.00071 U	0.00068 U
1,1-Dichloropropene	NS	0.016 U	0.022 U	0.014 U	NA	NA
1,2,3-Trichlorobenzene	NS	0.016 U	0.022 U	0.014 U	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	0.016 U	0.022 U	0.014 U	NA	NA
1,2,4-Trimethylbenzene	3.6	0.016 U	0.022 U	0.014 U	NA	NA
1,2-Dibromo-3-chloropropane	NS	0.016 U	0.022 U	0.014 U	NA	NA
1,2-Dibromoethane	NS	0.013 U	0.017 U	0.012 U	NA	NA
1,2-Dichlorobenzene	1.1	0.016 U	0.022 U	0.028	NA	NA
1,2-Dichloroethane	0.02	0.0032 U	0.0043 U	0.0029 U	0.00071 U	0.00068 U
1,2-Dichloropropane	NS	0.011 U	0.015 U	0.01 U	0.00081 U	0.00078 U
1,3,5-Trimethylbenzene	8.4	0.016 U	0.022 U	0.014 U	NA	NA
1,3-Dichlorobenzene	2.4	0.016 U	0.022 U	0.014 U	NA	NA
1,3-Dichloropropane	NS	0.016 U	0.022 U	0.014 U	NA	NA
1,4-Dichlorobenzene	1.8	0.016 U	0.022 U	0.014 U	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	0.016 U	0.022 U	0.014 U	NA	NA
2-Butanone	0.12	0.032 U	0.043 U	0.029 U	0.0019 U *	0.0019 U *
2-Hexanone	NS	0.032 U	0.043 U	0.029 U	0.0015 U	0.0014 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.032 U	0.043 U	0.029 U	0.00067 U	0.00064 U
Acetone	0.05	0.049	0.088	0.063	0.0082 J B	0.071 B
Benzene	0.06	0.0032 U	0.0043 U	0.0029 U	0.00069 U	0.00066 U
Bromobenzene	NS	0.016 U	0.022 U	0.014 U	NA	NA
Bromochloromethane	NS	0.016 U	0.022 U	0.014 U	NA	NA
Bromodichloromethane	NS	0.0032 U	0.0043 U	0.0029 U	0.00036 U	0.00035 U
Bromoform	NS	0.013 U	0.017 U	0.012 U	0.00074 U	0.00071 U
Bromomethane	NS	0.0064 U	0.0086 U	0.0058 U	0.0025 U *	0.0024 U *
Carbon disulfide	NS	0.032 U	0.043 U	0.029 U	0.0005 U	0.00048 U
Carbon tetrachloride	0.76	0.0032 U	0.0043 U	0.0029 U	0.0012 U	0.0011 U
Chlorobenzene	1.1	0.0032 U	0.0043 U	0.0029 U	0.00072 U	0.00069 U
Chloroethane	NS	0.0064 U	0.0086 U	0.0058 U	0.0012 U	0.0011 U
Chloroform	0.37	0.0048 U	0.0065 U	0.0044 U	0.00041 U	0.0004 U
Chloromethane	NS	0.016 U	0.022 U	0.014 U	0.00095 U	0.00091 U
cis-1,2-Dichloroethene	0.25	0.0032 U	0.0043 U	0.0029 U	0.00045 U	0.00043 U
cis-1,3-Dichloropropene	NS	0.0032 U	0.0043 U	0.0029 U	0.00068 U	0.00065 U
Dibromochloromethane	NS	0.0032 U	0.0043 U	0.0029 U	0.00043 U	0.00041 U
Dibromomethane	NS	0.032 U	0.043 U	0.029 U	NA	NA
Dichlorodifluoromethane	NS	0.032 U	0.043 U	0.029 U	NA	NA
Ethylbenzene	1	0.0032 U	0.0043 U	0.0029 U	0.00085 U	0.00081 U
Hexachlorobutadiene	NS	0.016 U	0.022 U	0.014 U	NA	NA
Isopropylbenzene	NS	0.038	0.016	0.28	NA	NA
Methyl tert butyl ether	0.93	0.0064 U	0.0086 U	0.0058 U	NA	NA
Methylene chloride	0.05	0.032 U	0.043 U	0.029 U	0.0056 J B	0.012 J B
n-Butylbenzene	12	0.064	0.036	0.46	NA	NA
n-Propylbenzene	3.9	0.094	0.033	0.6	NA	NA
Naphthalene	12	0.016 U	0.084	0.2	NA	NA
o-Chlorotoluene	NS	0.016 U	0.022 U	0.014 U	NA	NA
o-Xylene	1.6	0.0064 U	0.0086 U	0.0058 U	NA	NA
p-Chlorotoluene	NS	0.016 U	0.022 U	0.014 U	NA	NA
p-Isopropyltoluene	NS	0.0032 U	0.0043 U	0.0029 U	NA	NA
p/m-Xylene	1.6	0.0064 U	0.0086 U	0.0058 U	NA	NA
sec-Butylbenzene	11	0.075	0.046	0.35	NA	NA
Styrene	NS	0.0064 U	0.0086 U	0.0058 U	0.00018 U	0.00017 U
tert-Butylbenzene	5.9	0.016 U	0.022 U	0.032	NA	NA
Tetrachloroethene	1.3	0.12	0.0043 U	0.0065	0.00098 U	0.00094 U
Toluene	0.7	0.0048 U	0.0065 U	0.0044 U	0.0002 J	0.00021 J
trans-1,2-Dichloroethene	0.19	0.0048 U	0.0065 U	0.0044 U	0.00047 U	0.00045 U
trans-1,3-Dichloropropene	NS	0.0032 U	0.0043 U	0.0029 U	0.00033 U	0.00031 U
Trichloroethene	0.47	0.0045	0.0043 U	0.0029 U	0.00098 U	0.00094 U
Trichlorofluoromethane	NS	0.016 U	0.022 U	0.014 U	NA	NA
Vinyl acetate	NS	0.032 U	0.043 U	0.029 U	NA	NA
Vinyl chloride	0.02	0.0064 U	0.0086 U	0.0058 U	0.00028 U	0.00027 U
Xylenes, Total	1.6	0.0128 U	0.0172 U	0.0116 U	0.00098 J	0.00057 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	M-14D (5'-7.5') 220-10802-3 11/23/2009	M-14D (7.5'-10') 220-10802-4 11/23/2009	M-14D (10'-12.5') 220-10802-5 11/23/2009	M-14D (12.5'-15') 220-10802-6 11/23/2009	M-14D (15'-17.5') 220-10802-7 11/23/2009
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.00062 U	0.00089 U	0.00093 U	0.001 U	0.00093 U
1,1,2,2-Tetrachloroethane	NS	0.00061 U	0.00088 U	0.00092 U	0.001 U	0.00091 U
1,1,2-Trichloroethane	NS	0.00044 U	0.00062 U	0.00065 U	0.00073 U	0.00065 U
1,1-Dichloroethane	0.27	0.00035 U	0.00051 U	0.00053 U	0.00059 U	0.00052 U
1,1-Dichloroethene	0.33	0.00068 U	0.00098 U	0.001 U	0.0011 U	0.001 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.00068 U	0.00098 U	0.001 U	0.0011 U	0.001 U
1,2-Dichloropropane	NS	0.00079 U	0.0011 U	0.0012 U	0.0013 U	0.0012 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA
2-Butanone	0.12	0.0019 U *	0.029 *	0.0028 U *	0.0031 U *	0.0028 U *
2-Hexanone	NS	0.0014 U	0.002 U	0.0021 U	0.0024 U	0.0021 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.00065 U	0.00093 U	0.00097 U	0.0011 U	0.00096 U
Acetone	0.05	0.053 B	0.15 B	0.042 B	0.088 B	0.055 B
Benzene	0.06	0.00067 U	0.00096 U	0.001 U	0.0011 U	0.001 U
Bromobenzene	NS	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.00035 U	0.00051 U	0.00053 U	0.00059 U	0.00052 U
Bromoform	NS	0.00072 U	0.001 U	0.0011 U	0.0012 U	0.0011 U
Bromomethane	NS	0.0024 U *	0.0035 U *	0.0037 U *	0.0041 U	0.0036 U
Carbon disulfide	NS	0.00048 U	0.0035 J	0.0089	0.01	0.017
Carbon tetrachloride	0.76	0.0011 U	0.0016 U	0.0017 U	0.0019 U	0.0017 U
Chlorobenzene	1.1	0.00069 U	0.001 U	0.001 U	0.0012 U	0.001 U
Chloroethane	NS	0.0012 U	0.0017 U	0.0017 U	0.0019 U	0.0017 U
Chloroform	0.37	0.0004 U	0.00057 U	0.0006 U	0.00067 U	0.00059 U
Chloromethane	NS	0.00092 U	0.0013 U	0.0014 U	0.0015 U	0.0014 U
cis-1,2-Dichloroethene	0.25	0.00044 U	0.00062 U	0.00065 U	0.00073 U	0.00065 U
cis-1,3-Dichloropropene	NS	0.00066 U	0.00095 U	0.00099 U	0.0011 U	0.00098 U
Dibromochloromethane	NS	0.00041 U	0.00059 U	0.00062 U	0.00069 U	0.00061 U
Dibromomethane	NS	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA
Ethylbenzene	1	0.00082 U	0.0012 U	0.0012 U	0.0014 U	0.0012 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.013 J B	0.01 J B	0.01 J B	0.01 J B	0.01 J B
n-Butylbenzene	12	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA
Styrene	NS	0.00018 U	0.00025 U	0.00026 U	0.0003 U	0.00026 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.00095 U	0.0014 U	0.0014 U	0.0016 U	0.0014 U
Toluene	0.7	0.00017 J	0.00054 J	0.00028 J	0.00015 U	0.00046 J
trans-1,2-Dichloroethene	0.19	0.00046 U	0.00066 U	0.00069 U	0.00077 U	0.00068 U
trans-1,3-Dichloropropene	NS	0.00032 U	0.00046 U	0.00048 U	0.00053 U	0.00047 U
Trichloroethene	0.47	0.00095 U	0.0014 U	0.0014 U	0.0016 U	0.0014 U
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	NA	NA
Vinyl chloride	0.02	0.00027 U	0.00039 U	0.00041 U	0.00045 U	0.0004 U
Xylenes, Total	1.6	0.00057 U	0.0015 J	0.00086 U	0.0016 J	0.00085 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	M-14D (17.5'-20') 220-10802-8 11/23/2009	FB-1 220-10802-9 11/23/2009	TB-1 220-10802-10 11/24/2009	FB 200798-5 3/26/2002 Field Blank	TB 200798-6 3/26/2002 Trip Blank
1,1,1,2-Tetrachloroethane	NS	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	0.68	0.00099 U	0.00069 U	0.00069 U	0.0002 U	0.0002 U
1,1,2,2-Tetrachloroethane	NS	0.00097 U	0.00081 U	0.00081 U	0.0003 U	0.0003 U
1,1,2-Trichloroethane	NS	0.00069 U	0.00065 U	0.00065 U	0.0002 U	0.0002 U
1,1-Dichloroethane	0.27	0.00056 U	0.001 U	0.001 U	0.0003 U	0.0003 U
1,1-Dichloroethene	0.33	0.0011 U	0.00083 U	0.00083 U	0.0006 U	0.0006 U
1,1-Dichloropropene	NS	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	NS	NA	NA	NA	NA	NA
1,2,4,5-Tetramethylbenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	NS	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	3.6	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NS	NA	NA	NA	NA	NA
1,2-Dibromoethane	NS	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	1.1	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.02	0.0011 U	0.00072 U	0.00072 U	0.0003 U	0.0003 U
1,2-Dichloropropane	NS	0.0013 U	0.00071 U	0.00071 U	0.0003 U	0.0003 U
1,3,5-Trimethylbenzene	8.4	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	2.4	NA	NA	NA	NA	NA
1,3-Dichloropropane	NS	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	NA	NA	NA	NA	NA
1,4-Diethylbenzene	NS	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NA	NA	NA	NA	NA
2-Butanone	0.12	0.003 U *	0.0012 J	0.0011 U	0.0004 UB	0.0004 UB
2-Hexanone	NS	0.0022 U	0.0011 U	0.0011 U	0.0008 U	0.0008 U
4-Ethyltoluene	NS	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	NS	0.001 U	0.00038 U	0.00038 U	0.0004 U	0.0004 U
Acetone	0.05	0.06 B	0.0018 J	0.0022 J	0.0009 UB	0.003 JB
Benzene	0.06	0.0011 U	0.00074 U	0.00074 U	0.0003 U	0.0003 U
Bromobenzene	NS	NA	NA	NA	NA	NA
Bromochloromethane	NS	NA	NA	NA	NA	NA
Bromodichloromethane	NS	0.00056 U	0.00048 U	0.00048 U	0.0002 U	0.0002 U
Bromoform	NS	0.0011 U	0.00046 U	0.00046 U	0.0002 U	0.0002 U
Bromomethane	NS	0.0039 U *	0.0021 U	0.0021 U	0.002 U	0.002 U
Carbon disulfide	NS	0.012	0.0009 U	0.0009 U	0.0003 U	0.0003 U
Carbon tetrachloride	0.76	0.0018 U	0.0011 U	0.0011 U	0.0002 U	0.0002 U
Chlorobenzene	1.1	0.0011 U	0.00072 U	0.00072 U	0.0002 U	0.0002 U
Chloroethane	NS	0.0018 U	0.0011 U	0.0011 U	0.004 U	0.004 U
Chloroform	0.37	0.00064 U	0.00067 U	0.00067 U	0.0009 U	0.0009 U
Chloromethane	NS	0.0015 U	0.0011 U	0.0011 U	0.0009 U	0.0009 U
cis-1,2-Dichloroethene	0.25	0.00069 U	0.00099 U	0.00099 U	0.0003 U	0.0003 U
cis-1,3-Dichloropropene	NS	0.001 U	0.00028 U	0.00028 U	0.0003 U	0.0003 U
Dibromochloromethane	NS	0.00066 U	0.00055 U	0.00055 U	0.0002 U	0.0002 U
Dibromomethane	NS	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NS	NA	NA	NA	NA	NA
Ethylbenzene	1	0.0013 U	0.00087 U	0.00087 U	0.0003 U	0.0003 U
Hexachlorobutadiene	NS	NA	NA	NA	NA	NA
Isopropylbenzene	NS	NA	NA	NA	NA	NA
Methyl tert butyl ether	0.93	NA	NA	NA	NA	NA
Methylene chloride	0.05	0.014 J B	0.0021 J	0.0026 J	0.0002 U	0.0002 U
n-Butylbenzene	12	NA	NA	NA	NA	NA
n-Propylbenzene	3.9	NA	NA	NA	NA	NA
Naphthalene	12	NA	NA	NA	NA	NA
o-Chlorotoluene	NS	NA	NA	NA	NA	NA
o-Xylene	1.6	NA	NA	NA	NA	NA
p-Chlorotoluene	NS	NA	NA	NA	NA	NA
p-Isopropyltoluene	NS	NA	NA	NA	NA	NA
p/m-Xylene	1.6	NA	NA	NA	NA	NA
sec-Butylbenzene	11	NA	NA	NA	NA	NA
Styrene	NS	0.00028 U	0.00064 U	0.00064 U	0.0002 U	0.0002 U
tert-Butylbenzene	5.9	NA	NA	NA	NA	NA
Tetrachloroethene	1.3	0.0015 U	0.00081 U	0.00081 U	0.0003 U	0.0003 U
Toluene	0.7	0.0037 J	0.00072 U	0.00072 U	0.0003 U	0.0003 U
trans-1,2-Dichloroethene	0.19	0.00073 U	0.00076 U	0.00076 U	0.0003 U	0.0003 U
trans-1,3-Dichloropropene	NS	0.00051 U	0.00057 U	0.00057 U	0.0002 U	0.0002 U
Trichloroethene	0.47	0.0015 U	0.00062 U	0.00062 U	0.0008 U	0.0008 U
Trichlorofluoromethane	NS	NA	NA	NA	NA	NA
Vinyl acetate	NS	NA	NA	NA	0.0007 U	0.0007 U
Vinyl chloride	0.02	0.00043 U	0.00099 U	0.00099 U	0.0003 U	0.0003 U
Xylenes, Total	1.6	0.00091 U	0.0023 U	0.0023 U	0.0005 U	0.0005 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	FIELD BLANK 1 L0718726-20 12/14/2007	FIELD BLANK-2 L0800656-02 1/11/2008	FIELD BLANK-3 220-11026-1 12/10/2009 1	TRIP BLANK 220-11210-34 12/29/2009 1	TRIP BLANK 1 L0718726-21 11/30/2007
1,1,1,2-Tetrachloroethane	NS	0.5 U	0.5 U	NA	NA	0.5 U
1,1,1-Trichloroethane	0.68	0.5 U	0.5 U	0.00069 U	0.00069 U	0.5 U
1,1,2,2-Tetrachloroethane	NS	0.5 U	0.5 U	0.00081 U	0.00081 U	0.5 U
1,1,2-Trichloroethane	NS	0.75 U	0.75 U	0.00065 U	0.00065 U	0.75 U
1,1-Dichloroethane	0.27	0.75 U	0.75 U	0.001 U	0.001 U	0.75 U
1,1-Dichloroethene	0.33	0.5 U	0.5 U	0.00083 U	0.00083 U	0.5 U
1,1-Dichloropropene	NS	2.5 U	2.5 U	NA	NA	2.5 U
1,2,3-Trichlorobenzene	NS	2.5 U	2.5 U	NA	NA	2.5 U
1,2,4,5-Tetramethylbenzene	NS	0.5 U	0.5 U	NA	NA	0.5 U
1,2,4-Trichlorobenzene	NS	2.5 U	2.5 U	NA	NA	2.5 U
1,2,4-Trimethylbenzene	3.6	2.5 U	2.5 U	NA	NA	2.5 U
1,2-Dibromo-3-chloropropane	NS	2.5 U	2.5 U	NA	NA	2.5 U
1,2-Dibromoethane	NS	2 U	2 U	NA	NA	2 U
1,2-Dichlorobenzene	1.1	2.5 U	2.5 U	NA	NA	2.5 U
1,2-Dichloroethane	0.02	0.5 U	0.5 U	0.00072 U	0.00072 U	0.5 U
1,2-Dichloropropane	NS	1.8 U	1.8 U	0.00071 U	0.00071 U	1.8 U
1,3,5-Trimethylbenzene	8.4	2.5 U	2.5 U	NA	NA	2.5 U
1,3-Dichlorobenzene	2.4	2.5 U	2.5 U	NA	NA	2.5 U
1,3-Dichloropropane	NS	2.5 U	2.5 U	NA	NA	2.5 U
1,4-Dichlorobenzene	1.8	2.5 U	2.5 U	NA	NA	2.5 U
1,4-Diethylbenzene	NS	0.5 U	0.5 U	NA	NA	0.5 U
2,2-Dichloropropane	NS	2.5 U	2.5 U	NA	NA	2.5 U
2-Butanone	0.12	5 U	5 U	0.0011 U	0.0011 U	5 U
2-Hexanone	NS	5 U	5 U	0.0011 U	0.0011 U	5 U
4-Ethyltoluene	NS	0.5 U	0.5 U	NA	NA	0.5 U
4-Methyl-2-pentanone	NS	5 U	5 U	0.00038 U	0.00038 U	5 U
Acetone	0.05	5 U	5 U	0.001 U	0.001 U *	5 U
Benzene	0.06	0.5 U	0.5 U	0.00074 U	0.00074 U	0.5 U
Bromobenzene	NS	2.5 U	2.5 U	NA	NA	2.5 U
Bromochloromethane	NS	2.5 U	2.5 U	NA	NA	2.5 U
Bromodichloromethane	NS	0.5 U	0.5 U	0.00048 U	0.00048 U	0.5 U
Bromoform	NS	2 U	2 U	0.00046 U	0.00046 U	2 U
Bromomethane	NS	1 U	1 U	0.0021 U	0.0021 U	1 U
Carbon disulfide	NS	5 U	5 U	0.0009 U	0.0009 U	5 U
Carbon tetrachloride	0.76	0.5 U	0.5 U	0.0011 U	0.0011 U	0.5 U
Chlorobenzene	1.1	0.5 U	0.5 U	0.00072 U	0.00072 U	0.5 U
Chloroethane	NS	1 U	1 U	0.0011 U	0.0011 U	1 U
Chloroform	0.37	0.75 U	0.75 U	0.00067 U	0.00067 U	0.75 U
Chloromethane	NS	2.5 U	2.5 U	0.0011 U	0.0011 U	2.5 U
cis-1,2-Dichloroethene	0.25	0.5 U	0.5 U	0.00099 U	0.00099 U	0.5 U
cis-1,3-Dichloropropene	NS	0.5 U	0.5 U	0.00028 U	0.00028 U	0.5 U
Dibromochloromethane	NS	0.5 U	0.5 U	0.00055 U	0.00055 U	0.5 U
Dibromomethane	NS	5 U	5 U	NA	NA	5 U
Dichlorodifluoromethane	NS	5 U	5 U	NA	NA	5 U
Ethylbenzene	1	0.5 U	0.5 U	0.00087 U	0.00087 U	0.5 U
Hexachlorobutadiene	NS	0.6 U	0.6 U	NA	NA	0.6 U
Isopropylbenzene	NS	0.5 U	0.5 U	NA	NA	0.5 U
Methyl tert butyl ether	0.93	1 U	1 U	NA	NA	1 U
Methylene chloride	0.05	5 U	5 U	0.00078 U	0.0046 J	5 U
n-Butylbenzene	12	0.5 U	0.5 U	NA	NA	0.5 U
n-Propylbenzene	3.9	0.5 U	0.5 U	NA	NA	0.5 U
Naphthalene	12	2.5 U	2.5 U	NA	NA	2.5 U
o-Chlorotoluene	NS	2.5 U	2.5 U	NA	NA	2.5 U
o-Xylene	1.6	1 U	1 U	NA	NA	1 U
p-Chlorotoluene	NS	2.5 U	2.5 U	NA	NA	2.5 U
p-Isopropyltoluene	NS	0.5 U	0.5 U	NA	NA	0.5 U
p/m-Xylene	1.6	1 U	1 U	NA	NA	1 U
sec-Butylbenzene	11	0.5 U	0.5 U	NA	NA	0.5 U
Styrene	NS	1 U	1 U	0.00064 U	0.00064 U	1 U
tert-Butylbenzene	5.9	2.5 U	2.5 U	NA	NA	2.5 U
Tetrachloroethene	1.3	0.5 U	0.5 U	0.00081 U	0.00081 U	0.5 U
Toluene	0.7	0.75 U	0.75 U	0.00072 U	0.00072 U	0.75 U
trans-1,2-Dichloroethene	0.19	0.75 U	0.75 U	0.00076 U	0.00076 U	0.75 U
trans-1,3-Dichloropropene	NS	0.5 U	0.5 U	0.00057 U	0.00057 U	0.5 U
Trichloroethene	0.47	0.5 U	0.5 U	0.00062 U	0.00062 U	0.5 U
Trichlorofluoromethane	NS	2.5 U	2.5 U	NA	NA	2.5 U
Vinyl acetate	NS	5 U	5 U	NA	NA	5 U
Vinyl chloride	0.02	1 U	1 U	0.00099 U	0.00099 U	1 U
Xylenes, Total	1.6	2 U	2 U	0.0023 U	0.0023 U	2 U

Table 4
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Part 375 Unrestricted Use) in Soil Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte	NYSDEC Part 375 SCO for Unrestricted Use mg/kg	TRIP BLANK-2 L0800656-01 1/3/2008	TRIP BLANK-5 220-11026-2 12/10/2009 1	Duplicate-1 L0718726-19 12/14/2007	Duplicate-2 L0800656-29 1/11/2008
1,1,1,2-Tetrachloroethane	NS	0.5 U	NA	0.003 U	0.003 U
1,1,1-Trichloroethane	0.68	0.5 U	0.00069 U	0.003 U	0.003 U
1,1,2,2-Tetrachloroethane	NS	0.5 U	0.00081 U	0.003 U	0.003 U
1,1,2-Trichloroethane	NS	0.75 U	0.00065 U	0.0045 U	0.0045 U
1,1-Dichloroethane	0.27	0.75 U	0.001 U	0.0045 U	0.0045 U
1,1-Dichloroethene	0.33	0.5 U	0.00083 U	0.003 U	0.003 U
1,1-Dichloropropene	NS	2.5 U	NA	0.015 U	0.015 U
1,2,3-Trichlorobenzene	NS	2.5 U	NA	0.015 U	0.015 U
1,2,4,5-Tetramethylbenzene	NS	0.5 U	NA	0.003 U	0.003 U
1,2,4-Trichlorobenzene	NS	2.5 U	NA	0.015 U	0.015 U
1,2,4-Trimethylbenzene	3.6	2.5 U	NA	0.015 U	0.015 U
1,2-Dibromo-3-chloropropane	NS	2.5 U	NA	0.015 U	0.015 U
1,2-Dibromoethane	NS	2 U	NA	0.012 U	0.012 U
1,2-Dichlorobenzene	1.1	2.5 U	NA	0.015 U	0.015 U
1,2-Dichloroethane	0.02	0.5 U	0.00072 U	0.003 U	0.003 U
1,2-Dichloropropane	NS	1.8 U	0.00071 U	0.01 U	0.01 U
1,3,5-Trimethylbenzene	8.4	2.5 U	NA	0.015 U	0.015 U
1,3-Dichlorobenzene	2.4	2.5 U	NA	0.015 U	0.015 U
1,3-Dichloropropane	NS	2.5 U	NA	0.015 U	0.015 U
1,4-Dichlorobenzene	1.8	2.5 U	NA	0.015 U	0.015 U
1,4-Diethylbenzene	NS	0.5 U	NA	0.003 U	0.003 U
2,2-Dichloropropane	NS	2.5 U	NA	0.015 U	0.015 U
2-Butanone	0.12	5 U	0.0011 U	0.03 U	0.03 U
2-Hexanone	NS	5 U	0.0011 U	0.03 U	0.03 U
4-Ethyltoluene	NS	0.5 U	NA	0.003 U	0.003 U
4-Methyl-2-pentanone	NS	5 U	0.00038 U	0.03 U	0.03 U
Acetone	0.05	5 U	0.001 U	0.03 U	0.03 U
Benzene	0.06	0.5 U	0.00074 U	0.003 U	0.003 U
Bromobenzene	NS	2.5 U	NA	0.015 U	0.015 U
Bromochloromethane	NS	2.5 U	NA	0.015 U	0.015 U
Bromodichloromethane	NS	0.5 U	0.00048 U	0.003 U	0.003 U
Bromoform	NS	2 U	0.00046 U	0.012 U	0.012 U
Bromomethane	NS	1 U	0.0021 U	0.006 U	0.006 U
Carbon disulfide	NS	5 U	0.0009 U	0.03 U	0.03 U
Carbon tetrachloride	0.76	0.5 U	0.0011 U	0.003 U	0.003 U
Chlorobenzene	1.1	0.5 U	0.00072 U	0.003 U	0.003 U
Chloroethane	NS	1 U	0.0011 U	0.006 U	0.006 U
Chloroform	0.37	0.75 U	0.00067 U	0.0045 U	0.0045 U
Chloromethane	NS	2.5 U	0.0011 U	0.015 U	0.015 U
cis-1,2-Dichloroethene	0.25	0.5 U	0.00099 U	0.003 U	0.003 U
cis-1,3-Dichloropropene	NS	0.5 U	0.00028 U	0.003 U	0.003 U
Dibromochloromethane	NS	0.5 U	0.00055 U	0.003 U	0.003 U
Dibromomethane	NS	5 U	NA	0.03 U	0.03 U
Dichlorodifluoromethane	NS	5 U	NA	0.03 U	0.03 U
Ethylbenzene	1	0.5 U	0.00087 U	0.003 U	0.003 U
Hexachlorobutadiene	NS	0.6 U	NA	0.015 U	0.015 U
Isopropylbenzene	NS	0.5 U	NA	0.003 U	0.003 U
Methyl tert butyl ether	0.93	1 U	NA	0.006 U	0.006 U
Methylene chloride	0.05	5 U	0.003 J	0.03 U	0.03 U
n-Butylbenzene	12	0.5 U	NA	0.003 U	0.003 U
n-Propylbenzene	3.9	0.5 U	NA	0.003 U	0.003 U
Naphthalene	12	2.5 U	NA	0.015 U	0.015 U
o-Chlorotoluene	NS	2.5 U	NA	0.015 U	0.015 U
o-Xylene	1.6	1 U	NA	0.006 U	0.006 U
p-Chlorotoluene	NS	2.5 U	NA	0.015 U	0.015 U
p-Isopropyltoluene	NS	0.5 U	NA	0.003 U	0.003 U
p/m-Xylene	1.6	1 U	NA	0.006 U	0.006 U
sec-Butylbenzene	11	0.5 U	NA	0.003 U	0.003 U
Styrene	NS	1 U	0.00064 U	0.006 U	0.006 U
tert-Butylbenzene	5.9	2.5 U	NA	0.015 U	0.015 U
Tetrachloroethene	1.3	0.5 U	0.00081 U	0.003 U	0.003 U
Toluene	0.7	0.75 U	0.00072 U	0.0045 U	0.0045 U
trans-1,2-Dichloroethene	0.19	0.75 U	0.00076 U	0.0045 U	0.0045 U
trans-1,3-Dichloropropene	NS	0.5 U	0.00057 U	0.003 U	0.003 U
Trichloroethene	0.47	0.5 U	0.00062 U	0.003 U	0.003 U
Trichlorofluoromethane	NS	2.5 U	NA	0.015 U	0.015 U
Vinyl acetate	NS	5 U	NA	0.03 U	0.03 U
Vinyl chloride	0.02	1 U	0.00099 U	0.006 U	0.006 U
Xylenes, Total	1.6	2U	0.0023 U	0.012 U	0.012 U

Table 5
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-1		M-2		M-3		3M
Lab Sample ID	Groundwater	L0716704-10	220-11052-3	L0716704-01	220-10981-2	L0716704-02	220-11052-2	220-11052-1
Date Sampled	Standards	11/7/2007	12/14/2009	11/6/2007	12/10/2009	11/6/2007	12/14/2009	12/14/2009
Dilution					1			Duplicate Sample
Units	µg/L							of M-3
Analyte								
1,1,1,2-Tetrachloroethane	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
1,1,1-Trichloroethane	5	0.5 U	0.69 U	0.5 U	0.69 U	0.5 U	0.69 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.81 U	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U
1,1,2-Trichloroethane	1	0.75 U	0.65 U	0.75 U	0.65 U	0.75 U	0.65 U	0.65 U
1,1-Dichloroethane	5	0.75 U	1 U	0.75 U	1 U	0.75 U	1 U	1 U
1,1-Dichloroethene	5	0.5 U	0.83 U	0.5 U	0.83 U	0.5 U	0.83 U	0.83 U
1,1-Dichloropropene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2,3-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2,3-Trichloropropane	0.04	5 U	NA	5 U	NA	5 U	NA	NA
1,2,4,5-Tetramethylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
1,2,4-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2,4-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2-Dibromo-3-chloropropane	0.04	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2-Dibromoethane	NS	2 U	NA	2 U	NA	2 U	NA	NA
1,2-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,2-Dichloroethane	0.6	0.5 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U
1,2-Dichloropropane	1	1.8 U	0.71 U	1.8 U	0.71 U	1.8 U	0.71 U	0.71 U
1,3,5-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,3-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,3-Dichloropropane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,4-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
1,4-Diethylbenzene	NS	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
2,2-Dichloropropane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
2-Butanone	NS	5 U	1.1 U	5 U	1.1 U	5 U	1.1 U	1.1 U
2-Hexanone	50	5 U	1.1 U	5 U	1.1 U	5 U	1.1 U *	1.1 U
4-Ethyltoluene	NS	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
4-Methyl-2-pentanone	NS	5 U	0.38 U	5 U	0.38 U	5 U	0.38 U *	0.38 U
Acetone	NS	5 U	2.1 J	8.2	1 U	5 U	1 J	1 U
Benzene	1	0.5 U	0.74 U	0.5 U	0.74 U	0.5 U	0.74 U	0.74 U
Bromobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
Bromochloromethane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
Bromodichloromethane	50	0.5 U	0.48 U	0.5 U	0.48 U	0.5 U	0.48 U	0.48 U
Bromoform	50	2 U	0.46 U *	2 U	0.46 U	2 U	0.46 U	0.46 U *
Bromomethane	5	2 U	2.1 U	2 U	2.1 U	2 U	2.1 U	2.1 U
Carbon disulfide	NS	5 U	2.4 J	5 U	0.90 U	5 U	0.90 U	0.90 U
Carbon tetrachloride	5	0.5 U	1.1 U	0.5 U	1.1 U	0.5 U	1.1 U	1.1 U
Chlorobenzene	5	0.5 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U
Chloroethane	5	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U
Chloroform	7	0.75 U	0.67 U	0.75 U	0.67 U	0.75 U	0.67 U	0.67 U
Chloromethane	NS	2.5 U	1.1 U	2.5 U	1.1 U	2.5 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	5	0.5 U	0.99 U	0.85	0.99 U	**13**	0.99 U	0.99 U
cis-1,3-Dichloropropene	5	0.5 U	0.28 U	0.5 U	0.28 U	0.5 U	0.28 U	0.28 U
Dibromochloromethane	NS	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.55 U	0.55 U
Dibromomethane	5	5 U	NA	5 U	NA	5 U	NA	NA
Dichlorodifluoromethane	5	5 U	NA	5 U	NA	5 U	NA	NA
Ethylbenzene	5	0.5 U	0.87 U	0.5 U	0.87 U	0.5 U	0.87 U	0.87 U
Hexachlorobutadiene	0.5	0.6 U	NA	0.6 U	NA	0.6 U	NA	NA
Isopropylbenzene	5	2.1	NA	0.5 U	NA	0.5 U	NA	NA
Methyl tert butyl ether	10	5.1	NA	1 U	NA	1 U	NA	NA
Methylene chloride	5	5 U	0.78 U	5 U	0.78 U	5 U	0.78 U	0.78 U
Naphthalene	NS	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
n-Butylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
n-Propylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
o-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
o-Xylene	5	1 U	NA	1 U	NA	1 U	NA	NA
p/m-Xylene	5	1 U	NA	1 U	NA	1 U	NA	NA
p-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
p-Isopropyltoluene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
sec-Butylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA	NA
Styrene	5	1 U	0.64 U	1 U	0.64 U	1 U	0.64 U	0.64 U
tert-Butylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
Tetrachloroethene	5	0.5 U	**7.9**	0.74	0.81 U	**30**	0.81 U	0.81 U
Toluene	5	0.75 U	0.72 U	0.75 U	0.72 U	0.75 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	5	0.75 U	0.76 U	0.75 U	0.76 U	0.75 U	0.76 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.5 U	0.57 U	0.5 U	0.57 U	0.5 U	0.57 U	0.57 U
Trichloroethene	5	0.5 U	0.62 U	0.5 U	0.62 U	2.4	0.62 U	0.62 U
Trichlorofluoromethane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA	NA
Vinyl acetate	NS	5 U	NA	5 U	NA	5 U	NA	NA
Vinyl chloride	2	1 U	0.99 U	1.6	0.99 U	**18**	0.99 U	0.99 U
Xylene Total	NS	NA	2.3 U	NA	2.3 U	NA	2.3 U	2.3 U

Table 5
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Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-3d		M-4		M-4d		M-5	
Lab Sample ID	Groundwater	L0805149-01	220-11051-1	L0716704-08	220-11051-3	L0716704-09	220-11051-4	220-11025-2	L0716444-01
Date Sampled	Standards	4/11/2008	12/14/2009	11/5/2007	12/11/2009	11/5/2007	12/11/2009	12/10/2009	11/1/2007
Dilution			1						
Units	µg/L								
Analyte									
1,1,1,2-Tetrachloroethane	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
1,1,1-Trichloroethane	5	1 U	0.69 U	0.5 U	0.69 U	0.5 U	0.69 U	0.69 U	0.5 U
1,1,2,2-Tetrachloroethane	5	1 U	0.81 U	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U	0.5 U
1,1,2-Trichloroethane	1	1.5 U	0.65 U	0.75 U	0.65 U	0.75 U	0.65 U	0.65 U	0.75 U
1,1-Dichloroethane	5	1.5 U	1 U	0.75 U	1 U	0.75 U	1 U	1 U	0.75 U
1,1-Dichloroethene	5	1 U	0.83 U	0.5 U	0.83 U	0.5 U	0.83 U	0.83 U	0.5 U
1,1-Dichloropropene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2,3-Trichlorobenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2,3-Trichloropropane	0.04	10 U	NA	5 U	NA	5 U	NA	NA	5 U
1,2,4,5-Tetramethylbenzene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
1,2,4-Trichlorobenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2,4-Trimethylbenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2-Dibromo-3-chloropropane	0.04	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2-Dibromoethane	NS	4 U	NA	2 U	NA	2 U	NA	NA	2 U
1,2-Dichlorobenzene	3	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,2-Dichloroethane	0.6	1 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U	0.5 U
1,2-Dichloropropane	1	3.5 U	0.71 U	1.8 U	0.71 U	1.8 U	0.71 U	0.71 U	1.8 U
1,3,5-Trimethylbenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,3-Dichlorobenzene	3	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,3-Dichloropropane	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,4-Dichlorobenzene	3	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
1,4-Diethylbenzene	NS	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
2,2-Dichloropropane	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
2-Butanone	NS	10 U	1.1 U	5 U	1.1 U	5 U	1.1 U	1.1 U	5 U
2-Hexanone	50	10 U	1.1 U *	5 U	1.1 U *	5 U	1.1 U	1.1 U	5 U
4-Ethyltoluene	NS	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
4-Methyl-2-pentanone	NS	10 U	0.38 U *	5 U	0.38 U *	5 U	0.38 U	0.38 U	5 U
Acetone	NS	10 U	1 U	5 U	1.0 U	5 U	2.2 J B	2.1 J	5 U
Benzene	1	1 U	0.74 U	0.5 U	0.74 U	0.5 U	0.74 U	0.74 U	0.5 U
Bromobenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
Bromochloromethane	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
Bromodichloromethane	50	1 U	0.48 U	0.5 U	0.48 U	0.5 U	0.48 U	0.48 U	0.5 U
Bromoform	50	4 U	0.46 U	2 U	0.46 U	2 U	0.46 U	0.46 U	2 U
Bromomethane	5	2 U	2.1 U	2 U	2.1 U	2 U	2.1 U	2.1 U	1 U
Carbon disulfide	NS	10 U	0.90 U	5 U	0.90 U	5 U	0.90 U	0.90 U	5 U
Carbon tetrachloride	5	1 U	1.1 U	0.5 U	1.1 U	0.5 U	1.1 U	1.1 U	0.5 U
Chlorobenzene	5	1 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U	0.5 U
Chloroethane	5	2 U	1.1 U	1 U	1.1 U	1 U	1.1 U	1.1 U	1 U
Chloroform	7	1.5 U	0.67 U	0.75 U	0.67 U	0.75 U	0.67 U	0.67 U	0.75 U
Chloromethane	NS	5 U	1.1 U	2.5 U	1.1 U	2.5 U	1.1 U	1.1 U	2.5 U
cis-1,2-Dichloroethene	5	**98**	**6.3**	0.5 U	0.99 U	0.5 U	0.99 U	0.99 U	0.5 U
cis-1,3-Dichloropropene	5	1 U	0.28 U	0.5 U	0.28 U	0.5 U	0.28 U	0.28 U	0.5 U
Dibromochloromethane	NS	1 U	0.55 U	0.5 U	0.55 U	0.5 U	0.55 U	0.55 U	0.5 U
Dibromomethane	5	10 U	NA	5 U	NA	5 U	NA	NA	5 U
Dichlorodifluoromethane	5	10 U	NA	5 U	NA	5 U	NA	NA	5 U
Ethylbenzene	5	1 U	0.87 U	0.5 U	0.87 U	0.5 U	0.87 U	0.87 U	0.5 U
Hexachlorobutadiene	0.5	1.2 U	NA	0.6 U	NA	0.6 U	NA	NA	0.6 U
Isopropylbenzene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
Methyl tert butyl ether	10	2 U	NA	1 U	NA	1 U	NA	NA	1 U
Methylene chloride	5	10 U	0.78 U	5 U	0.78 U	5 U	0.78 U	0.78 U	5 U
Naphthalene	NS	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
n-Butylbenzene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
n-Propylbenzene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
o-Chlorotoluene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
o-Xylene	5	2 U	NA	1 U	NA	1 U	NA	NA	1 U
p/m-Xylene	5	2 U	NA	1 U	NA	1 U	NA	NA	1 U
p-Chlorotoluene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
p-Isopropyltoluene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
sec-Butylbenzene	5	1 U	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U
Styrene	5	2 U	0.64 U	1 U	0.64 U	1 U	0.64 U	0.64 U	1 U
tert-Butylbenzene	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
Tetrachloroethene	5	**66**	0.81 U	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U	0.5 U
Toluene	5	1.5 U	0.72 U	0.75 U	0.72 U	0.75 U	0.72 U	0.72 U	0.75 U
trans-1,2-Dichloroethene	5	**24**	3.5 J	0.75 U	0.76 U	0.75 U	0.76 U	0.76 U	0.75 U
trans-1,3-Dichloropropene	0.4	1 U	0.57 U	0.5 U	0.57 U	0.5 U	0.57 U	0.57 U	0.5 U
Trichloroethene	5	**17**	1.7 J	0.5 U	0.62 U	0.5 U	0.62 U	0.62 U	0.5 U
Trichlorofluoromethane	5	5 U	NA	2.5 U	NA	2.5 U	NA	NA	2.5 U
Vinyl acetate	NS	10 U	NA	5 U	NA	5 U	NA	NA	5 U
Vinyl chloride	2	**160**	**12**	1 U	0.99 U	1 U	0.99 U	0.99 U	1 U
Xylene Total	NS	NA	2.3 U	NA	2.3 U	NA	2.3 U	2.3 U	NA

Table 5
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-5d		M-6		M-6d	
Lab Sample ID	Groundwater	L0716444-02	220-11025-1	220-10981-3	L0716444-03	L0716444-04	220-10981-1
Date Sampled	Standards	11/1/2007	12/11/2009	12/10/2009	11/1/2007	11/1/2007	12/10/2009
Dilution							1
Units	µg/L						
Analyte							
1,1,1,2-Tetrachloroethane	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
1,1,1-Trichloroethane	5	0.5 U	0.69 U	0.69 U	0.5 U	0.5 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.81 U	0.81 U	0.5 U	0.5 U	0.81 U
1,1,2-Trichloroethane	1	0.75 U	0.65 U	0.65 U	0.75 U	0.75 U	0.65 U
1,1-Dichloroethane	5	0.75 U	1 U	1 U	0.75 U	0.75 U	1 U
1,1-Dichloroethene	5	0.5 U	0.83 U	0.83 U	0.5 U	0.5 U	0.83 U
1,1-Dichloropropene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2,3-Trichlorobenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2,3-Trichloropropane	0.04	5 U	NA	NA	5 U	5 U	NA
1,2,4,5-Tetramethylbenzene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
1,2,4-Trichlorobenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2,4-Trimethylbenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2-Dibromo-3-chloropropane	0.04	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2-Dibromoethane	NS	2 U	NA	NA	2 U	2 U	NA
1,2-Dichlorobenzene	3	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,2-Dichloroethane	0.6	0.5 U	0.72 U	0.72 U	0.5 U	0.5 U	0.72 U
1,2-Dichloropropane	1	1.8 U	0.71 U	0.71 U	1.8 U	1.8 U	0.71 U
1,3,5-Trimethylbenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,3-Dichlorobenzene	3	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,3-Dichloropropane	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,4-Dichlorobenzene	3	2.5 U	NA	NA	2.5 U	2.5 U	NA
1,4-Diethylbenzene	NS	0.5 U	NA	NA	0.5 U	0.5 U	NA
2,2-Dichloropropane	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
2-Butanone	NS	5 U	1.1 U	1.1 U	5 U	5 U	1.1 U
2-Hexanone	50	5 U	1.1 U	1.1 U	5 U	5 U	1.1 U
4-Ethyltoluene	NS	0.5 U	NA	NA	0.5 U	0.5 U	NA
4-Methyl-2-pentanone	NS	5 U	0.38 U	0.38 U	5 U	5 U	0.38 U
Acetone	NS	5 U	1.9 J	1.7 J	5 U	5 U	2.1 J
Benzene	1	0.5 U	0.74 U	0.74 U	0.5 U	0.5 U	0.74 U
Bromobenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
Bromochloromethane	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
Bromodichloromethane	50	0.5 U	0.48 U	0.48 U	0.5 U	0.5 U	0.48 U
Bromoform	50	2 U	0.46 U	0.46 U	2 U	2 U	0.46 U
Bromomethane	5	1 U	2.1 U	2.1 U	1 U	1 U	2.1 U
Carbon disulfide	NS	5 U	0.90 U	1.2 J	5 U	5 U	0.90 U
Carbon tetrachloride	5	0.5 U	1.1 U	1.1 U	0.5 U	0.5 U	1.1 U
Chlorobenzene	5	0.5 U	0.72 U	0.72 U	0.5 U	0.5 U	0.72 U
Chloroethane	5	1 U	1.1 U	1.1 U	1 U	1 U	1.1 U
Chloroform	7	0.75 U	0.67 U	0.67 U	0.75 U	0.75 U	0.67 U
Chloromethane	NS	2.5 U	1.1 U	1.1 U	2.5 U	2.5 U	1.1 U
cis-1,2-Dichloroethene	5	0.5 U	0.99 U	0.99 U	0.5 U	0.5 U	0.99 U
cis-1,3-Dichloropropene	5	0.5 U	0.28 U	0.28 U	0.5 U	0.5 U	0.28 U
Dibromochloromethane	NS	0.5 U	0.55 U	0.55 U	0.5 U	0.5 U	0.55 U
Dibromomethane	5	5 U	NA	NA	5 U	5 U	NA
Dichlorodifluoromethane	5	5 U	NA	NA	5 U	5 U	NA
Ethylbenzene	5	0.5 U	0.87 U	0.87 U	0.5 U	0.5 U	0.87 U
Hexachlorobutadiene	0.5	0.6 U	NA	NA	0.6 U	0.6 U	NA
Isopropylbenzene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
Methyl tert butyl ether	10	1 U	NA	NA	1 U	1 U	NA
Methylene chloride	5	5 U	0.78 U	0.78 U	5 U	5 U	0.78 U
Naphthalene	NS	2.5 U	NA	NA	2.5 U	2.5 U	NA
n-Butylbenzene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
n-Propylbenzene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
o-Chlorotoluene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
o-Xylene	5	1 U	NA	NA	1 U	1 U	NA
p/m-Xylene	5	1 U	NA	NA	1 U	1 U	NA
p-Chlorotoluene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
p-Isopropyltoluene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
sec-Butylbenzene	5	0.5 U	NA	NA	0.5 U	0.5 U	NA
Styrene	5	1 U	0.64 U	0.64 U	1 U	1 U	0.64 U
tert-Butylbenzene	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
Tetrachloroethene	5	0.5 U	0.81 U	0.81 U	0.5 U	0.5 U	0.81 U
Toluene	5	0.75 U	0.72 U	0.72 U	0.75 U	0.78	0.72 U
trans-1,2-Dichloroethene	5	0.75 U	0.76 U	0.76 U	0.75 U	0.75 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.5 U	0.57 U	0.57 U	0.5 U	0.5 U	0.57 U
Trichloroethene	5	0.5 U	0.62 U	0.62 U	0.5 U	0.5 U	0.62 U
Trichlorofluoromethane	5	2.5 U	NA	NA	2.5 U	2.5 U	NA
Vinyl acetate	NS	5 U	NA	NA	5 U	5 U	NA
Vinyl chloride	2	1 U	0.99 U	0.99 U	1 U	1 U	0.99 U
Xylene Total	NS	NA	2.3 U	2.3 U			2.3 U

Table 5
2350 Fifth Avenue
New York, NY

Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-7			M-8		M-9s	
Lab Sample ID	Groundwater	L0716704-05	220-11051-2		L0716704-03	220-10939-2	L0716444-07	220-10925-3
Date Sampled	Standards	11/5/2007	12/14/2009		11/6/2007	12/8/2009	11/2/2007	12/7/2009
Dilution			4	1				1
Units	µg/L			Secondary				
Analyte								
1,1,1,2-Tetrachloroethane	5	5 U	NA	NA	1 U	NA	0.5 U	NA
1,1,1-Trichloroethane	5	5 U	2.8 U	0.69 U	1 U	0.69 U	0.5 U	0.69 U
1,1,2,2-Tetrachloroethane	5	5 U	3.2 U	0.81 U	1 U	0.81 U	0.5 U	0.81 U
1,1,2-Trichloroethane	1	7.5 U	2.6 U	0.65 U	1.5 U	0.65 U	0.75 U	0.65 U
1,1-Dichloroethane	5	7.5 U	4.1 U	1 U	1.5 U	1 U	0.75 U	1 U
1,1-Dichloroethene	5	5 U	3.3 U	0.83 U	1 U	0.83 U	0.5 U	0.83 U
1,1-Dichloropropene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2,3-Trichlorobenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2,3-Trichloropropane	0.04	50 U	NA	NA	10 U	NA	5 U	NA
1,2,4,5-Tetramethylbenzene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2,4-Trimethylbenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2-Dibromo-3-chloropropane	0.04	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2-Dibromoethane	NS	20 U	NA	NA	4 U	NA	2 U	NA
1,2-Dichlorobenzene	3	25 U	NA	NA	5 U	NA	2.5 U	NA
1,2-Dichloroethane	0.6	5 U	2.9 U	0.72 U	1 U	0.72 U	0.5 U	0.72 U
1,2-Dichloropropane	1	18 U	2.8 U	0.71 U	3.5 U	0.71 U	1.8 U	0.71 U
1,3,5-Trimethylbenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,3-Dichlorobenzene	3	25 U	NA	NA	5 U	NA	2.5 U	NA
1,3-Dichloropropane	5	25 U	NA	NA	5 U	NA	2.5 U	NA
1,4-Dichlorobenzene	3	25 U	NA	NA	5 U	NA	2.5 U	NA
1,4-Diethylbenzene	NS	5 U	NA	NA	1 U	NA	0.5 U	NA
2,2-Dichloropropane	5	25 U	NA	NA	5 U	NA	2.5 U	NA
2-Butanone	NS	50 U	4.4 U	1.1 U	10 U	1.1 U	5 U	1.1 U
2-Hexanone	50	50 U	4.4 U *	1.1 U *	10 U	1.1 U	5 U	1.1 U
4-Ethyltoluene	NS	5 U	NA	NA	1 U	NA	0.5 U	NA
4-Methyl-2-pentanone	NS	50 U	1.5 U *	0.38 U *	10 U	0.38 U	5 U	0.38 U
Acetone	NS	50 U	4.1 U	1.5 J	10 U	1.3 J	5 U	1.4 J
Benzene	1	5 U	3 U	0.74 U	1 U	0.74 U	0.5 U	0.74 U
Bromobenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
Bromochloromethane	5	25 U	NA	NA	5 U	NA	2.5 U	NA
Bromodichloromethane	50	5 U	1.9 U	0.48 U	1 U	0.48 U	0.5 U	0.48 U
Bromoform	50	20 U	1.8 U	0.46 U	4 U	0.46 U *	2 U	0.46 U
Bromomethane	5	2 U	8.5 U	2.1 U	2 U	2.1 U	1 U	2.1 U
Carbon disulfide	NS	50 U	3.6 U	0.90 U	10 U	1.1 J	5 U	0.90 U
Carbon tetrachloride	5	5 U	4.3 U	1.1 U	1 U	1.1 U *	0.5 U	1.1 U
Chlorobenzene	5	5 U	2.9 U	0.72 U	1 U	0.72 U	0.5 U	0.72 U
Chloroethane	5	10 U	4.2 U	1.1 U	2 U	1.1 U	1 U	1.1 U
Chloroform	7	7.5 U	2.7 U	0.67 U	1.5 U	0.67 U	0.75 U	0.67 U
Chloromethane	NS	25 U	4.4 U	1.1 U	5 U	1.1 U	2.5 U	1.1 U
cis-1,2-Dichloroethene	5	**390**	**230**	**290 E**	1 U	0.99 U	0.5 U	0.99 U
cis-1,3-Dichloropropene	5	5 U	1.1 U	0.28 U	1 U	0.28 U	0.5 U	0.28 U
Dibromochloromethane	NS	5 U	2.2 U	0.55 U	1 U	0.55 U	0.5 U	0.55 U
Dibromomethane	5	50 U	NA	NA	10 U	NA	5 U	NA
Dichlorodifluoromethane	5	50 U	NA	NA	10 U	NA	5 U	NA
Ethylbenzene	5	5 U	3.5 U	0.87 U	1 U	0.87 U	0.5 U	0.87 U
Hexachlorobutadiene	0.5	6 U	NA	NA	1.2 U	NA	0.6 U	NA
Isopropylbenzene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
Methyl tert butyl ether	10	10 U	NA	NA	2 U	NA	1 U	NA
Methylene chloride	5	50 U	**12** J	0.78 U	10 U	0.78 U	5 U	0.78 U
Naphthalene	NS	25 U	NA	NA	5 U	NA	2.5 U	NA
n-Butylbenzene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
n-Propylbenzene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
o-Chlorotoluene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
o-Xylene	5	10 U	NA	NA	2 U	NA	1 U	NA
p/m-Xylene	5	10 U	NA	NA	2 U	NA	1 U	NA
p-Chlorotoluene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
p-Isopropyltoluene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
sec-Butylbenzene	5	5 U	NA	NA	1 U	NA	0.5 U	NA
Styrene	5	10 U	2.6 U	0.64 U	2 U	0.64 U	1 U	0.64 U
tert-Butylbenzene	5	25 U	NA	NA	5 U	NA	2.5 U	NA
Tetrachloroethene	5	5 U	3.2 U	0.81 U	1 U	0.81 U	0.5 U	0.81 U
Toluene	5	7.5 U	2.9 U	0.72 U	1.5 U	0.72 U	0.75 U	0.72 U
trans-1,2-Dichloroethene	5	**18**	**7.1** J	**7.9**	1.5 U	0.76 U	0.75 U	0.76 U
trans-1,3-Dichloropropene	0.4	5 U	2.3 U	0.57 U	1 U	0.57 U	0.5 U	0.57 U
Trichloroethene	5	5 U	2.5 U	0.62 U	1 U	0.62 U	0.5 U	0.62 U
Trichlorofluoromethane	5	25 U	NA	NA	5 U	NA	2.5 U	NA
Vinyl acetate	NS	50 U	NA	NA	10 U	NA	5 U	NA
Vinyl chloride	2	**16**	**11** J	**13**	2 U	0.99 U	1 U	0.99 U
Xylene Total	NS		9.1 U	2.3 U	NA	2.3 U	NA	2.3 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 5
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-9d		M-10s		M-10d	
Lab Sample ID	Groundwater	L0716444-08	220-10925-2	L0716444-10	220-10874-2	L0716444-11	220-10874-1
Date Sampled	Standards	11/2/2007	12/7/2009	11/2/2007	12/3/2009	11/2/2007	12/3/2009
Dilution							
Units	µg/L						
Analyte							
1,1,1,2-Tetrachloroethane	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,1,1-Trichloroethane	5	0.5 U	0.69 U	0.5 U	0.69 U	0.5 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.81 U	0.5 U	0.81 U	0.5 U	0.81 U
1,1,2-Trichloroethane	1	0.75 U	0.65 U	0.75 U	0.65 U	0.75 U	0.65 U
1,1-Dichloroethane	5	0.75 U	1 U	0.75 U	1 U	0.75 U	1 U
1,1-Dichloroethene	5	0.5 U	0.83 U	0.5 U	0.83 U	0.5 U	0.83 U
1,1-Dichloropropene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2,3-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2,3-Trichloropropane	0.04	5 U	NA	5 U	NA	5 U	NA
1,2,4,5-Tetramethylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2,4-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2-Dibromo-3-chloropropane	0.04	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2-Dibromoethane	NS	2 U	NA	2 U	NA	2 U	NA
1,2-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,2-Dichloroethane	0.6	0.5 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U
1,2-Dichloropropane	1	1.8 U	0.71 U	1.8 U	0.71 U	1.8 U	0.71 U
1,3,5-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,3-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,3-Dichloropropane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,4-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	2.5 U	NA
1,4-Diethylbenzene	NS	0.5 U	NA	0.5 U	NA	0.5 U	NA
2,2-Dichloropropane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
2-Butanone	NS	5 U	1.1 U	5 U	1.1 U	5 U	1.1 U
2-Hexanone	50	5 U	1.1 U *	5 U	1.1 U	5 U	1.1 U
4-Ethyltoluene	NS	0.5 U	NA	0.5 U	NA	0.5 U	NA
4-Methyl-2-pentanone	NS	5 U	0.38 U *	5 U	0.38 U	5 U	0.38 U
Acetone	NS	5 U	1.5 J	5 U	1.0 U	5 U	1.1 J
Benzene	1	0.5 U	0.74 U	0.5 U	0.74 U	0.5 U	0.74 U
Bromobenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
Bromochloromethane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
Bromodichloromethane	50	0.5 U	0.48 U	0.5 U	0.48 U	0.5 U	0.48 U
Bromoform	50	2 U	0.46 U	2 U	0.46 U	2 U	0.46 U
Bromomethane	5	1 U	2.1 U	1 U	2.1 U	1 U	2.1 U
Carbon disulfide	NS	5 U	0.90 U	5 U	0.90 U	5 U	0.90 U
Carbon tetrachloride	5	0.5 U	1.1 U	0.5 U	1.1 U	0.5 U	1.1 U
Chlorobenzene	5	0.5 U	0.72 U	0.5 U	0.72 U	0.5 U	0.72 U
Chloroethane	5	1 U	1.1 U	1 U	1.1 U	1 U	1.1 U
Chloroform	7	0.75 U	0.67 U	0.75 U	0.67 U	0.75 U	0.67 U
Chloromethane	NS	2.5 U	1.1 U	2.5 U	1.1 U	2.5 U	1.1 U
cis-1,2-Dichloroethene	5	0.5 U	0.99 U	0.5 U	0.99 U	0.5 U	0.99 U
cis-1,3-Dichloropropene	5	0.5 U	0.28 U	0.5 U	0.28 U	0.5 U	0.28 U
Dibromochloromethane	NS	0.5 U	0.55 U	0.5 U	0.55 U	0.5 U	0.55 U
Dibromomethane	5	5 U	NA	5 U	NA	5 U	NA
Dichlorodifluoromethane	5	5 U	NA	5 U	NA	5 U	NA
Ethylbenzene	5	0.5 U	0.87 U	0.5 U	0.87 U	0.5 U	0.87 U
Hexachlorobutadiene	0.5	0.6 U	NA	0.6 U	NA	0.6 U	NA
Isopropylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
Methyl tert butyl ether	10	1 U	NA	1 U	NA	1 U	NA
Methylene chloride	5	5 U	0.78 U	5 U	0.78 U	5 U	0.78 U
Naphthalene	NS	2.5 U	NA	2.5 U	NA	2.5 U	NA
n-Butylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
n-Propylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
o-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
o-Xylene	5	1 U	NA	1 U	NA	1 U	NA
p/m-Xylene	5	1 U	NA	1 U	NA	1 U	NA
p-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
p-Isopropyltoluene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
sec-Butylbenzene	5	0.5 U	NA	0.5 U	NA	0.5 U	NA
Styrene	5	1 U	0.64 U	1 U	0.64 U	1 U	0.64 U
tert-Butylbenzene	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
Tetrachloroethene	5	0.5 U	0.81 U	0.5 U	0.81 U	0.5 U	0.81 U
Toluene	5	0.75 U	0.72 U	0.75 U	0.72 U	0.75 U	0.72 U
trans-1,2-Dichloroethene	5	0.75 U	0.76 U	0.75 U	0.76 U	0.75 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.5 U	0.57 U	0.5 U	0.57 U	0.5 U	0.57 U
Trichloroethene	5	0.5 U	0.62 U	0.5 U	0.62 U	0.5 U	0.62 U
Trichlorofluoromethane	5	2.5 U	NA	2.5 U	NA	2.5 U	NA
Vinyl acetate	NS	5 U	NA	5 U	NA	5 U	NA
Vinyl chloride	2	1 U	0.99 U	1 U	0.99 U	1 U	0.99 U
Xylene Total	NS	NA	2.3 U	NA	2.3 U	NA	2.3 U

Table 5
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-11s		M-11d		M-12d	
Lab Sample ID	Groundwater	L0716704-06	220-10965-1	L0716704-04	220-10965-2	L0716704-11	220-10965-3
Date Sampled	Standards	11/6/2007	12/9/2009	11/6/2007	12/9/2009	11/7/2007	12/9/2009
Dilution			20				
Units	µg/L						
Analyte							
1,1,1,2-Tetrachloroethane	5	5 U	NA	1 U	NA	0.5 U	NA
1,1,1-Trichloroethane	5	5 U	14 U	1 U	0.69 U	0.5 U	0.69 U
1,1,2,2-Tetrachloroethane	5	5 U	16 U	1 U	0.81 U	0.5 U	0.81 U
1,1,2-Trichloroethane	1	7.5 U	13 U	1.5 U	0.65 U	0.75 U	0.65 U
1,1-Dichloroethane	5	7.5 U	21 U	1.5 U	1 U	0.75 U	1 U
1,1-Dichloroethene	5	5 U	17 U	1 U	0.83 U	0.5 U	0.83 U
1,1-Dichloropropene	5	25 U	NA	5 U	NA	2.5 U	NA
1,2,3-Trichlorobenzene	5	25 U	NA	5 U	NA	2.5 U	NA
1,2,3-Trichloropropane	0.04	50 U	NA	10 U	NA	5 U	NA
1,2,4,5-Tetramethylbenzene	5	5 U	NA	1 U	NA	0.5 U	NA
1,2,4-Trichlorobenzene	5	25 U	NA	5 U	NA	2.5 U	NA
1,2,4-Trimethylbenzene	5	25 U	NA	5 U	NA	2.5 U	NA
1,2-Dibromo-3-chloropropane	0.04	25 U	NA	5 U	NA	2.5 U	NA
1,2-Dibromoethane	NS	20 U	NA	4 U	NA	2 U	NA
1,2-Dichlorobenzene	3	25 U	NA	5 U	NA	2.5 U	NA
1,2-Dichloroethane	0.6	5 U	14 U	1 U	0.72 U	0.5 U	0.72 U
1,2-Dichloropropane	1	18 U	14 U	3.5 U	0.71 U	1.8 U	0.71 U
1,3,5-Trimethylbenzene	5	25 U	NA	5 U	NA	2.5 U	NA
1,3-Dichlorobenzene	3	25 U	NA	5 U	NA	2.5 U	NA
1,3-Dichloropropane	5	25 U	NA	5 U	NA	2.5 U	NA
1,4-Dichlorobenzene	3	25 U	NA	5 U	NA	2.5 U	NA
1,4-Diethylbenzene	NS	5 U	NA	1 U	NA	0.5 U	NA
2,2-Dichloropropane	5	25 U	NA	5 U	NA	2.5 U	NA
2-Butanone	NS	50 U	22 U	10 U	1.1 U	5 U	1.1 U
2-Hexanone	50	50 U	22 U	10 U	1.1 U	5 U	1.1 U
4-Ethyltoluene	NS	5 U	NA	1 U	NA	0.5 U	NA
4-Methyl-2-pentanone	NS	50 U	7.6 U	10 U	0.38 U	5 U	0.38 U
Acetone	NS	50 U	21 U	10 U	1.2 J	5 U	1.8 J
Benzene	1	5 U	15 U	1 U	0.74 U	0.5 U	0.74 U
Bromobenzene	5	25 U	NA	5 U	NA	2.5 U	NA
Bromochloromethane	5	25 U	NA	5 U	NA	2.5 U	NA
Bromodichloromethane	50	5 U	9.6 U	1 U	0.48 U	0.5 U	0.48 U
Bromoform	50	20 U	9.2 U	4 U	0.46 U	2 U	0.46 U
Bromomethane	5	2 U	42 U	2 U	2.1 U	2 U	2.1 U
Carbon disulfide	NS	50 U	18 U	10 U	0.90 U	5 U	0.90 U
Carbon tetrachloride	5	5 U	21 U	1 U	1.1 U	0.5 U	1.1 U
Chlorobenzene	5	5 U	14 U	1 U	0.72 U	0.5 U	0.72 U
Chloroethane	5	10 U	21 U	2 U	1.1 U	1 U	1.1 U
Chloroform	7	7.5 U	13 U	1.5 U	0.67 U	0.75 U	0.67 U
Chloromethane	NS	25 U	22 U	5 U	1.1 U	2.5 U	1.1 U
cis-1,2-Dichloroethene	5	**1,300**	**1,800**	1 U	0.99 U	0.5 U	0.99 U
cis-1,3-Dichloropropene	5	5 U	5.6 U	1 U	0.28 U	0.5 U	0.28 U
Dibromochloromethane	NS	5 U	11 U	1 U	0.55 U	0.5 U	0.55 U
Dibromomethane	5	50 U	NA	10 U	NA	5 U	NA
Dichlorodifluoromethane	5	50 U	NA	10 U	NA	5 U	NA
Ethylbenzene	5	5 U	17 U	1 U	0.87 U	0.5 U	0.87 U
Hexachlorobutadiene	0.5	6 U	NA	1.2 U	NA	0.6 U	NA
Isopropylbenzene	5	5 U	NA	1 U	NA	0.5 U	NA
Methyl tert butyl ether	10	10 U	NA	2 U	NA	1 U	NA
Methylene chloride	5	50 U	**25** J	10 U	0.78 U	5 U	0.78 U
Naphthalene	NS	25 U	NA	5 U	NA	2.5 U	NA
n-Butylbenzene	5	5 U	NA	1 U	NA	0.5 U	NA
n-Propylbenzene	5	5 U	NA	1 U	NA	0.5 U	NA
o-Chlorotoluene	5	25 U	NA	5 U	NA	2.5 U	NA
o-Xylene	5	10 U	NA	2 U	NA	1 U	NA
p/m-Xylene	5	10 U	NA	2 U	NA	1 U	NA
p-Chlorotoluene	5	25 U	NA	5 U	NA	2.5 U	NA
p-Isopropyltoluene	5	5 U	NA	1 U	NA	0.5 U	NA
sec-Butylbenzene	5	5 U	NA	1 U	NA	0.5 U	NA
Styrene	5	10 U	13 U	2 U	0.64 U	1 U	0.64 U
tert-Butylbenzene	5	25 U	NA	5 U	NA	2.5 U	NA
Tetrachloroethene	5	**64**	**90** J	1 U	0.81 U	0.5 U	0.81 U
Toluene	5	7.5 U	14 U	1.5 U	0.72 U	0.75 U	0.72 U
trans-1,2-Dichloroethene	5	**34**	15 U	1.5 U	0.76 U	0.75 U	0.76 U
trans-1,3-Dichloropropene	0.4	5 U	11 U	1 U	0.57 U	0.5 U	0.57 U
Trichloroethene	5	**66**	**79** J	1 U	0.62 U	0.5 U	0.62 U
Trichlorofluoromethane	5	25 U	NA	5 U	NA	2.5 U	NA
Vinyl acetate	NS	50 U	NA	10 U	NA	5 U	NA
Vinyl chloride	2	**1,000**	**580**	2 U	0.99 U	1 U	0.99 U
Xylene Total	NS	NA	45 U	NA	2.3 U	NA	2.3 U

Table 5
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID	Class GA	M-13s		M-13d		M-14s	M-14D
Lab Sample ID	Groundwater	L0716444-05	220-11051-6	L0716444-06	220-11051-5	220-10939-1	220-10925-4
Date Sampled	Standards	10/31/2007	12/11/2009	10/31/2007	12/11/2009	12/8/2009	12/7/2009
Dilution							
Units	µg/L						
Analyte							
1,1,1,2-Tetrachloroethane	5	0.5 U	NA	0.5 U	NA	NA	NA
1,1,1-Trichloroethane	5	0.5 U	0.69 U	0.5 U	0.69 U	0.69 U	0.69 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U	0.81 U
1,1,2-Trichloroethane	1	0.75 U	0.65 U	0.75 U	0.65 U	0.65 U	0.65 U
1,1-Dichloroethane	5	0.75 U	1 U	0.75 U	1 U	1 U	1 U
1,1-Dichloroethene	5	0.5 U	0.83 U	0.5 U	0.83 U	0.83 U	0.83 U
1,1-Dichloropropene	5	2.5 U	NA	2.5 U	NA	NA	NA
1,2,3-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
1,2,3-Trichloropropane	0.04	5 U	NA	5 U	NA	NA	NA
1,2,4,5-Tetramethylbenzene	5	0.5 U	NA	0.5 U	NA	NA	NA
1,2,4-Trichlorobenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
1,2,4-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.04	2.5 U	NA	2.5 U	NA	NA	NA
1,2-Dibromoethane	NS	2 U	NA	2 U	NA	NA	NA
1,2-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	NA	NA
1,2-Dichloroethane	0.6	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U	0.72 U
1,2-Dichloropropane	1	1.8 U	0.71 U	1.8 U	0.71 U	0.71 U	0.71 U
1,3,5-Trimethylbenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
1,3-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	NA	NA
1,3-Dichloropropane	5	2.5 U	NA	2.5 U	NA	NA	NA
1,4-Dichlorobenzene	3	2.5 U	NA	2.5 U	NA	NA	NA
1,4-Diethylbenzene	NS	0.5 U	NA	0.5 U	NA	NA	NA
2,2-Dichloropropane	5	2.5 U	NA	2.5 U	NA	NA	NA
2-Butanone	NS	5 U	1.1 U	5 U	1.1 U	1.1 U	1.1 U
2-Hexanone	50	5 U	1.1 U *	5 U	1.1 U *	1.1 U	1.1 U *
4-Ethyltoluene	NS	0.5 U	NA	0.5 U	NA	NA	NA
4-Methyl-2-pentanone	NS	5 U	0.38 U *	5 U	0.38 U *	0.38 U	0.38 U *
Acetone	NS	25	1.0 U	5 U	1 U	2.5 J	1 U
Benzene	1	0.5 U	0.74 U	0.5 U	0.74 U	0.74 U	0.74 U
Bromobenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
Bromochloromethane	5	2.5 U	NA	2.5 U	NA	NA	NA
Bromodichloromethane	50	0.5 U	0.48 U	0.5 U	0.48 U	0.48 U	0.48 U
Bromoform	50	2 U	0.46 U	2 U	0.46 U	0.46 U *	0.46 U
Bromomethane	5	1 U	2.1 U	1 U	2.1 U	2.1 U	2.1 U
Carbon disulfide	NS	5 U	0.90 U	5 U	0.90 U	0.90 U	0.93 J
Carbon tetrachloride	5	0.5 U	1.1 U	0.5 U	1.1 U	1.1 U *	1.1 U
Chlorobenzene	5	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U	0.72 U
Chloroethane	5	1 U	1.1 U	1 U	1.1 U	1.1 U	1.1 U
Chloroform	7	0.75 U	0.67 U	0.75 U	0.67 U	0.67 U	0.67 U
Chloromethane	NS	2.5 U	1.1 U	2.5 U	1.1 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	5	0.5 U	0.99 U	0.5 U	0.99 U	0.99 U	**25**
cis-1,3-Dichloropropene	5	0.5 U	0.28 U	0.5 U	0.28 U	0.28 U	0.28 U
Dibromochloromethane	NS	0.5 U	0.55 U	0.5 U	0.55 U	0.55 U	0.55 U
Dibromomethane	5	5 U	NA	5 U	NA	NA	NA
Dichlorodifluoromethane	5	5 U	NA	5 U	NA	NA	NA
Ethylbenzene	5	0.5 U	0.87 U	0.5 U	0.87 U	0.87 U	0.87 U
Hexachlorobutadiene	0.5	0.6 U	NA	0.6 U	NA	NA	NA
Isopropylbenzene	5	0.5 U	NA	0.5 U	NA	NA	NA
Methyl tert butyl ether	10	1 U	NA	1.1	NA	NA	NA
Methylene chloride	5	5 U	0.78 U	5 U	0.78 U	0.78 U	0.78 U
Naphthalene	NS	2.5 U	NA	2.5 U	NA	NA	NA
n-Butylbenzene	5	0.5 U	NA	0.5 U	NA	NA	NA
n-Propylbenzene	5	0.5 U	NA	0.5 U	NA	NA	NA
o-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	NA	NA
o-Xylene	5	1 U	NA	1 U	NA	NA	NA
p/m-Xylene	5	1 U	NA	1 U	NA	NA	NA
p-Chlorotoluene	5	2.5 U	NA	2.5 U	NA	NA	NA
p-Isopropyltoluene	5	0.5 U	NA	0.5 U	NA	NA	NA
sec-Butylbenzene	5	0.5 U	NA	0.5 U	NA	NA	NA
Styrene	5	1 U	0.64 U	1 U	0.64 U	0.64 U	0.64 U
tert-Butylbenzene	5	2.5 U	NA	2.5 U	NA	NA	NA
Tetrachloroethene	5	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U	3.6 J
Toluene	5	0.75 U	0.72 U	0.75 U	0.72 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	5	0.75 U	0.76 U	0.75 U	0.76 U	0.76 U	0.76 U
trans-1,3-Dichloropropene	0.4	0.5 U	0.57 U	0.5 U	0.57 U	0.57 U	0.57 U
Trichloroethene	5	0.5 U	0.62 U	0.5 U	0.62 U	0.62 U	2.3 J
Trichlorofluoromethane	5	2.5 U	NA	2.5 U	NA	NA	NA
Vinyl acetate	NS	5 U	NA	5 U	NA	NA	NA
Vinyl chloride	2	1 U	0.99 U	1 U	0.99 U	0.99 U	0.99 U
Xylene Total	NS	NA	2.3 U	NA	2.3 U	2.3 U	2.3 U

Table 5
2350 Fifth Avenue
New York, NY
Exceedances of SCGs (Class GA Standards) in Groundwater

Client ID Lab Sample ID Date Sampled Dilution Units Analyte	Class GA Groundwater Standards µg/L	Duplicate L0716704-07 11/6/2007	Field Blank L0716704-12 11/7/2007	FB-1 220-11052-4 12/14/2009	Trip Blank L0716444-09 10/25/2007	TB-3 220-10874-3 12/3/2009	TB-4 220-10925-5 12/7/2009
1,1,1,2-Tetrachloroethane	5	20 U	0.5 U	NA	0.5 U	NA	NA
1,1,1-Trichloroethane	5	20 U	0.5 U	0.69 U	0.5 U	0.69 U	0.69 U
1,1,2,2-Tetrachloroethane	5	20 U	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U
1,1,2-Trichloroethane	1	30 U	0.75 U	0.65 U	0.75 U	0.65 U	0.65 U
1,1-Dichloroethane	5	30 U	0.75 U	1 U	0.75 U	1 U	1 U
1,1-Dichloroethene	5	20 U	0.5 U	0.83 U	0.5 U	0.83 U	0.83 U
1,1-Dichloropropene	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,2,3-Trichlorobenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,2,3-Trichloropropane	0.04	200 U	5 U	NA	5 U	NA	NA
1,2,4,5-Tetramethylbenzene	5	20 U	0.5 U	NA	0.5 U	NA	NA
1,2,4-Trichlorobenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,2,4-Trimethylbenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,2-Dibromo-3-chloropropane	0.04	100 U	2.5 U	NA	2.5 U	NA	NA
1,2-Dibromoethane	NS	80 U	2 U	NA	2 U	NA	NA
1,2-Dichlorobenzene	3	100 U	2.5 U	NA	2.5 U	NA	NA
1,2-Dichloroethane	0.6	20 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U
1,2-Dichloropropane	1	70 U	1.8 U	0.71 U	1.8 U	0.71 U	0.71 U
1,3,5-Trimethylbenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,3-Dichlorobenzene	3	100 U	2.5 U	NA	2.5 U	NA	NA
1,3-Dichloropropane	5	100 U	2.5 U	NA	2.5 U	NA	NA
1,4-Dichlorobenzene	3	100 U	2.5 U	NA	2.5 U	NA	NA
1,4-Diethylbenzene	NS	20 U	0.5 U	NA	0.5 U	NA	NA
2,2-Dichloropropane	5	100 U	2.5 U	NA	2.5 U	NA	NA
2-Butanone	NS	200 U	5 U	1.1 U	5 U	1.1 U	1.1 U
2-Hexanone	50	200 U	5 U	1.1 U *	5 U	1.1 U	1.1 U *
4-Ethyltoluene	NS	20 U	0.5 U	NA	0.5 U	NA	NA
4-Methyl-2-pentanone	NS	200 U	5 U	0.38 U	5 U	0.38 U	0.38 U *
Acetone	NS	200 U	25	1.6 J	5 U	1 U	1 U
Benzene	1	20 U	0.5 U	0.74 U	0.5 U	0.74 U	0.74 U
Bromobenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
Bromochloromethane	5	100 U	2.5 U	NA	2.5 U	NA	NA
Bromodichloromethane	50	20 U	0.5 U	0.48 U	0.5 U	0.48 U	0.48 U
Bromoform	50	80 U	2 U	0.46 U	2 U	0.46 U	0.46 U
Bromomethane	5	2 U	2 U	2.1 U	1 U	2.1 U	2.1 U
Carbon disulfide	NS	200 U	5 U	0.90 U	5 U	0.90 U	0.90 U
Carbon tetrachloride	5	20 U	0.5 U	1.1 U	0.5 U	1.1 U	1.1 U
Chlorobenzene	5	20 U	0.5 U	0.72 U	0.5 U	0.72 U	0.72 U
Chloroethane	5	40 U	1 U	1.1 U	1 U	1.1 U	1.1 U
Chloroform	7	30 U	0.75 U	0.67 U	0.75 U	0.67 U	0.67 U
Chloromethane	NS	100 U	2.5 U	1.1 U	2.5 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	5	**3,000**	0.5 U	0.99 U	0.5 U	0.99 U	0.99 U
cis-1,3-Dichloropropene	5	20 U	0.5 U	0.28 U	0.5 U	0.28 U	0.28 U
Dibromochloromethane	NS	20 U	0.5 U	0.55 U	0.5 U	0.55 U	0.55 U
Dibromomethane	5	200 U	5 U	NA	5 U	NA	NA
Dichlorodifluoromethane	5	200 U	5 U	NA	5 U	NA	NA
Ethylbenzene	5	20 U	0.5 U	0.87 U	0.5 U	0.87 U	0.87 U
Hexachlorobutadiene	0.5	24 U	0.6 U	NA	0.6 U	NA	NA
Isopropylbenzene	5	20 U	0.5 U	NA	0.5 U	NA	NA
Methyl tert butyl ether	10	40 U	1 U	NA	1 U	NA	NA
Methylene chloride	5	200 U	5 U	0.78 U	5 U	2.9 J	3.6 J
Naphthalene	NS	100 U	2.5 U	NA	2.5 U	NA	NA
n-Butylbenzene	5	20 U	0.5 U	NA	0.5 U	NA	NA
n-Propylbenzene	5	20 U	0.5 U	NA	0.5 U	NA	NA
o-Chlorotoluene	5	100 U	2.5 U	NA	2.5 U	NA	NA
o-Xylene	5	40 U	1 U	NA	1 U	NA	NA
p/m-Xylene	5	40 U	1 U	NA	1 U	NA	NA
p-Chlorotoluene	5	100 U	2.5 U	NA	2.5 U	NA	NA
p-Isopropyltoluene	5	20 U	0.5 U	NA	0.5 U	NA	NA
sec-Butylbenzene	5	20 U	0.5 U	NA	0.5 U	NA	NA
Styrene	5	40 U	1 U	0.64 U	1 U	0.64 U	0.64 U
tert-Butylbenzene	5	100 U	2.5 U	NA	2.5 U	NA	NA
Tetrachloroethene	5	**280**	0.5 U	0.81 U	0.5 U	0.81 U	0.81 U
Toluene	5	30 U	0.75 U	0.72 U	0.75 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	5	**63**	0.75 U	0.76 U	0.75 U	0.76 U	0.76 U
trans-1,3-Dichloropropene	0.4	20 U	0.5 U	0.57 U	0.5 U	0.57 U	0.57 U
Trichloroethene	5	**260**	0.5 U	0.62 U	0.5 U	0.62 U	0.62 U
Trichlorofluoromethane	5	100 U	2.5 U	NA	2.5 U	NA	NA
Vinyl acetate	NS	200 U	5 U	NA	5 U	NA	NA
Vinyl chloride	2	**2,100**	1 U	0.99 U	1 U	0.99 U	0.99 U
Xylene Total	NS	NA	NA	2.3 U	NA	2.3 U	2.3 U

Table 6
2350 Fifth Avenue
New York, NY

Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-1			SG-2		SG
Lab Sample No.	678932	678937	P0904199-005	678933	P0904199-004	678934
Sampling Date	8/8/2006	8/8/2006	12/2/2009	8/8/2006	12/2/2009	8/8/2006
Dilution Factor	1	1	1.22	5	1.34	20
Units µg/m^3		Duplicate Sample of SG-1				
Volatile Compounds (GC/MS)						
1,1,1-Trichloroethane **	1.1	13	0.61 U	5.5 U	1.6	22 U
1,1,2,2-Tetrachloroethane	1.4 U	1.4 U	0.61 U	6.9 U	0.67 U	27 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	1.5 U	1.5 U	0.61 U	7.7 U	0.67 U	31 U
1,1,2-Trichloroethane	1.1 U	1.1 U	0.61 U	5.5 U	0.67 U	22 U
1,1-Dichloroethane	0.81 U	0.81 U	0.61 U	4 U	0.67 U	16 U
1,1-Dichloroethene	0.79 U	0.79 U	0.61 U	4 U	0.67 U	16 U
1,2,4-Trichlorobenzene	3.7 U	3.7 U	0.61 U	19 U	0.67 U	74 U
1,2,4-Trimethylbenzene	3.7	**39**	0.61 U	**38**	**7.1**	20 U
1,2-Dibromo-3-chloropropane	NA	NA	0.61 U	NA	0.67 U	NA
1,2-Dibromoethane	1.5 U	1.5 U	0.61 U	7.7 U	0.67 U	31 U
1,2-Dichlorobenzene	1.2 U	1.2 U	0.61 U	6 U	0.67 U	24 U
1,2-Dichloroethane	0.81 U	0.81 U	0.61 U	4 U	0.67 U	16 U
1,2-Dichloroethene (cis)	0.79 U	0.79 U	0.61 U	4 U	0.67 U	16 U
1,2-Dichloroethene (total)	0.79 U	0.79 U	NA	4 U	NA	16 U
1,2-Dichloroethene (trans)	0.79 U	0.79 U	0.61 U	4 U	0.67 U	16 U
1,2-Dichloropropane	0.92 U	0.92 U	0.61 U	4.6 U	0.67 U	18 U
1,2-Dichlorotetrafluoroethane (Freon 114)	1.4 U	1.4 U	0.61 U	7 U	0.67 U	28 U
1,3,5-Trimethylbenzene	1.1	11	0.61 U	11	1.3	20 U
1,3-Butadiene	1.1 U	1.1 U	0.61 U	5.5 U	0.67 U	22 U
1,3-Dichlorobenzene	1.2 U	1.2 U	0.61 U	6 U	0.67 U	24 U
1,3-Dichloropropene (cis)	0.91 U	0.91 U	0.61 U	4.5 U	0.67 U	18 U
1,3-Dichloropropene (trans)	0.91 U	0.91 U	0.61 U	4.5 U	0.67 U	18 U
1,4-Dichlorobenzene	1.2 U	**2.5**	0.61 U	6 U	0.67 U	24 U
1,4-Dioxane	18 U	18 U	0.61 U	90 U	0.67 U	360 U
2,2,4-Trimethylpentane	25	93	NA	460	NA	24
4-Methyl-2-pentanone (MIBK)	2 U	2 U	0.61 U	10 U	0.67 U	41 U
Acetone (2-propanone)	17	48	6.1 U	93	6.7 U	240 U
Acetonitrile	NA	NA	0.61 U	NA	0.67 U	NA
Acrolein	NA	NA	2.4 U	NA	2.7 U	NA
Acrylonitrile	NA	NA	0.61 U	NA	0.67 U	NA
alpha-Pinene	NA	NA	0.61 U	NA	0.67 U	NA
Benzene	1	1.2	0.61 U	3.2 U	0.67 U	13 U
Benzyl chloride	NA	NA	0.61 U	NA	0.67 U	NA
Bromodichloromethane	1.3 U	1.3 U	0.61 U	6.7 U	0.67 U	27 U
Bromoethene	0.87 U	0.87 U	NA	4.4 U	NA	17 U
Bromoform	2.1 U	2.1 U	0.61 U	10 U	0.67 U	41 U
Bromomethane (Methyl bromide)	0.78 U	0.78 U	0.61 U	3.9 U	0.67 U	16 U
Carbon disulfide	2.6	14	6.1 U	47	6.7 U	31 U
Carbon tetrachloride	1.3 U	1.3 U	0.61 U	6.3 U	0.67 U	25 U
Chlorobenzene	0.92 U	0.92 U	0.61 U	4.6 U	0.67 U	18 U
Chloroethane (ethyl chloride)	1.3 U	1.3 U	0.61 U	6.6 U	0.67 U	26 U
Chloroform	2.4	**27**	0.61 U	4.9 U	1.2	20 U
Chloromethane (Methyl chloride)	1.2	1 U	0.61 U	5.2 U	0.67 U	21 U
Cumene	NA	NA	0.61 U	NA	0.67 U	NA
Cyclohexane	0.69 U	0.69 U	1.2 U	3.4 U	1.3 U	14 U
Dibromochloromethane	1.7 U	1.7 U	0.61 U	8.5 U	0.67 U	34 U
Dichlorodifluoromethane	**2.8**	**4**	**2.4**	12 U	2.4	49 U
d-Limonene	NA	NA	1.3	NA	0.67 U	NA
Ethanol	NA	NA	6.1 U	NA	6.7 U	NA
Ethyl Acetate	NA	NA	1.2 U	NA	1.3 U	NA
Ethylbenzene	2.1	**8.3**	0.61 U	**17**	**0.67 U**	**26**
Hexachlorobutadiene	2.1 U	2.1 U	0.61 U	11 U	0.67 U	43 U
Isopropyl Alcohol	12 U	12 U	1.2 U	61 U	1.3 U	250 U
Methyl Methacrylate	NA	NA	1.2 U	NA	1.3 U	NA
Methylene Chloride	1.7 U	1.7 U	0.61 U	8.7 U	0.67 U	35 U
MTBE (Methyl tert-butyl ether)	1.8 U	1.8 U	0.61 U	9 U	0.67 U	36 U
Naphthalene	NA	NA	0.61 U	NA	0.67 U	NA
n-Butyl Acetate	NA	NA	0.61 U	NA	0.67 U	NA
n-Heptane	0.82 U	0.82 U	0.61 U	4.1 U	0.67 U	16 U
n-Hexane	1.8 U	1.8 U	0.61 U	8.8 U	0.67 U	35 U
n-Nonane	NA	NA	0.61 U	NA	0.67 U	NA
n-Octane	NA	NA	0.61 U	NA	0.67 U	NA
n-Propylbenzene	NA	NA	0.61 U	NA	0.67 U	NA
Propylene	NA	NA	0.61 U	NA	0.67 U	NA
Styrene	0.85 U	2.1	0.61 U	9.8	0.67 U	17
Tertiary butyl alcohol (TBA)	15 U	15 U	NA	76 U	NA	300 U
Tetrachloroethene (PCE)	16	**250**	**630 D**	**750**	88	**3100**
Tetrahydrofuran **	15 U	15 U	0.61 U	74 U	0.67 U	290 U
Toluene	6.4	17	0.72	36	0.84	20
Trichloroethene (TCE)	1.1 U	1.1 U	4.1	5.4 U	0.67 U	21 U
Trichlorofluoromethane (Freon 11)	1.6	3.9	1.5	5.6 U	1.3	22 U
Vinyl acetate	NA	NA	6.1 U	NA	6.7 U	NA
Vinyl Chloride	0.51 U	0.51 U	0.61 U	2.6 U	0.67 U	10 U
Xylene (m&p)	8.7	48	NA	78	NA	91
Xylene (m,p)	6.1	**33**	1.2 U	**56**	**1.3 U**	**56**
Xylene (o)	2.4	**13**	0.61 U	**21**	**0.67 U**	**32**
Total TICs	NA	NA	37	NA	32.4	NA

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	G-3	SG-4		SG-5	
Lab Sample No.	P0904169-008	678935	P0904169-010	678936	P0904169-009
Sampling Date	11/30/2009	8/8/2006	11/30/2009	8/8/2006	11/30/2009
Dilution Factor	1.3	1	1.31	1	1.29
Units µg/m^3					
Volatile Compounds (GC/MS)					
1,1,1-Trichloroethane **	43 U	1.1 U	0.66 U	1.1 U	0.93
1,1,2,2-Tetrachloroethane	43 U	1.4 U	0.66 U	1.4 U	0.65 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	43 U	1.5 U	0.66 U	1.5 U	0.65 U
1,1,2-Trichloroethane	43 U	1.1 U	0.66 U	1.1 U	0.65 U
1,1-Dichloroethane	43 U	0.81 U	0.66 U	0.81 U	0.65 U
1,1-Dichloroethene	43 U	0.79 U	0.66 U	0.79 U	0.65 U
1,2,4-Trichlorobenzene	43 U	3.7 U	0.66 U	3.7 U	0.65 U
1,2,4-Trimethylbenzene	43 U	**7.9**	0.66 U	4.6	3.1
1,2-Dibromo-3-chloropropane	43 U	NA	0.66 U	NA	0.65 U
1,2-Dibromoethane	43 U	1.5 U	0.66 U	1.5 U	0.65 U
1,2-Dichlorobenzene	43 U	1.2 U	0.66 U	1.2 U	0.65 U
1,2-Dichloroethane	43 U	0.81 U	0.66 U	0.81 U	0.65 U
1,2-Dichloroethene (cis)	43 U	0.79 U	0.66 U	0.79 U	0.65 U
1,2-Dichloroethene (total)	NA	0.79 U	NA	0.79 U	NA
1,2-Dichloroethene (trans)	43 U	0.79 U	0.66 U	0.79 U	0.65 U
1,2-Dichloropropane	43 U	0.92 U	0.66 U	0.92 U	0.65 U
1,2-Dichlorotetrafluoroethane (Freon 114)	43 U	1.4 U	0.66 U	1.4 U	0.65 U
1,3,5-Trimethylbenzene	43 U	2.3	0.66 U	1.3	0.99
1,3-Butadiene	43 U	1.1 U	0.66 U	1.1 U	0.65 U
1,3-Dichlorobenzene	43 U	1.2 U	0.66 U	1.2 U	0.65 U
1,3-Dichloropropene (cis)	43 U	0.91 U	0.66 U	0.91 U	0.65 U
1,3-Dichloropropene (trans)	43 U	0.91 U	0.66 U	0.91 U	0.65 U
1,4-Dichlorobenzene	43 U	1.2 U	0.66 U	1.2 U	0.76
1,4-Dioxane	43 U	18 U	1.2	18 U	0.65 U
2,2,4-Trimethylpentane	NA	23	NA	13	NA
4-Methyl-2-pentanone (MIBK)	43 U	2 U	0.66 U	2 U	0.65 U
Acetone (2-propanone)	430 U	26	6.6 U	29	7.4
Acetonitrile	43 U	NA	0.66 U	NA	0.65 U
Acrolein	170 U	NA	2.7	NA	2.6 U
Acrylonitrile	43 U	NA	0.66 U	NA	0.65 U
alpha-Pinene	43 U	NA	0.66 U	NA	0.65 U
Benzene	43 U	**6.1**	0.66 U	2.4	2.7
Benzyl chloride	43 U	NA	0.66 U	NA	0.65 U
Bromodichloromethane	43 U	1.3 U	0.66 U	1.3 U	0.65 U
Bromoethene	NA	0.87 U	NA	0.87 U	NA
Bromoform	43 U	2.1 U	0.66 U	2.1 U	0.65 U
Bromomethane (Methyl bromide)	43 U	0.78 U	0.66 U	0.78 U	0.65 U
Carbon disulfide	430 U	1.6 U	6.6 U	1.8	6.5 U
Carbon tetrachloride	43 U	1.3 U	0.66 U	1.3 U	0.65 U
Chlorobenzene	43 U	0.92 U	0.66 U	0.92 U	0.65 U
Chloroethane (ethyl chloride)	43 U	1.3 U	0.66 U	1.3 U	0.65 U
Chloroform	43 U	0.98	4.2	0.98 U	18
Chloromethane (Methyl chloride)	43 U	1.4	0.66 U	1.3	0.65 U
Cumene	43 U	NA	0.66 U	NA	0.65 U
Cyclohexane	87 U	2.1	1.3 U	0.69 U	1.3 U
Dibromochloromethane	43 U	1.7 U	0.66 U	1.7 U	0.65 U
Dichlorodifluoromethane	43 U	**3.3**	**2.6**	**3.3**	2.6
d-Limonene	43 U	NA	0.66 U	NA	1.5
Ethanol	430 U	NA	6.6 U	NA	6.5 U
Ethyl Acetate	87 U	NA	1.3 U	NA	1.3 U
Ethylbenzene	43 U	**4.3**	0.66 U	2	1.3
Hexachlorobutadiene	43 U	2.1 U	0.66 U	2.1 U	0.65 U
Isopropyl Alcohol	87 U	12 U	1.3 U	16	1.3 U
Methyl Methacrylate	87 U	NA	1.3 U	NA	1.3 U
Methylene Chloride	43 U	1.7 U	0.66 U	**3.5**	0.65 U
MTBE (Methyl tert-butyl ether)	43 U	1.8 U	0.66 U	1.8 U	0.65 U
Naphthalene	43 U	NA	0.66 U	NA	0.65 U
n-Butyl Acetate	43 U	NA	0.66 U	NA	0.65 U
n-Heptane	43 U	5.3	0.66 U	2.1	0.65 U
n-Hexane	43 U	10	0.66 U	3	0.65 U
n-Nonane	43 U	NA	0.66 U	NA	2.8
n-Octane	43 U	NA	0.66 U	NA	1.5
n-Propylbenzene	43 U	NA	0.66 U	NA	0.65 U
Propylene	43 U	NA	0.99	NA	0.96
Styrene	43 U	0.85 U	0.66 U	0.85 U	0.65 U
Tertiary butyl alcohol (TBA)	NA	15 U	NA	15 U	NA
Tetrachloroethene (PCE)	**6,700**	68	54	58	**110**
Tetrahydrofuran **	43 U	15 U	0.66 U	15 U	0.65 U
Toluene	43 U	25	0.89	11	4.0
Trichloroethene (TCE)	43 U	1.1 U	1.4	1.1 U	0.65 U
Trichlorofluoromethane (Freon 11)	43 U	2.1	1.4	1.9	1.4
Vinyl acetate	430 U	NA	6.6 U	NA	6.5 U
Vinyl Chloride	43 U	0.51 U	0.66 U	0.51 U	0.65 U
Xylene (m&p)	NA	20	NA	9.1	NA
Xylene (m,p)	87 U	**13**	1.3 U	6.5	6.1
Xylene (o)	43 U	**5.2**	0.66 U	**2.5**	2.0
Total TICs	ND	NA	158.7	NA	302

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-6		SG-7		SG-8	
Lab Sample No.	L0800907-01	P0904199-001	L0800907-02	P0904201-006	L0800907-04	P0904201-007
Sampling Date	1/18/2008	12/2/2009	1/18/2008	12/1/2009	1/17/2008	12/1/2009
Dilution Factor		1.41		1.28		1.30
Units µg/m^3						
Volatile Compounds (GC/MS)						
1,1,1-Trichloroethane **	92.1 U	470 U	1,420 U	1,300 U	35.4 U	6.7
1,1,2,2-Tetrachloroethane	116 U	470 U	1,780 U	1,300 U	44.6 U	0.65 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	129 U	470 U	1,990 U	1,300 U	49.7 U	0.65 U
1,1,2-Trichloroethane	92.1 U	470 U	1,420 U	1,300 U	35.4 U	0.65 U
1,1-Dichloroethane	68.3 U	470 U	1,050 U	1,300 U	26.3 U	0.65 U
1,1-Dichloroethene	66.9 U	**950**	1,030 U	1,300 U	25.7 U	0.65 U
1,2,4-Trichlorobenzene	125 U	470 U	1,930 U	1,300 U	48.2 U	0.65 U
1,2,4-Trimethylbenzene	83 U	470 U	1,280 U	1,300 U	31.9 U	1
1,2-Dibromo-3-chloropropane	NA	470 U	NA	1,300 U	NA	0.65 U
1,2-Dibromoethane	130 U	470 U	2,000 U	1,300 U	49.9 U	0.65 U
1,2-Dichlorobenzene	101 U	470 U	1,560 U	1,300 U	39 U	0.65 U
1,2-Dichloroethane	68.3 U	470 U	1,050 U	1,300 U	26.3 U	0.65 U
1,2-Dichloroethene (cis)	66.9 U	**370,000** D	**3,400**	**1,500**	25.7 U	0.65 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	66.9 U	11,000	1,030 U	1,300 U	25.7 U	0.65 U
1,2-Dichloropropane	78 U	470 U	1,200 U	1,300 U	30 U	0.65 U
1,2-Dichlorotetrafluoroethane (Freon 114)	118 U	470 U	1,820 U	1,300 U	45.4 U	0.65 U
1,3,5-Trimethylbenzene	83 U	470 U	1,280 U	1,300 U	31.9 U	0.65 U
1,3-Butadiene	37.3 U	470 U	575 U	1,300 U	14.4 U	0.65 U
1,3-Dichlorobenzene	101 U	470 U	1,560 U	1,300 U	39 U	0.65 U
1,3-Dichloropropene (cis)	76.6 U	470 U	1,180 U	1,300 U	29.4 U	0.65 U
1,3-Dichloropropene (trans)	76.6 U	470 U	1,180 U	1,300 U	29.4 U	0.65 U
1,4-Dichlorobenzene	101 U	470 U	1,560 U	1,300 U	39 U	1.3
1,4-Dioxane	122 U	470 U	1,870 U	1,300 U	46.8 U	0.65 U
2,2,4-Trimethylpentane	78.8 U	NA	1,210 U	NA	30.3 U	NA
4-Methyl-2-pentanone (MIBK)	69.1 U	470 U	1,060 U	1,300 U	26.6 U	0.65 U
Acetone (2-propanone)	160 U	4,700 U	2,470 U	13,000 U	61.7 U	7.6
Acetonitrile	NA	470 U	NA	1,300 U	NA	0.65 U
Acrolein	NA	1,900 U	NA	5,100 U	NA	2.6 U
Acrylonitrile	NA	470 U	NA	1,300 U	NA	0.65 U
alpha-Pinene	NA	470 U	NA	1,300 U	NA	0.76
Benzene	53.9 U	470 U	831 U	1,300 U	20.7 U	0.95
Benzyl chloride	87.4 U	470 U	1,350 U	1,300 U	33.6 U	0.65 U
Bromodichloromethane	113 U	470 U	1,740 U	1,300 U	43.5 U	0.77
Bromoethene	73.8 U	NA	1,140 U	NA	28.4 U	NA
Bromoform	174 U	470 U	2,690 U	1,300 U	67.1 U	0.65 U
Bromomethane (Methyl bromide)	65.5 U	470 U	1,010 U	1,300 U	25.2 U	0.65 U
Carbon disulfide	52.6 U	4,700 U	810 U	13,000 U	20.2 U	6.5 U
Carbon tetrachloride	106 U	470 U	1,640 U	1,300 U	40.8 U	0.65 U
Chlorobenzene	77.7 U	470 U	1,200 U	1,300 U	29.9 U	0.65 U
Chloroethane (ethyl chloride)	44.5 U	470 U	686 U	1,300 U	17.1 U	0.65 U
Chloroform	82.4 U	470 U	1,270 U	1,300 U	46.4	**6.7**
Chloromethane (Methyl chloride)	34.8 U	470 U	537 U	1,300 U	13.4 U	0.65 U
Cumene	NA	470 U	NA	1,300 U	NA	0.65 U
Cyclohexane	58.1 U	940 U	895 U	2,600 U	22.3 U	1.3 U
Dibromochloromethane	144 U	470 U	2,220 U	1,300 U	55.3 U	0.65 U
Dichlorodifluoromethane	167 U	470 U	2,570 U	1,300 U	64.2 U	**2.2**
d-Limonene	NA	470 U	NA	1,300 U	NA	3
Ethanol	127 U	4,700 U	1,960 U	13,000 U	48.9 U	36
Ethyl Acetate	60.8 U	940 U	937 U	2,600 U	23.4 U	1.4
Ethylbenzene	73.3 U	470 U	1,130 U	1,300 U	28.2 U	0.81
Hexachlorobutadiene	180 U	470 U	2,770 U	1,300 U	69.2 U	0.65 U
Isopropyl Alcohol	207 U	940 U	3,200 U	2,600 U	79.8 U	2.5
Methyl Methacrylate	NA	940 U	NA	2,600 U	NA	1.3 U
Methylene Chloride	117 U	470 U	1,810 U	1,300 U	45.1 U	0.65 U
MTBE (Methyl tert-butyl ether)	60.8 U	470 U	938 U	1,300 U	23.4 U	0.65 U
Naphthalene	NA	470 U	NA	1,300 U	NA	0.65 U
n-Butyl Acetate	NA	470 U	NA	1,300 U	NA	0.65 U
n-Heptane	69.2 U	470 U	1,060 U	1,300 U	26.6 U	0.65 U
n-Hexane	119 U	470 U	1,830 U	1,300 U	45.7 U	0.65 U
n-Nonane	NA	470 U	NA	1,300 U	NA	0.83
n-Octane	NA	470 U	NA	1,300 U	NA	0.65 U
n-Propylbenzene	NA	470 U	NA	1,300 U	NA	0.65 U
Propylene	58.1 U	470 U	895 U	1,300 U	22.3 U	1.6 M1
Styrene	71.9 U	470 U	1,110 U	1,300 U	27.6 U	0.65 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	**3,240**	**180,000** D	**332,000**	**180,000**	**2,100**	**1,000** D
Tetrahydrofuran **	49.8 U	470 U	767 U	1,300 U	19.1 U	0.65 U
Toluene	63.6 U	470 U	980 U	1,300 U	24.4 U	6.3
Trichloroethene (TCE)	**279**	**81,000**	**9,310**	**6,000**	**47.2**	**12**
Trichlorofluoromethane (Freon 11)	94.8 U	470 U	1,460 U	1,300 U	36.5 U	1.3
Vinyl acetate	59.4 U	4,700 U	916 U	13,000 U	22.8 U	6.5 U
Vinyl Chloride	43.1 U	**2,600**	665 U	1,300 U	16.6 U	0.65 U
Xylene (m&p)	NA	NA	NA	NA	NA	NA
Xylene (m,p)	146 U	940 U	2,260 U	2,600 U	56.4 U	**2.9**
Xylene (o)	73.3 U	470 U	1,130 U	1,300 U	28.2 U	0.78
Total TICs	NA	ND	NA	ND	NA	53.8

Note:
Two Tentatively Identified Compounds (TICs) were identified in SG-12: 5.78 ppbV cyclohexane, 1-methyl-1-(4…) and 5.86 ppbV acetophenone

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-9		SG-10		SG-11	
Lab Sample No.	L0800907-05	P0904199-003	L0800907-06	P0904199-002	L0800907-08	P0904201-010
Sampling Date	1/17/2008	12/2/2009	1/17/2008	12/2/2009	1/17/2008	12/1/2009
Dilution Factor		1.27		1.64		2.02
Units µg/m^3						
Volatile Compounds (GC/MS)						
1,1,1-Trichloroethane **	3.49 U	0.64 U	9.47	15	3.49 U	1 U
1,1,2,2-Tetrachloroethane	4.4 U	0.64 U	4.42 U	0.82 U	4.4 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	4.91 U	0.64 U	4.94 U	0.82 U	4.91 U	1 U
1,1,2-Trichloroethane	3.49 U	0.64 U	3.52 U	0.82 U	3.49 U	1 U
1,1-Dichloroethane	2.59 U	0.64 U	2.61 U	0.82 U	2.59 U	1 U
1,1-Dichloroethene	2.54 U	0.64 U	2.56 U	0.82 U	2.54 U	1 U
1,2,4-Trichlorobenzene	4.75 U	0.64 U	4.78 U	0.82 U	4.75 U	1 U
1,2,4-Trimethylbenzene	3.15 U	1.2	3.17 U	3	3.15 U	1.4
1,2-Dibromo-3-chloropropane	NA	0.64 U	NA	0.82 U	NA	1 U
1,2-Dibromoethane	4.92 U	0.64 U	4.95 U	0.82 U	4.92 U	1 U
1,2-Dichlorobenzene	3.85 U	0.64 U	3.87 U	0.82 U	3.85 U	1 U
1,2-Dichloroethane	2.59 U	0.64 U	2.61 U	0.82 U	2.59 U	1 U
1,2-Dichloroethene (cis)	2.54 U	0.64 U	2.56 U	**85**	2.54 U	1 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	2.54 U	0.64 U	2.56 U	1.2	2.54 U	4
1,2-Dichloropropane	2.96 U	0.64 U	2.98 U	0.82 U	2.96 U	1 U
1,2-Dichlorotetrafluoroethane (Freon 114)	4.48 U	0.64 U	4.5 U	0.82 U	4.48 U	1 U
1,3,5-Trimethylbenzene	3.15 U	0.64 U	3.17 U	0.86	3.15 U	1 U
1,3-Butadiene	1.42 U	0.64 U	1.42 U	0.82 U	1.42 U	1 U
1,3-Dichlorobenzene	3.85 U	0.64 U	3.87 U	0.82 U	3.85 U	1 U
1,3-Dichloropropene (cis)	2.91 U	0.64 U	2.92 U	0.82 U	2.91 U	1 U
1,3-Dichloropropene (trans)	2.91 U	0.64 U	2.92 U	0.82 U	2.91 U	1 U
1,4-Dichlorobenzene	3.85 U	1.6	3.87 U	2.2	3.85 U	1.2
1,4-Dioxane	4.62 U	0.64 U	4.64 U	0.82 U	4.62 U	1 U
2,2,4-Trimethylpentane	2.99 U	NA	3.01 U	NA	2.99 U	NA
4-Methyl-2-pentanone (MIBK)	2.62 U	0.64 U	2.64 U	0.82 U	2.62 U	1 U
Acetone (2-propanone)	6.08 U	11 M1	6.12 U	8.2 U	6.08 U	22
Acetonitrile	NA	0.64 U	NA	0.82 U	NA	1 U
Acrolein	NA	2.5 U	NA	3.3 U	NA	4 U
Acrylonitrile	NA	0.64 U	NA	0.82 U	NA	1 U
alpha-Pinene	NA	1.4	NA	0.82 U	NA	1.5
Benzene	2.05 U	0.90	2.06 U	0.82 U	2.05 U	1.4
Benzyl chloride	3.32 U	0.64 U	3.34 U	0.82 U	3.32 U	1 U
Bromodichloromethane	4.29 U	0.64 U	4.32 U	0.82 U	4.29 U	1 U
Bromoethene	2.8 U	NA	2.82 U	NA	2.8 U	NA
Bromoform	6.62 U	0.64 U	6.66 U	0.82 U	6.62 U	1 U
Bromomethane (Methyl bromide)	2.49 U	0.64 U	2.5 U	0.82 U	2.49 U	1 U
Carbon disulfide	1.99 U	6.4 U	2.01 U	8.2 U	1.99 U	10 U
Carbon tetrachloride	4.03 U	0.64 U	4.05 U	0.82 U	4.03 U	1 U
Chlorobenzene	2.95 U	0.64 U	2.97 U	0.82 U	2.95 U	1 U
Chloroethane (ethyl chloride)	1.69 U	0.64 U	1.7 U	0.82 U	1.69 U	1 U
Chloroform	3.13 U	0.64 U	**4.93**	2.9	**10.4**	1.1
Chloromethane (Methyl chloride)	1.32 U	0.64 U	1.33 U	0.82 U	1.32 U	1 U
Cumene	NA	0.64 U	NA	0.82 U	NA	1 U
Cyclohexane	2.2 U	1.3 U	2.22 U	1.6 U	2.2 U	2 U
Dibromochloromethane	5.46 U	0.64 U	5.49 U	0.82 U	5.46 U	1 U
Dichlorodifluoromethane	6.33 U	**2.4**	6.37 U	**2.3**	6.33 U	**2.2**
d-Limonene	NA	2.5	NA	5.2	NA	120
Ethanol	4.83 U	15	5.57	9.4	4.83 U	43
Ethyl Acetate	2.31 U	1.3 U	2.32 U	1.8	2.31 U	220 D
Ethylbenzene	2.78 U	0.73	2.8 U	**4.2**	2.78 U	1.9
Hexachlorobutadiene	6.83 U	0.64 U	6.87 U	0.82 U	6.83 U	1 U
Isopropyl Alcohol	7.87 U	3.3	7.92 U	2.3 M1	7.87 U	15
Methyl Methacrylate	NA	1.3 U	NA	1.6 U	NA	2 U
Methylene Chloride	4.45 U	0.75	4.48 U	0.82 U	4.45 U	1 U
MTBE (Methyl tert-butyl ether)	2.31 U	0.64 U	2.32 U	0.82 U	2.31 U	1 U
Naphthalene	NA	0.70	NA	1.2	NA	1 U
n-Butyl Acetate	NA	0.64 U	NA	0.82 U	NA	1 U
n-Heptane	2.62 U	0.64 U	2.64 U	1	2.62 U	1.2
n-Hexane	4.52 U	0.67	4.54 U	0.82 U	4.52 U	2.2
n-Nonane	NA	0.92	NA	7.8	NA	1.1
n-Octane	NA	0.64 U	NA	1.4	NA	1 U
n-Propylbenzene	NA	0.64 U	NA	0.82 U	NA	1 U
Propylene	2.2 U	1.7 M1	2.22 U	0.86	2.2 U	4.1
Styrene	2.73 U	0.64 U	2.74 U	0.82 U	2.73 U	1.3
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	**150**	**300** D	**125**	**280** D	**163**	34
Tetrahydrofuran **	1.89 U	0.64 U	1.9 U	0.82 U	1.89 U	1 U
Toluene	2.41 U	5.1	2.43 U	8.1	2.41 U	20
Trichloroethene (TCE)	3.44 U	0.94	3.46 U	**21**	3.44 U	1 U
Trichlorofluoromethane (Freon 11)	3.6 U	1.6	3.62 U	1.5	3.6 U	1.2
Vinyl acetate	2.26 U	6.4 U	2.27 U	8.2 U	2.26 U	10 U
Vinyl Chloride	1.64 U	0.64 U	1.65 U	0.82 U	1.64 U	1 U
Xylene (m&p)	NA	NA	NA	NA	NA	NA
Xylene (m,p)	5.56 U	2.4	5.6 U	**15**	5.56 U	4
Xylene (o)	2.78 U	0.77	2.8 U	**3.9**	2.78 U	1.2
Total TICs	NA	67.4	NA	187.8	NA	308

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-12			SG-13	
Lab Sample No.	L0800907-09	P0904201-005	P0904201-008	L0800907-10	P0904201-004
Sampling Date	1/17/2008	12/1/2009	12/1/2009	1/17/2008	12/1/2009
Dilution Factor		1.22	1.21		1.17
Units µg/m^3					
Volatile Compounds (GC/MS)			Duplicate Sample of SG-12		
1,1,1-Trichloroethane **	3.56 U	0.61 U	0.68	34.5 U	0.59 U
1,1,2,2-Tetrachloroethane	4.48 U	0.61 U	0.61 U	43.4 U	0.59 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	5 U	0.61 U	0.61 U	48.5 U	0.59 U
1,1,2-Trichloroethane	3.56 U	0.61 U	0.61 U	34.5 U	0.59 U
1,1-Dichloroethane	2.64 U	0.61 U	0.61 U	25.6 U	0.59 U
1,1-Dichloroethene	2.59 U	0.61 U	0.61 U	25.1 U	0.59 U
1,2,4-Trichlorobenzene	4.84 U	0.61 U	0.61 U	46.9 U	0.59 U
1,2,4-Trimethylbenzene	3.21 U	0.93	1.2	31.1 U	1.2
1,2-Dibromo-3-chloropropane	NA	0.61 U	0.61 U	NA	0.59 U
1,2-Dibromoethane	5.02 U	0.61 U	0.61 U	48.6 U	0.59 U
1,2-Dichlorobenzene	3.92 U	0.61 U	0.61 U	38 U	0.59 U
1,2-Dichloroethane	2.64 U	0.61 U	0.61 U	25.6 U	0.59 U
1,2-Dichloroethene (cis)	2.59 U	0.61 U	0.61 U	25.1 U	0.59 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	2.59 U	0.61 U	0.61 U	25.1 U	0.59 U
1,2-Dichloropropane	3.02 U	0.61 U	0.61 U	29.2 U	0.59 U
1,2-Dichlorotetrafluoroethane (Freon 114)	4.56 U	0.61 U	0.61 U	44.2 U	0.59 U
1,3,5-Trimethylbenzene	3.21 U	0.61 U	0.61 U	31.1 U	0.59 U
1,3-Butadiene	1.44 U	0.61 U	0.61 U	14 U	0.59 U
1,3-Dichlorobenzene	3.92 U	0.61 U	0.61 U	38 U	0.59 U
1,3-Dichloropropene (cis)	2.96 U	0.61 U	0.61 U	28.7 U	0.59 U
1,3-Dichloropropene (trans)	2.96 U	0.61 U	0.61 U	28.7 U	0.59 U
1,4-Dichlorobenzene	3.92 U	**8.5**	**6.8**	38 U	1.2
1,4-Dioxane	4.71 U	0.61 U	0.61 U	45.6 U	0.59 U
2,2,4-Trimethylpentane	3.05 U	NA	NA	29.5 U	NA
4-Methyl-2-pentanone (MIBK)	2.67 U	0.61 U	0.61 U	25.9 U	0.59 U
Acetone (2-propanone)	6.2 U	45	35	60.1 U	9.9
Acetonitrile	NA	0.61 U	0.61 U	NA	0.59 U
Acrolein	NA	2.4 U	2.4 U	NA	2.3 U
Acrylonitrile	NA	0.61 U	0.61 U	NA	0.59 U
alpha-Pinene	NA	1.0	1.5	NA	0.59 U
Benzene	2.08 U	1.6	1.8	20.2 U	2.1
Benzyl chloride	3.38 U	0.61 U	0.61 U	32.7 U	0.59 U
Bromodichloromethane	4.38 U	0.61 U	0.61 U	42.4 U	0.59 U
Bromoethene	2.86 U	NA	NA	27.7 U	NA
Bromoform	6.75 U	0.61 U	0.61 U	65.4 U	0.59 U
Bromomethane (Methyl bromide)	2.54 U	0.61 U	0.61 U	24.6 U	0.59 U
Carbon disulfide	2.03 U	6.1 U	6.1 U	19.7 U	5.9 U
Carbon tetrachloride	4.11 U	0.61 U	0.61 U	39.8 U	0.59 U
Chlorobenzene	3 U	0.61 U	0.61 U	29.1 U	0.59 U
Chloroethane (ethyl chloride)	1.72 U	0.61 U	0.61 U	16.7 U	0.59 U
Chloroform	**15.1**	0.61 U	0.99	30.9 U	0.59 U
Chloromethane (Methyl chloride)	1.35 U	0.74	0.72	13.1 U	0.59 U
Cumene	NA	0.61 U	0.61 U	NA	0.59 U
Cyclohexane	2.25 U	1.2 U	1.2 U	21.8 U	1.2 U
Dibromochloromethane	5.56 U	0.61 U	0.61 U	53.9 U	0.59 U
Dichlorodifluoromethane	6.46 U	**2.3**	**2.3**	62.6 U	**2.3**
d-Limonene	NA	0.76	1.7	NA	0.59 U
Ethanol	4.92 U	17	27	47.7 U	15
Ethyl Acetate	2.35 U	1.2 U	1.4	22.8 U	1.7
Ethylbenzene	2.84 U	1.4	1.5	27.5 U	1
Hexachlorobutadiene	6.96 U	0.61 U	0.61 U	67.4 U	0.59 U
Isopropyl Alcohol	8.02 U	2.2	4.8	77.7 U	1.7
Methyl Methacrylate	NA	1.2 U	1.2 U	NA	1.2 U
Methylene Chloride	4.54 U	0.80	0.78	43.9 U	0.59 U
MTBE (Methyl tert-butyl ether)	2.35 U	0.61 U	0.61 U	22.8 U	0.59 U
Naphthalene	NA	0.61 U	0.61 U	NA	0.59 U
n-Butyl Acetate	NA	0.61 U	0.61 U	NA	0.59 U
n-Heptane	2.68 U	0.70	0.89	25.9 U	0.96
n-Hexane	4.6 U	1.1	1.2	44.6 U	1.8
n-Nonane	NA	2.5	2.1	NA	0.99
n-Octane	NA	1.3	1.1	NA	0.68
n-Propylbenzene	NA	0.61 U	0.61 U	NA	0.59 U
Propylene	2.25 U	2.2	2.4	21.8 U	3.1 M1
Styrene	2.78 U	0.95	1	26.9 U	0.59 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	29.6	0.66	22	**2,150**	**480** D
Tetrahydrofuran **	1.92 U	0.61 U	3	18.6 U	0.59 U
Toluene	2.46 U	25	18	23.8 U	7.3
Trichloroethene (TCE)	3.51 U	0.61 U	0.61 U	34 U	2.8
Trichlorofluoromethane (Freon 11)	3.67 U	1.2	1.2	35.5 U	1.1
Vinyl acetate	2.3 U	6.1 U	6.1 U	22.3 U	5.9 U
Vinyl Chloride	1.67 U	0.61 U	0.61 U	16.2 U	0.59 U
Xylene (m&p)	NA	NA	NA	NA	NA
Xylene (m,p)	5.67 U	4.7	4.7	54.9 U	3.4
Xylene (o)	2.84 U	1.2	1.4	27.5 U	1.1
Total TICs	NA	66	66.1	NA	30.7

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-14		SG-22	SG-23	SG-24
Lab Sample No.	L0800907-11	P0904201-009	P0904169-007	P0904169-006	P0904201-003
Sampling Date	1/18/2008	12/1/2009	11/30/2009	11/30/2009	12/1/2009
Dilution Factor		1.27	1.28	1.28	1.27
Units µg/m^3					
Volatile Compounds (GC/MS)					
1,1,1-Trichloroethane **	3.59 U	0.66	4.3 U	6.4 U	3.2 U
1,1,2,2-Tetrachloroethane	4.51 U	0.64 U	4.3 U	6.4 U	3.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	5.04 U	0.64 U	4.3 U	6.4 U	3.2 U
1,1,2-Trichloroethane	3.59 U	0.64 U	4.3 U	6.4 U	3.2 U
1,1-Dichloroethane	2.66 U	0.64 U	4.3 U	6.4 U	3.2 U
1,1-Dichloroethene	2.61 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2,4-Trichlorobenzene	4.88 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2,4-Trimethylbenzene	3.23 U	2.8	4.3 U	6.4 U	10
1,2-Dibromo-3-chloropropane	NA	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dibromoethane	5.05 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichlorobenzene	3.95 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichloroethane	2.66 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichloroethene (cis)	2.61 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	2.61 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichloropropane	3.04 U	0.64 U	4.3 U	6.4 U	3.2 U
1,2-Dichlorotetrafluoroethane (Freon 114)	4.6 U	0.64 U	4.3 U	6.4 U	3.2 U
1,3,5-Trimethylbenzene	3.23 U	2.4	4.3 U	6.4 U	3.4
1,3-Butadiene	1.45 U	0.64 U	4.3 U	6.4 U	3.2 U
1,3-Dichlorobenzene	3.95 U	0.64 U	4.3 U	6.4 U	3.2 U
1,3-Dichloropropene (cis)	2.98 U	0.64 U	4.3 U	6.4 U	3.2 U
1,3-Dichloropropene (trans)	2.98 U	0.64 U	4.3 U	6.4 U	3.2 U
1,4-Dichlorobenzene	3.95 U	0.64	4.3 U	6.4 U	3.2 U
1,4-Dioxane	4.74 U	0.64 U	4.3 U	6.4 U	3.2 U
2,2,4-Trimethylpentane	3.07 U	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	2.69 U	0.64 U	4.3 U	6.4 U	3.2 U
Acetone (2-propanone)	6.25 U	6.6	43 U	64 U	56
Acetonitrile	NA	0.64 U	4.3 U	6.4 U	3.2 U
Acrolein	NA	2.5 U	17 U	26 U	13 U
Acrylonitrile	NA	0.64 U	4.3 U	6.4 U	3.2 U
alpha-Pinene	NA	0.79	4.3 U	6.4 U	5.1
Benzene	2.1 U	0.97	4.3 U	6.4 U	3.7
Benzyl chloride	3.4 U	0.64 U	4.3 U	6.4 U	3.2 U
Bromodichloromethane	4.4 U	0.64 U	4.3 U	6.4 U	3.2 U
Bromoethene	2.88 U	NA	NA	NA	NA
Bromoform	6.8 U	0.64 U	4.3 U	6.4 U	3.2 U
Bromomethane (Methyl bromide)	2.55 U	0.64 U	4.3 U	6.4 U	3.2 U
Carbon disulfide	2.05 U	6.4 U	43 U	64 U	32 U
Carbon tetrachloride	4.14 U	0.64 U	4.3 U	6.4 U	3.2 U
Chlorobenzene	3.03 U	0.64 U	4.3 U	6.4 U	3.2 U
Chloroethane (ethyl chloride)	1.73 U	0.64 U	4.3 U	6.4 U	3.2 U
Chloroform	**5.95**	3.6	**120**	6.4 U	3.2 U
Chloromethane (Methyl chloride)	1.36 U	0.64 U	4.3 U	6.4 U	3.2 U
Cumene	NA	0.64 U	4.3 U	6.4 U	3.2 U
Cyclohexane	2.26 U	1.3 U	8.5 U	34	50
Dibromochloromethane	5.6 U	0.64 U	4.3 U	6.4 U	3.2 U
Dichlorodifluoromethane	6.5 U	**2.7**	4.3 U	6.4 U	3.2 U
d-Limonene	NA	0.86	4.3 U	6.4 U	3.2 U
Ethanol	4.96 U	12	43 U	64 U	32 U
Ethyl Acetate	2.37 U	2.2	8.5 U	13 U	6.4 U
Ethylbenzene	2.85 U	**3.6**	4.3 U	6.4 U	**5.2**
Hexachlorobutadiene	7.01 U	0.64 U	4.3 U	6.4 U	3.2 U
Isopropyl Alcohol	8.08 U	2.8	8.5 U	13 U	6.4 U
Methyl Methacrylate	NA	1.3 U	8.5 U	13 U	6.4 U
Methylene Chloride	4.57 U	0.64 U	4.3 U	6.4 U	3.2 U
MTBE (Methyl tert-butyl ether)	2.37 U	0.64 U	4.3 U	6.4 U	17
Naphthalene	NA	0.64 U	4.3 U	6.4 U	3.2 U
n-Butyl Acetate	NA	0.64 U	4.3 U	6.4 U	3.2 U
n-Heptane	2.69 U	1.1	4.3 U	10	300
n-Hexane	4.63 U	0.77	4.3 U	11	25
n-Nonane	NA	1.6	4.3 U	6.4 U	21
n-Octane	NA	1.3	4.3 U	6.4 U	22
n-Propylbenzene	NA	0.64 U	4.3 U	6.4 U	3.2 U
Propylene	2.26 U	1.5	4.3 U	14	25 M1
Styrene	2.8 U	0.64 U	4.3 U	6.4 U	3.2 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	70.6	88	**780**	27	7
Tetrahydrofuran **	1.94 U	0.64 U	4.3 U	6.4 U	3.2 U
Toluene	2.48 U	4.2	4.3 U	66	400
Trichloroethene (TCE)	3.53 U	0.64 U	**13**	6.4 U	3.9
Trichlorofluoromethane (Freon 11)	3.69 U	1.2	4.3 U	6.4 U	3.2 U
Vinyl acetate	2.31 U	6.4 U	43 U	64 U	32 U
Vinyl Chloride	1.68 U	0.64 U	4.3 U	6.4 U	3.2 U
Xylene (m&p)	NA	NA	NA	NA	NA
Xylene (m,p)	5.71 U	**21**	8.5 U	13 U	**18**
Xylene (o)	2.85 U	1.4	4.3 U	6.4 U	**6.2**
Total TICs	NA	125.3	3,522	20,570	3,880

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-25	SG-26	SG-27	SG-28	SG-29	SG-30
Lab Sample No.	P0904169-005	P0904169-004	P0904169-003	P0904169-002	P0904169-006	P0904201-002
Sampling Date	11/30/2009	11/30/2009	11/30/2009	11/30/2009	11/30/2009	12/1/2009
Dilution Factor	1.25	1.32	1.2	1.26	1.28	1.26
Units μg/m^3						
Volatile Compounds (GC/MS)						
1,1,1-Trichloroethane **	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,1,2,2-Tetrachloroethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,1,2-Trichloroethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,1-Dichloroethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,1-Dichloroethene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2,4-Trichlorobenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2,4-Trimethylbenzene	10	0.88	1.3	7.9 U	0.72	**9.4**
1,2-Dibromo-3-chloropropane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dibromoethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichlorobenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichloroethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichloroethene (cis)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichloropropane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,2-Dichlorotetrafluoroethane (Freon 114)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,3,5-Trimethylbenzene	12	0.73	0.78	7.9 U	0.57 U	1.8
1,3-Butadiene	1.3 U	0.66 U	2.6	7.9 U	0.57 U	0.63 U
1,3-Dichlorobenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,3-Dichloropropene (cis)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,3-Dichloropropene (trans)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
1,4-Dichlorobenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.60	0.63 U
1,4-Dioxane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
2,2,4-Trimethylpentane	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Acetone (2-propanone)	67	6.6 U	6.0 U	79 U	7.3	12
Acetonitrile	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Acrolein	5.0 U	2.6 U	2.4 U	32 U	2.3 U	2.5 U
Acrylonitrile	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
alpha-Pinene	76	0.77	5.6	7.9 U	0.57 U	0.63 U
Benzene	1.3 U	0.66 U	1.2	7.9 U	1.2	0.63 U
Benzyl chloride	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Bromodichloromethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Bromoethene	NA	NA	NA	NA	NA	NA
Bromoform	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Bromomethane (Methyl bromide)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Carbon disulfide	13 U	6.6 U	6.0 U	79 U	5.7 U	6.3 U
Carbon tetrachloride	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Chlorobenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Chloroethane (ethyl chloride)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Chloroform	1.3 U	2.3	3.5	**14**	0.57 U	**21**
Chloromethane (Methyl chloride)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Cumene	3.5	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Cyclohexane	43	1.3 U	2.4	16 U	1.1 U	1.3 U
Dibromochloromethane	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Dichlorodifluoromethane	**2.1**	**2.3**	**2.5**	7.9 U	**2.3**	**2.3**
d-Limonene	2.3	0.66 U	0.96	7.9 U	0.65	1.2
Ethanol	13 U	6.6 U	6.0 U	79 U	20	6.3 U
Ethyl Acetate	2.5 U	1.3 U	1.2 U	16 U	14	1.3 U
Ethylbenzene	**2.8**	0.66 U	1.5	7.9 U	0.74	0.76
Hexachlorobutadiene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Isopropyl Alcohol	2.5 U	1.3 U	1.2 U	16 U	2.2	1.3 U
Methyl Methacrylate	2.5 U	1.3 U	1.2 U	16 U	1.1 U	1.3 U
Methylene Chloride	1.3 U	0.66 U	0.60 U	7.9 U	0.78	0.63 U
MTBE (Methyl tert-butyl ether)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Naphthalene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
n-Butyl Acetate	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.67
n-Heptane	150	0.70	65	7.9 U	0.57 U	0.63 U
n-Hexane	11	0.66 U	100	7.9 U	0.72	0.63 U
n-Nonane	35	2.5	25	7.9 U	1.1	2.0
n-Octane	150	1.9	43	7.9 U	0.90	1.2
n-Propylbenzene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.79
Propylene	3.4	0.66 U	170 D	7.9 U	1.4	0.63 U
Styrene	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	**140**	**130**	16	**1,200**	15	**130**
Tetrahydrofuran **	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Toluene	63	3.5	5.6	7.9 U	6.8	15
Trichloroethene (TCE)	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Trichlorofluoromethane (Freon 11)	1.3 U	1.1	1	7.9 U	1.1	0.80
Vinyl acetate	13 U	6.6 U	6 U	79 U	5.7 U	6.3 U
Vinyl Chloride	1.3 U	0.66 U	0.60 U	7.9 U	0.57 U	0.63 U
Xylene (m&p)	NA	NA	NA	NA	NA	NA
Xylene (m,p)	**17**	2.2	4.9	16 U	2.4	3.2
Xylene (o)	**9.6**	0.71	1.6	7.9 U	0.74	0.90
Total TICs	3,270	1,043.60	3,241	60	99.7	185.3

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	SG-31	AA	Duplicate	QC AMBIENT	Outdoor Ambient	TRIP BLANK	TRIP BLANK
Lab Sample No.	P0904201-001	L0800907-07	L0800907-03	P0904201-011	P0904199-006	P0904169-011	P0904201-012
Sampling Date	12/1/2009	1/17/2008	1/18/2008	12/1/2009	12/2/2009	11/30/2009	12/1/2009
Dilution Factor	1.26			1.21	1.25	1	1
Units $\mu g/m^3$							
Volatile Compounds (GC/MS)							
1,1,1-Trichloroethane **	0.63 U	3.47 U	3.59 U	0.61 U	0.63 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.63 U	4.37 U	4.51 U	0.61 U	0.63 U	0.50 U	0.50 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	0.63 U	4.88 U	5.04 U	0.61 U	0.63 U	0.50 U	0.50 U
1,1,2-Trichloroethane	0.63 U	3.47 U	3.59 U	0.61 U	0.63 U	0.50 U	0.50 U
1,1-Dichloroethane	0.63 U	2.58 U	2.66 U	0.61 U	0.63 U	0.50 U	0.50 U
1,1-Dichloroethene	0.63 U	2.52 U	2.61 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.63 U	4.72 U	4.88 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	**8.9**	3.13 U	3.23 U	0.81	4.5	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane	0.63 U	NA	NA	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dibromoethane	0.63 U	4.89 U	5.05 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.63 U	3.83 U	3.95 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichloroethane	0.63 U	2.58 U	2.66 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichloroethene (cis)	0.63 U	2.52 U	2.61 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	0.63 U	2.52 U	2.61 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichloropropane	0.63 U	2.94 U	3.04 U	0.61 U	0.63 U	0.50 U	0.50 U
1,2-Dichlorotetrafluoroethane (Freon 114)	0.63 U	4.45 U	4.6 U	0.61 U	0.63 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	1.5	3.13 U	3.23 U	0.61 U	1.5	0.50 U	0.50 U
1,3-Butadiene	0.63 U	1.41 U	1.45 U	0.61 U	0.66	0.50 U	0.50 U
1,3-Dichlorobenzene	0.63 U	3.83 U	3.95 U	0.61 U	0.63 U	0.50 U	0.50 U
1,3-Dichloropropene (cis)	0.63 U	2.89 U	2.98 U	0.61 U	0.63 U	0.50 U	0.50 U
1,3-Dichloropropene (trans)	0.63 U	2.89 U	2.98 U	0.61 U	0.63 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.63 U	3.83 U	3.95 U	**10**	2	0.50 U	0.50 U
1,4-Dioxane	0.63 U	4.59 U	4.74 U	0.61 U	0.63 U	0.50 U	0.50 U
2,2,4-Trimethylpentane	NA	2.97 U	3.07 U	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	0.63 U	2.61 U	2.69 U	0.61 U	0.63 U	0.50 U	0.50 U
Acetone (2-propanone)	10	11.8	6.25 U	21	17	5.0 U	5 U
Acetonitrile	0.63 U	NA	NA	0.61 U	0.63 U	0.50 U	0.50 U
Acrolein	2.5 U	NA	NA	2.4 U	2.5 U	2.0 U	2 U
Acrylonitrile	0.63 U	NA	NA	0.61 U	0.63 U	0.50 U	0.50 U
alpha-Pinene	0.63 U	NA	NA	0.61 U	0.63 U	0.50 U	0.50 U
Benzene	0.63 U	2.03 U	2.1 U	1.2	**5.1**	0.50 U	0.50 U
Benzyl chloride	0.63 U	3.3 U	3.4 U	0.61 U	0.63 U	0.50 U	0.50 U
Bromodichloromethane	0.63 U	4.26 U	4.4 U	0.61 U	0.63 U	0.50 U	0.50 U
Bromoethene	NA	2.78 U	2.88 U	NA	0.63 U	NA	NA
Bromoform	0.63 U	6.58 U	6.8 U	0.61 U	NA	0.50 U	0.50 U
Bromomethane (Methyl bromide)	0.63 U	2.47 U	2.55 U	0.61 U	0.63 U	0.50 U	0.50 U
Carbon disulfide	6.3 U	1.98 U	2.05 U	6.1 U	6.3 U	5.0 U	5 U
Carbon tetrachloride	0.63 U	4 U	4.14 U	0.61 U	0.63 U	0.50 U	0.50 U
Chlorobenzene	0.63 U	2.93 U	3.03 U	0.61 U	0.63 U	0.50 U	0.50 U
Chloroethane (ethyl chloride)	0.63 U	1.68 U	1.73 U	0.61 U	0.63 U	0.50 U	0.50 U
Chloroform	4	3.11 U	**5.45**	0.61 U	0.63 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	0.63 U	1.31 U	1.36 U	0.67	0.63 U	0.50 U	0.50 U
Cumene	0.63 U	NA	NA	0.61 U	0.63 U	0.50 U	0.50 U
Cyclohexane	1.3 U	2.19 U	2.26 U	1.2 U	1.9	1 U	1 U
Dibromochloromethane	0.63 U	5.42 U	5.6 U	0.61 U	0.63 U	0.50 U	0.50 U
Dichlorodifluoromethane	**2.2**	6.3 U	6.5 U	**2.3**	**2.5**	0.50 U	0.50 U
d-Limonene	0.90	NA	NA	0.61 U	1.1	0.50 U	0.50 U
Ethanol	6.3 U	10.8	4.96 U	20	55	5.2	7.3
Ethyl Acetate	1.3 U	2.29 U	2.37 U	1.2 U	1.3 U	1 U	1 U
Ethylbenzene	0.94	2.76 U	2.85 U	0.79	**3.1**	0.50 U	0.50 U
Hexachlorobutadiene	0.63 U	6.79 U	7.01 U	0.61 U	0.63 U	0.50 U	0.50 U
Isopropyl Alcohol	1.3 U	7.82 U	8.08 U	2.1	4.7	1 U	1 U
Methyl Methacrylate	1.3 U	NA	NA	1.2 U	1.3 U	1 U	1 U
Methylene Chloride	0.63 U	4.42 U	4.57 U	1.3	**5.9**	0.50 U	0.50 U
MTBE (Methyl tert-butyl ether)	0.63 U	2.29 U	2.37 U	0.61 U	0.63 U	0.50 U	0.50 U
Naphthalene	0.67	NA	NA	0.61 U	0.93	0.50 U	0.50 U
n-Butyl Acetate	0.63 U	NA	NA	0.61 U	0.73	0.50 U	0.50 U
n-Heptane	0.63 U	2.61 U	2.69 U	0.61 U	3.6	1.4	0.50 U
n-Hexane	0.63 U	4.49 U	4.63 U	0.92	6.3	0.51	0.50 U
n-Nonane	2.5	NA		1.9	1.9	0.50 U	0.50 U
n-Octane	1.5	NA		0.61	1.9	0.50 U	0.50 U
n-Propylbenzene	0.72	NA		0.61 U	0.88	0.50 U	0.50 U
Propylene	0.63 U	2.19 U	2.26 U	2.6 M1	6.2	0.50 U	0.50 U
Styrene	0.63 U	2.71 U	2.8 U	0.61 U	0.63 U	0.50 U	0.50 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	74	4.32 U	71.1	0.89	2.4	0.50 U	0.50 U
Tetrahydrofuran **	0.63 U	1.88 U	1.94 U	0.61 U	0.63 U	0.50 U	0.50 U
Toluene	2.9	3.12	2.48 U	7.5	19	10	0.50 U
Trichloroethene (TCE)	0.63 U	3.42 U	3.53 U	0.61 U	0.63 U	0.50 U	0.50 U
Trichlorofluoromethane (Freon 11)	1.5	3.58 U	3.69 U	1.2	2.9	0.50 U	0.50 U
Vinyl acetate	6.3 U	2.24 U	2.31 U	6.1 U	6.3 U	5 U	5 U
Vinyl Chloride	0.63 U	1.63 U	1.68 U	0.61 U	0.63 U	0.50 U	0.50 U
Xylene (m&p)	NA	NA	NA	NA	NA	NA	NA
Xylene (m,p)	4.3	5.53 U	5.71 U	2.5	10	1.0 U	1 U
Xylene (o)	1.3	2.76 U	2.85 U	0.73	**3.9**	0.50 U	0.50 U
Total TICs	385.7	NA	NA	55.7	207	143	ND

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID Lab Sample No. Sampling Date Dilution Factor Units µg/m^3 Volatile Compounds (GC/MS)	TRIP BLANK P0904199-007 12/2/2009 1	METHOD BLANK P091208-MB 12/8/2009 1	METHOD BLANK P091209-MB 12/9/2009 1	METHOD BLANK P091210-MB 12/10/2009 1	METHOD BLANK P091214-MB 12/14/2009 1	METHOD BLANK P091215-MB 12/15/2009 1
1,1,1-Trichloroethane **	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2,2-Tetrachloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1-Dichloroethene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2,4-Trimethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromo-3-chloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dibromoethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethene (cis)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichloropropane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,2-Dichlorotetrafluoroethane (Freon 114)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3,5-Trimethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Butadiene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropene (cis)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,3-Dichloropropene (trans)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dichlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,4-Dioxane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
2,2,4-Trimethylpentane	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Acetone (2-propanone)	5 U	5 U	5 U	5 U	5 U	5 U
Acetonitrile	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Acrolein	2 U	2 U	2 U	2 U	2 U	2 U
Acrylonitrile	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
alpha-Pinene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Benzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Benzyl chloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromoethene	0.50 U	NA	NA	NA	NA	NA
Bromoform	NA	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromomethane (Methyl bromide)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon disulfide	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chlorobenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroethane (ethyl chloride)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloroform	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chloromethane (Methyl chloride)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cumene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cyclohexane	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Dichlorodifluoromethane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
d-Limonene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Ethanol	5 U	5 U	5 U	5 U	5 U	5 U
Ethyl Acetate	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Hexachlorobutadiene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Isopropyl Alcohol	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Methacrylate	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
MTBE (Methyl tert-butyl ether)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Naphthalene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Butyl Acetate	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Heptane	2.7	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Hexane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Nonane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Octane	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
n-Propylbenzene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Propylene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tertiary butyl alcohol (TBA)	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrahydrofuran **	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Toluene	0.50	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene (TCE)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichlorofluoromethane (Freon 11)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Vinyl acetate	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Chloride	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Xylene (m&p)	NA	NA	NA	NA	NA	NA
Xylene (m,p)	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (o)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Total TICs	ND	ND	ND	ND	ND	ND

Table 6
2350 Fifth Avenue
New York, NY
Results of Soil Vapor Samples
Volatile Organic Compounds

Sample ID	METHOD BLANK	METHOD BLANK	FIELDBLANK-1
Lab Sample No.	P091211-MB	P091214-MB	678938
Sampling Date	12/11/2009	12/14/2009	8/8/2006
Dilution Factor	1	1	1
Units µg/m^3			
Volatile Compounds (GC/MS)			
1,1,1-Trichloroethane **	0.50 U	0.50 U	1.1 U
1,1,2,2-Tetrachloroethane	0.50 U	0.50 U	1.4 U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon TF)	0.50 U	0.50 U	1.5 U
1,1,2-Trichloroethane	0.50 U	0.50 U	1.1 U
1,1-Dichloroethane	0.50 U	0.50 U	0.81 U
1,1-Dichloroethene	0.50 U	0.50 U	0.79 U
1,2,4-Trichlorobenzene	0.50 U	0.50 U	3.7 U
1,2,4-Trimethylbenzene	0.50 U	0.50 U	0.98 U
1,2-Dibromo-3-chloropropane	0.50 U	0.50 U	NA
1,2-Dibromoethane	0.50 U	0.50 U	1.5 U
1,2-Dichlorobenzene	0.50 U	0.50 U	1.2 U
1,2-Dichloroethane	0.50 U	0.50 U	0.81 U
1,2-Dichloroethene (cis)	0.50 U	0.50 U	0.79 U
1,2-Dichloroethene (total)	NA	NA	0.79 U
1,2-Dichloroethene (trans)	0.50 U	0.50 U	0.79 U
1,2-Dichloropropane	0.50 U	0.50 U	0.92 U
1,2-Dichlorotetrafluoroethane (Freon 114)	0.50 U	0.50 U	1.4 U
1,3,5-Trimethylbenzene	0.50 U	0.50 U	0.98 U
1,3-Butadiene	0.50 U	0.50 U	1.1 U
1,3-Dichlorobenzene	0.50 U	0.50 U	1.2 U
1,3-Dichloropropene (cis)	0.50 U	0.50 U	0.91 U
1,3-Dichloropropene (trans)	0.50 U	0.50 U	0.91 U
1,4-Dichlorobenzene	0.50 U	0.50 U	1.2 U
1,4-Dioxane	0.50 U	0.50 U	18 U
2,2,4-Trimethylpentane	NA	NA	0.93 U
4-Methyl-2-pentanone (MIBK)	0.50 U	0.50 U	2 U
Acetone (2-propanone)	5 U	5 U	12 U
Acetonitrile	0.50 U	0.50 U	NA
Acrolein	2 U	2 U	NA
Acrylonitrile	0.50 U	0.50 U	NA
alpha-Pinene	0.50 U	0.50 U	NA
Benzene	0.50 U	0.50 U	0.64 U
Benzyl chloride	0.50 U	0.50 U	NA
Bromodichloromethane	0.50 U	0.50 U	1.3 U
Bromoethene	NA	NA	0.87 U
Bromoform	0.50 U	0.50 U	2.1 U
Bromomethane (Methyl bromide)	0.50 U	0.50 U	0.78 U
Carbon disulfide	5 U	5 U	1.6 U
Carbon tetrachloride	0.50 U	0.50 U	1.3 U
Chlorobenzene	0.50 U	0.50 U	0.92 U
Chloroethane (ethyl chloride)	0.50 U	0.50 U	1.3 U
Chloroform	0.50 U	0.50 U	0.98 U
Chloromethane (Methyl chloride)	0.50 U	0.50 U	1.3
Cumene	0.50 U	0.50 U	NA
Cyclohexane	1 U	1 U	0.69 U
Dibromochloromethane	0.50 U	0.50 U	1.7 U
Dichlorodifluoromethane	0.50 U	0.50 U	**2.9**
d-Limonene	0.50 U	0.50 U	NA
Ethanol	5 U	5 U	NA
Ethyl Acetate	1 U	1 U	NA
Ethylbenzene	0.50 U	0.50 U	0.87 U
Hexachlorobutadiene	0.50 U	0.50 U	2.1 U
Isopropyl Alcohol	1 U	1 U	12 U
Methyl Methacrylate	1 U	1 U	NA
Methylene Chloride	0.50 U	0.50 U	1.7 U
MTBE (Methyl tert-butyl ether)	0.50 U	0.50 U	1.8 U
Naphthalene	0.50 U	0.50 U	NA
n-Butyl Acetate	0.50 U	0.50 U	NA
n-Heptane	0.50 U	0.50 U	0.82 U
n-Hexane	0.50 U	0.50 U	1.8 U
n-Nonane	0.50 U	0.50 U	NA
n-Octane	0.50 U	0.50 U	NA
n-Propylbenzene	0.50 U	0.50 U	NA
Propylene	0.50 U	0.50 U	NA
Styrene	0.50 U	0.50 U	0.85 U
Tertiary butyl alcohol (TBA)	NA	NA	15 U
Tetrachloroethene (PCE)	0.50 U	0.50 U	1.4 U
Tetrahydrofuran **	0.50 U	0.50 U	15 U
Toluene	0.50 U	0.50 U	1.7
Trichloroethene (TCE)	0.50 U	0.50 U	1.1 U
Trichlorofluoromethane (Freon 11)	0.50 U	0.50 U	1.5
Vinyl acetate	5 U	5 U	NA
Vinyl Chloride	0.50 U	0.50 U	0.51 U
Xylene (m&p)	NA	NA	0.87 U
Xylene (m,p)	1 U	1 U	2.2 U
Xylene (o)	0.50 U	0.50 U	0.87 U
Total TICs	ND	ND	NA

Table 7a
2350 Fifth Avenue
New York, NY
Results of Historical Indoor Air Samples
Tetrachloroethene and Breakdown Products

Location	Compound $\mu g/m^3$	Sample Date						
		6/30/1997	7/18/1997	9/13/1997	10/2/1997	8/13/1998	8/23/1999	11/27/2001
Room 112 (P35)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	1.07	ND	ND
	Tetrachloroethene	38.37	30.51	**128.82**	77.97	62.38	66.44	14.92
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	2.1	2.16	2.29	ND	3.1	2.26	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Room 131 (P33)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	15.8	22.92	**113.9**	63.53	40.68	24.41	5.7
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	1.78	1.88	ND	ND	3.11	0.58	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Room 129 (P16)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	DN	ND	ND	ND	ND
	Tetrachloroethene	20.34	20.41	**109.16**	60.34	40	16.95	4.81
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	1.84	2.08	1.8	ND	3	ND	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Corridor outside Room 118	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	42.99	45.77	56.27	23.53	48.14	42.04	2.92
	trans-1,2-Dichloroethene	ND	ND	ND	ND	0.99	1.03	ND
	Trichloroethene	ND	2.24	ND	ND	3.11	1.29	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Cafeteria (Room 122-P10)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	70.51	65.29	52.21	22.37	47.46	37.29	2.51
	trans-1,2-Dichloroethene	ND	ND	ND	ND	0.99	1.23	ND
	Trichloroethene	ND	2.49	ND	ND	3.32	1.23	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND

Table 7a
2350 Fifth Avenue
New York, NY
Results of Historical Indoor Air Samples
Tetrachloroethene and Breakdown Products

Location	Compound μg/m^3	Sample Date						
		4/22/2002	1/13/2003	5/5/2003	8/23/2004	4/21/2005	5/20/2005	8/21/2005
Room 112 (P35)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	2.7
	Tetrachloroethene	12.2	14.92	9.49	14.24	39	15	50
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	ND	ND	ND	ND	1.7	ND	9.3
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Room 131 (P33)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	1.9	6.64	3.39	ND	44	45	ND
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	ND	ND	ND	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Room 129 (P16)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	1.83	3.86	2.98	ND	69	74.58	ND
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	ND	ND	ND	ND	1.4	1.9	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Corridor outside Room 118	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	2.44	ND	ND	2.98	54	61.02	ND
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	ND	ND	ND	ND	ND	1.4	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND
Cafeteria (Room 122-P10)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Tetrachloroethene	2.71	ND	2.17	ND	31	37.29	ND
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	ND	ND	ND	ND	2.4	ND	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND

Table 7b
2350 Fifth Avenue
New York, NY
Results of Indoor Air Samples
Tetrachloroethene and Breakdown Products

Location	Compound $\mu g/m^3$	Sample Date								
		2/18/2006	8/1/2006	12/15/2006	1/26/2007	10/4/2007	3/11/2008	7/3/2008	10/8/2008	1/23/2009
Old Boiler Room Basement	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	28	140	63	47	39	8.9	7.2	1.4	1.2
	Tetrachloroethene	**330**	**2300**	**720**	**620**	**780**	81	**110**	33	24
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	**38**	**250**	**92**	**64**	**70**	**8.1**	**8.6**	1.7	1.6
	Vinyl Chloride	1.9	ND	5.4	ND	ND	1.3	ND	ND	ND
Old Boiler Room Basement - Duplicate	1,1-Dichloroethene	NA	ND	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	NA	140	65	47	38	8.4	7.3	ND	1.1
	Tetrachloroethene	NA	**2400**	**820**	**610**	**720**	80	**120**	39	23
	trans-1,2-Dichloroethene	NA	ND	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	NA	**250**	**92**	**65**	**66**	**8**	**9.1**	1.1	1.5
	Vinyl Chloride	NA	ND	5.6	ND	ND	1.1	ND	ND	ND
Locker 1454	1,1-Dichloroethene	NA	NA	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	NA	NA	150	5.7	33	22	20	6	3
	Tetrachloroethene	NA	NA	**3100**	**220**	**980**	**680**	**800**	**320**	30
	trans-1,2-Dichloroethene	NA	NA	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	NA	NA	**110**	**6.1**	**36**	**22**	**24**	**7.3**	1.2
	Vinyl Chloride	NA	NA	ND	ND	ND	ND	ND	ND	ND
Between Lockers 1130 & 1131	1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	ND	ND
	cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	ND	2.7
	Tetrachloroethene	NA	NA	NA	NA	NA	NA	NA	34	28
	trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	ND	ND
	Trichloroethene	NA	NA	NA	NA	NA	NA	NA	1	1.8
	Vinyl Chloride	NA	NA	NA	NA	NA	NA	NA	ND	ND
Corridor outside Room 129/130 (P17)	1,1-Dichloroethene	NA	NA	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	NA	NA	ND	2	4.1	ND	ND	ND	0.75
	Tetrachloroethene	NA	NA	4.3	40	**110**	9.5	12	2.8	12
	trans-1,2-Dichloroethene	NA	NA	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	NA	NA	ND	2.4	**9.5**	ND	0.75	ND	0.71
	Vinyl Chloride	NA	NA	ND	ND	ND	ND	ND	ND	ND
Sales Office (Kitchen)	1,1-Dichloroethene	NA	NA	NA	ND	NA	NA	ND	ND	ND
	cis-1,2-Dichloroethene	NA	NA	NA	ND	NA	NA	ND	ND	ND
	Tetrachloroethene	NA	NA	NA	14	NA	NA	1.2	1.3	4.8
	trans-1,2-Dichloroethene	NA	NA	NA	ND	NA	NA	ND	ND	ND
	Trichloroethene	NA	NA	NA	ND	NA	NA	ND	ND	ND
	Vinyl Chloride	NA	NA	NA	ND	NA	NA	ND	ND	ND

Table 7b
2350 Fifth Avenue
New York, NY
Results of Indoor Air Samples
Tetrachloroethene and Breakdown Products

Location	Compound µg/m³	Sample Date								
		6/2/2009	9/29/2009	11/24/2009	4/9/2010	7/30/2010	10/26/2010	12/7/2010	1/31/2011	4/29/2011
Old Boiler Room Basement	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	cis-1,2-Dichloroethene	10	0.83	ND	10	ND	0.92	NA	11	5.9
	Tetrachloroethene	85	37	8.2	60	9.4	47	NA	72	44
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	Trichloroethene	**11**	2	ND	5	ND	2.3	NA	2.2	2.0
	Vinyl Chloride	0.88	ND	ND	4	ND	ND	NA	1.3	1.3
Old Boiler Room Basement - Duplicate	1,1-Dichloroethene	(Canister compromised - arrived from lab with no vacuum)	ND	ND	ND	ND	ND	NA	ND	ND
	cis-1,2-Dichloroethene		ND	ND	10	ND	0.87	NA	11	6.0
	Tetrachloroethene		38	8.2	59	13	35	NA	74	46
	trans-1,2-Dichloroethene		ND	ND	ND	ND	ND	NA	ND	ND
	Trichloroethene		2.1	ND	4.9	ND	2.3	NA	2.2	2.0
	Vinyl Chloride		ND	ND	3.9	ND	ND	NA	1.2	1.4
Locker 1454	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	5.8	4.1	1.8	4.7	ND	9.8	25	15	14
	Tetrachloroethene	83	**270**	3.7	20	54	**320**	11	14	17
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	**6.1**	**6.5**	ND	ND	ND	**9**	ND	ND	2.5
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	0.79	ND	ND
Between Lockers 1130 & 1131	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	cis-1,2-Dichloroethene	5.2	ND	ND	4.4	ND	4.3	NA	9.8	12
	Tetrachloroethene	14	29	1.3	13	25	44	NA	5.8	10
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	Trichloroethene	**5.4**	0.93	ND	ND	0.63	ND	NA	ND	2.1
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	NA	ND	ND
Corridor outside Room 129/130 (P17)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	cis-1,2-Dichloroethene	1.5	ND	ND	1.5	ND	0.85	13	8.6	4.0
	Tetrachloroethene	7.3	ND	ND	5.9	2.5	**170**	9.6	5.6	6.3
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Trichloroethene	1.6	ND	ND	ND	ND	ND	ND	ND	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sales Office (Kitchen)	1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	Tetrachloroethene	ND	ND	0.97	ND	ND	ND	NA	1.5	5.3
	trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	Trichloroethene	ND	ND	ND	ND	ND	ND	NA	ND	ND
	Vinyl Chloride	ND	ND	ND	ND	ND	ND	NA	ND	ND

Table 8
2350 Fifth Avenue
New York, NY
VOC Concentrations in Sub-Slab Insulation Material Samples

Client ID	C-30(0.5'-1.5')	C-30(0.5'-1.5') DUP	C-32 (1.5-2.5)		C-34 (2-3)	C-36 (1.5-2.5)
Lab Sample ID	220-10848-1	220-10848-4	220-10830-1		220-10860-1	220-10860-2
Date Sampled	12/1/2009	12/1/2009	11/30/2009		12/2/2009	12/2/2009
Dilution	1	1	1	1	1	5
	Low	Low	Low	Medium	Medium	Low
Analyte µg/Kg						
1,1,1-Trichloroethane	0.59 U	1.7 U	0.81 U	95 U H	230 U H	13 U H
1,1,2,2-Tetrachloroethane	0.58 U	1.7 U	0.79 U	100 U H	250 U H	13 U H
1,1,2-Trichloroethane	0.41 U	1.2 U	0.57 U	100 U H	260 U H	9.2 U H
1,1-Dichloroethane	0.33 U	0.96 U	0.46 U	110 U H	270 U H	7.5 U H
1,1-Dichloroethene	0.64 U	1.8 U	0.89 U	110 U H	280 U H	14 U H
1,2-Dichloroethane	0.64 U	1.8 U	0.89 U	90 U H	220 U H	14 U H
1,2-Dichloropropane	0.74 U	2.1 U	1.0 U	79 U H	200 U H	17 U H
2-Hexanone	1.3 U	3.8 U	1.8 U	200 U H	490 U H	30 U H
Acetone	43	82	210 B	370 U H *	910 U H	320 J H
Benzene	1.8 J	12 J	0.87 U	100 U H	250 U H	22 J H
Bromodichloromethane	0.33 U	0.96 U	0.46 U	110 U H	260 U H	7.5 U H
Bromoform	0.68 U	1.9 U	0.93 U	120 U H	300 U H	15 U H
Bromomethane	2.3 U *	6.6 U *	3.2 U *	140 U H	350 U H	52 U H
Carbon disulfide	0.45 U	1.3 U	0.63 U	100 U H	250 U H	10 U H *
Carbon tetrachloride	1.1 U	3 U	1.5 U	120 U H	290 U H	24 U H
Chlorobenzene	0.65 U	2 J	0.90 U	95 U H	230 U H	15 U H
Chloroethane	1.1 U	3.1 U	1.5 U	120 U H	300 U H	24 U H
Chloroform	0.38 U	1.1 U	1.8 J	95 U H	230 U H	8.5 U H
Chloromethane	0.87 U	2.5 U	1.2 U	98 U H	240 U H	19 U H
cis-1,2-Dichloroethene	0.41 U	1.2 U	0.57 U	92 U H	230 U H	9.2 U H
cis-1,3-Dichloropropene	0.62 U	1.8 U	0.86 U	93 U H	230 U H	14 U H
Dibromochloromethane	0.39 U	1.1 U	0.54 U	120 U H	290 U H	8.7 U H
Ethylbenzene	0.78 U	2.2 U	1.9 J	79 U H	200 U H	17 U H
Methyl Ethyl Ketone	1.8 U	5.1 U	37 *	170 U H	420 U H	40 U H
methyl isobutyl ketone	0.61 U	1.8 U	0.84 U	130 U H	310 U H	14 U H
Methylene Chloride	2.2 J	43 J	6.2 J B	**560** J H B	310 U H	240 J H B
Styrene	0.46 J	0.48 U	8.4	120 U H	300 U H	3.7 U H
Tetrachloroethene	19	130	50	150 J H	**16,000** H	4,700 H
Toluene	3 J B	14 J B	4.4 J	110 U H	270 U H	37 J H B
trans-1,2-Dichloroethene	0.43 U	1.2 U	0.60 U	81 U H	200 U H	9.7 U H
trans-1,3-Dichloropropene	0.30 U	0.86 U	0.41 U	95 U H	230 U H	6.7 U H
Trichloroethene	0.90 U	2.6 U	1.2 U	99 U H	250 U H	20 U H
Vinyl chloride	0.26 U	0.73 U	0.35 U	100 U H	250 U H	5.7 U H
Xylenes, Total	1.5 J	4.2 J	4.5 J	320 U H	790 U H	13 J H

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 8
2350 Fifth Avenue
New York, NY
VOC Concentrations in Sub-Slab Insulation Material Samples

Client ID Lab Sample ID Date Sampled Dilution Analyte µg/Kg	C-37 (1'-2') 220-10873-1 12/3/2009 2 Low	C-39(1.5'-2.5') 220-10910-1 12/4/2009 2 Low	C-40(1.5'-2.5') 220-10910-2 12/4/2009 5 Low	C-41(1.5'-2.5') 220-10910-3 12/4/2009 5 Low	C-42A(2'-2.5') 220-10950-1 12/8/2009 10 Low	C-42A(2'-2.5') 220-10950-1 12/8/2009 2 Medium
1,1,1-Trichloroethane	470 H	4.5 U H	15 U H	10 U H	5.6 U	1,800 U H
1,1,2,2-Tetrachloroethane	4.8 U H	4.4 U H	14 U H	10 U H	5.5 U	1,900 U H
1,1,2-Trichloroethane	3.4 U H	3.1 U H	10 U H	7.1 U H	3.9 U	1,900 U H
1,1-Dichloroethane	580 H	2.5 U H	8.3 U H	5.7 U H	3.2 U	2,000 U H
1,1-Dichloroethene	5.3 U H	4.9 U H	16 U H	11 U H	6.1 U	2,100 U H
1,2-Dichloroethane	5.3 U H	4.9 U H	16 U H	11 U H	6.1 U	1,700 U H
1,2-Dichloropropane	6.1 U H	5.7 U H	19 U H	13 U H	7 U	1,500 U H
2-Hexanone	11 U H	10 U H	33 U H	23 U H	13 U	3,700 U H
Acetone	140 J H	220 H	62 U H	43 U H	640	6,800 U H *
Benzene	5.2 U H	4.8 U H	16 U H	11 U H	250	1,900 U H
Bromodichloromethane	2.7 U H	2.5 U H	8.3 U H	5.7 U H	3.2 U	2,000 U H
Bromoform	5.6 U H	5.2 U H	17 U H	12 U H	6.4 U	2,300 U H
Bromomethane	19 U H	18 U H	57 U H	40 U H	22 U	2,600 U H
Carbon disulfide	3.7 U H *	3.5 U H	11 U H	7.8 U H	4.3 U	1,900 U H
Carbon tetrachloride	8.7 U H	8 U H	26 U H	18 U H	10 U	2,200 U H
Chlorobenzene	5.4 U H	5 U H	16 U H	11 U H	6.2 U	1,800 U H
Chloroethane	9 U H	8.3 U H	27 U H	19 U H	10 U	2,300 U H *
Chloroform	3.1 U H	3.9 J H	9.4 U H	6.5 U H	3.6 U	1,800 U H
Chloromethane	7.1 U H	6.6 U H	22 U H	15 U H	8.2 U	1,800 U H
cis-1,2-Dichloroethene	3.4 U H	3.1 U H	10 U H	7.1 U H	19 J	1,700 U H
cis-1,3-Dichloropropene	5.1 U H	4.7 U H	15 U H	11 U H	5.9 U	1,700 U H
Dibromochloromethane	3.2 U H	3.0 U H	9.7 U H	6.7 U H	3.7 U	2,200 U H
Ethylbenzene	6.4 U H	5.9 U H	19 U H	13 U H	350	**13,000** J H
Methyl Ethyl Ketone	15 U H	13 U H *	44 U H *	30 U H *	350	3,100 U H
methyl isobutyl ketone	5 U H	4.6 U H	15 U H	11 U H	5.8 U	2,300 U H
Methylene Chloride	54 J H B	48 J H B	210 J H B	200 J H B	280 B	**8,300** J H B
Styrene	1.4 U H	1.3 U H	4.1 U H	2.9 U H	8,200 E	230,000 H
Tetrachloroethene	1,000 H	920 H	2,800 H	930 H	**17,000** E	**560,000** H
Toluene	6.7 J H B	4.2 J H B	13 J H B	18 J H B	730 B	**10,000** J H
trans-1,2-Dichloroethene	3.6 U H	3.3 U H	11 U H	7.5 U H	4.1 U	1,500 U H
trans-1,3-Dichloropropene	2.5 U H	2.3 U H	7.5 U H	5.2 U H	2.8 U	1,800 U H
Trichloroethene	7.4 U H	6.8 U H	22 U H	16 U H	59	1,800 U H
Vinyl chloride	2.1 U H	1.9 U H	6.4 U H	4.4 U H	2.4 U	1,900 U H
Xylenes, Total	4.4 U H	4.1 U H	13 U H	9.3 U H	69	6,000 U H

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed out.

Table 8
2350 Fifth Avenue
New York, NY
VOC Concentrations in Sub-Slab Insulation Material Samples

Client ID	C-42B(2'-2.5')	C-43 (1-2)		C-44 (2-3)	SB-40 (1.5-3)	FB-2	TB-2
Lab Sample ID	220-10950-2	220-10976-1		220-10925-1	220-11210-25	220-10848-2	220-10848-3
Date Sampled	12/8/2009	12/9/2009		12/7/2009	12/29/2009	12/1/2009	12/1/2009
Dilution	1	5	1	1	2	1	1
	Low	Low	Medium	Low	Low	Low	Low
						µg/L	µg/L
Analyte µg/Kg							
1,1,1-Trichloroethane	3.7 U	13 U H	300 U H	2.4 U	4.6 U	0.69 U	0.69 U
1,1,2,2-Tetrachloroethane	3.6 U	13 U H	320 U H	2.4 U	4.5 U	0.81 U	0.81 U
1,1,2-Trichloroethane	2.6 U	9.0 U H	330 U H	1.7 U	3.2 U	0.65 U	0.65 U
1,1-Dichloroethane	2.1 U	7.3 U H	350 U H	1.4 U	2.6 U	1.0 U	1.0 U
1,1-Dichloroethene	4 U	14 U H	360 U H	2.7 U	5 U	0.83 U	0.83 U
1,2-Dichloroethane	4 U	14 U H	290 U H	2.7 U	5 U	0.72 U	0.72 U
1,2-Dichloropropane	4.7 U	16 U H	250 U H	3.1 U	5.8 U	0.71 U	0.71 U
2-Hexanone	8.3 U	29 U H	630 U H	5.5 U	10 U	1.1 U	1.1 U
Acetone	16 U	210 J H B	1,200 U H *	150	72 J *	1 U	1 U
Benzene	4 U	14 U H	320 U H	3.1 J	4.9 U	0.74 U	0.74 U
Bromodichloromethane	2.1 U	7.3 U H	330 U H	1.4 U	2.6 U	0.48 U	0.48 U
Bromoform	4.2 U	15 U H	390 U H	2.8 U	5.3 U	0.46 U	0.46 U
Bromomethane	14 U	50 U H	450 U H	9.5 U	18 U	2.1 U	2.1 U
Carbon disulfide	2.8 U	9.9 U H	320 U H	1.9 U *	3.6 U	0.90 U	0.90 U
Carbon tetrachloride	6.6 U	23 U H	370 U H	4.3 U	8.2 U	1.1 U	1.1 U
Chlorobenzene	4.1 U	14 U H	300 U H	2.7 U	5.1 U	0.72 U	0.72 U
Chloroethane	6.8 U	24 U H	390 U H	4.5 U	8.5 U	1.1 U	1.1 U
Chloroform	2.4 U	8.2 U H	300 U H	1.6 U	2.9 U	0.67 U	0.67 U
Chloromethane	5.4 U	19 U H	310 U H	3.6 U	6.8 U	1.1 U	1.1 U
cis-1,2-Dichloroethene	2.6 U	45 J H	290 U H	29	3.2 U	0.99 U	0.99 U
cis-1,3-Dichloropropene	3.9 U	14 U H	300 U H	2.6 U	4.9 U	0.28 U	0.28 U
Dibromochloromethane	2.4 U	8.5 U H	380 U H	1.6 U	3 U	0.55 U	0.55 U
Ethylbenzene	4.9 U	17 U H	250 U H	3.2 U	6.1 U	0.87 U	0.87 U
Methyl Ethyl Ketone	11 U	39 U H	530 U H	7.3 U	NA	1.1 U	1.1 U
methyl isobutyl ketone	3.8 U	13 U H	400 U H	2.5 U	NA	0.38 U	0.38 U
Methylene Chloride	26 J B	71 J H	390 U H	32 J B	24 J B	0.78 U	0.78 U
Styrene	6 J	3.6 U H	390 U H	0.69 U	1.3 U	0.64 U	0.64 U
Tetrachloroethene	290	**5,800** E H	**24,000** H	84	570	0.81 U	0.81 U
Toluene	0.51 U	9.9 J H B	350 U H	4.9 J B	0.64 U	0.72 U	0.72 U
trans-1,2-Dichloroethene	2.7 U	9.5 U H	260 U H	1.8 U	3.4 U	0.76 U	0.76 U
trans-1,3-Dichloropropene	1.9 U	6.5 U H	300 U H	1.2 U	2.3 U	0.57 U	0.57 U
Trichloroethene	11 J	990 H	**2,300** J H	3.7 U	23 J	0.62 U	0.62 U
Vinyl chloride	1.6 U	5.6 U H	320 U H	1.1 U	2 U	0.99 U	0.99 U
Xylenes, Total	3.4 U	12 U H	1000 U H	2.2 U	4.2 U	2.3 U	2.3 U

NOTE: Due to multiple extractions during laboratory analysis, reported results shown in black text are more accurate, less accurate results have been grayed

Table 9
2350 Fifth Avenue
New York, NY
Proposed Backfill Analysis/Reuse Criteria

	NYSDEC Part 375 SCO Restricted Residential Use mg/kg
TCL VOCs	
1,1,1-Trichloroethane	100
1,1,2,2-Tetrachloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	26
1,1-Dichloroethene	100
1,2-Dichloroethane	3.1
1,2-Dichloroethene, Total	NS
1,2-Dichloropropane	NS
2-Hexanone	NS
Acetone	100
Benzene	4.8
Bromodichloromethane	NS
Bromoform	NS
Bromomethane	NS
Carbon disulfide	NS
Carbon tetrachloride	2.4
Chlorobenzene	100
Chloroethane	NS
Chloroform	49
Chloromethane	NS
cis-1,2-Dichloroethene	100
cis-1,3-Dichloropropene	NS
Dibromochloromethane	NS
Ethylbenzene	41
m&p-Xylene	100
Methyl Ethyl Ketone	100
methyl isobutyl ketone	NS
Methylene Chloride	100
o-Xylene	100
Styrene	NS
Tetrachloroethene	19
Toluene	100
trans-1,2-Dichloroethene	100
trans-1,3-Dichloropropene	NS
Trichloroethene	21
Vinyl chloride	0.9
Xylenes, Total	100

Table 9
2350 Fifth Avenue
New York, NY
Proposed Backfill Analysis/Reuse Criteria

	NYSDEC Part 375 SCO Restricted Residential Use mg/kg
TCL SVOCs	
1,2,4-Trichlorobenzene	NS
1,2-Dichlorobenzene	100
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
2,2'-oxybis[1-chloropropane]	NS
2,4,5-Trichlorophenol	NS
2,4,6-Trichlorophenol	NS
2,4-Dichlorophenol	NS
2,4-Dimethylphenol	NS
2,4-Dinitrophenol	NS
2,4-Dinitrotoluene	NS
2,6-Dinitrotoluene	NS
2-Chloronaphthalene	NS
2-Chlorophenol	NS
2-Methylnaphthalene	NS
2-Methylphenol	100
2-Nitroaniline	NS
2-Nitrophenol	NS
3,3'-Dichlorobenzidine	NS
3-Nitroaniline	NS
4,6-Dinitro-2-methylphenol	NS
4-Bromophenyl phenyl ether	NS
4-Chloro-3-methylphenol	NS
4-Chloroaniline	NS
4-Chlorophenyl phenyl ether	NS
4-Nitroaniline	NS
4-Nitrophenol	NS
Acenaphthene	100
Acenaphthylene	100
Anthracene	100
Benzo[a]anthracene	1
Benzo[a]pyrene	1
Benzo[b]fluoranthene	1
Benzo[g,h,i]perylene	100
Benzo[k]fluoranthene	3.9
Benzyl alcohol	NS
Bis(2-chloroethoxy)methane	NS
Bis(2-chloroethyl)ether	NS
Bis(2-ethylhexyl) phthalate	NS
Butyl benzyl phthalate	NS
Carbazole	NS
Chrysene	3.9
Dibenz(a,h)anthracene	0.33
Dibenzofuran	59
Diethyl phthalate	NS

Table 9
2350 Fifth Avenue
New York, NY
Proposed Backfill Analysis/Reuse Criteria

	NYSDEC Part 375 SCO Restricted Residential Use mg/kg
TCL SVOCs (continued)	
Dimethyl phthalate	NS
Di-n-butyl phthalate	NS
Di-n-octyl phthalate	NS
Fluoranthene	100
Fluorene	100
Hexachlorobenzene	1.2
Hexachlorobutadiene	NS
Hexachlorocyclopentadiene	NS
Hexachloroethane	NS
Indeno[1,2,3-cd]pyrene	0.5
Isophorone	NS
Methylphenol, 3 & 4	NS
Naphthalene	100
Nitrobenzene	15
N-Nitrosodi-n-propylamine	NS
N-Nitrosodiphenylamine	NS
Pentachlorophenol	6.7
Phenanthrene	100
Phenol	100
Pyrene	100

Table 9
2350 Fifth Avenue
New York, NY
Proposed Backfill Analysis/Reuse Criteria

	NYSDEC Part 375 SCO Restricted Residential Use mg/kg
TCL Pesticides	
4,4'-DDD	13
4,4'-DDE	8.9
4,4'-DDT	7.9
Aldrin	0.097
alpha-BHC	0.48
alpha-Chlordane	4.2
beta-BHC	0.36
Chlordane (technical)	4.2
delta-BHC	100
Dieldrin	0.2
Endosulfan I	See Totals
Endosulfan II	See Totals
Endosulfan sulfate	See Totals
Endrin	11
Endrin aldehyde	NS
Endrin ketone	NS
gamma-BHC (Lindane)	1.3
gamma-Chlordane	NS
Heptachlor	2.1
Heptachlor epoxide	NS
Methoxychlor	NS
Toxaphene	NS

PCBs	
PCB-1016	1
PCB-1221	1
PCB-1232	1
PCB-1242	1
PCB-1248	1
PCB-1254	1
PCB-1260	1

Table 9
2350 Fifth Avenue
New York, NY
Proposed Backfill Analysis/Reuse Criteria

	NYSDEC Part 375 SCO Restricted Residential Use mg/kg
Metals	
Aluminum	NS
Antimony	NS
Arsenic	16
Barium	400
Beryllium	72
Cadmium	4.3
Calcium	NS
Chromium	180
Cobalt	NS
Copper	270
Iron	NS
Lead	400
Magnesium	NS
Manganese	2,000
Mercury	0.81
Nickel	310
Potassium	NS
Selenium	180
Silver	180
Sodium	NS
Thallium	NS
Vanadium	NS
Zinc	10,000

Table 10
2350 Fifth Avenue
New York, NY
Emergency Contact List

Company	Individual Name	Title	Contact Number
AKRF	Marc Godick	Project Director	914-922-2356 (office)
	Kathleen Brunner	Project Manager	646-388-9525 (office) 917-612-3990 (cell)
	Eric Park	Field Team Leader, SSO	646-388-9532 (office) 917-923-9182 (cell)
2350 Fifth Avenue Corporation	Joseph Karten	Client Representative	212-289-4551
NYSDEC	Bryan Wong	Project Manager	718-482-4905
NYSDOH	Dawn Hettrick	Project Manager	518-402-7880
Driller	To Be Determined		
Excavator	To Be Determined		
Ambulance, Fire Department & Police Department			911
NYSDEC Spill Hotline			800-457-7362

Table 11
2350 Fifth Avenue
New York, NY
Volume, Location, Depth and Concentration of PCE in Sub-Slab Insulation

Sample ID	PCE	Bulk Density(ρ)		Dimensions (ft)			Area	Total PCE	% of PCE
	(µg/Kg)	g/cm^3	Method	L	W	H	(sq ft)	(grams)	removed
C-42A(2'-2.5')	**560,000**	**0.275**	**Avg**	**11**	**36**	**0.50**	**396**	**862.92**	**83.61%**
C-43(1-2)	**24,000**	**0.275**	**Avg**	**21**	**17**	**1.04**	**348.5**	**67.81**	**6.57%**
C-6	**100,000**	**0.275**	**Avg**	**8**	**14**	**0.75**	**112**	**65.37**	**6.33%**
C-34(2-3)	**16,000**	**0.275**	**Avg**	**13**	**8**	**0.83**	**104**	**10.79**	**1.05%**
C-42B(2'-2.5')	290	0.275	Avg	12	35	0.79	420	0.75	0.07%
C-9	23	0.275	Avg	22	15	0.92	330	0.05	0.01%
C-30(0.5-1.5')	130	0.275	Avg	22	20	0.83	440	0.37	0.04%
C-31 - No insulation		0	NA	24	35	0.00	840	0.00	0.00%
C-32(1.5-2.5)	150	0.275	Avg	17	35	0.83	595	0.58	0.06%
C-4 - No insulation		0	NA	0	0	0.00	0	0.00	0.00%
C-33 - No insulation		0	NA	0	0	0.00	0	0.00	0.00%
C-39(1.5'-2.5')	920	0.275	Avg	23	35	0.50	805	2.88	0.28%
C-11 - No insulation		0	NA	15	30	0.00	450	0.00	0.00%
C-37(1'-2')	1,000	0.275	Avg	20	30	0.92	600	4.28	0.41%
C-2 - No insulation		0	NA	19	33	0.00	627	0.00	0.00%
C-36(1.5-2.5)	4,700	0.275	Avg	22	30	0.50	660	12.07	1.17%
C-35 - No insulation		0	NA	17	30	0.00	510	0.00	0.00%
C-10 - No insulation		0	NA	0	0	0.00	0	0.00	0.00%
C-41(1.5'-2.5')	930	0.275	Avg	15	22	0.50	330	1.19	0.12%
C-1	61	0.275	Avg	15	27	0.75	405	0.14	0.01%
C-40(1.5'-2.5')	2,800	0.09	Lab	15	35	0.58	525	2.18	0.21%
C-44(2-3)	84	0.46	Lab	23	35	0.79	805	0.70	0.07%

Notes:
The maximum sub-slab insulation removal area is represented by the first four samples: C-42A, C-43, C-6 and C-34.
Thickness of insulation layer (H) is based on observed recovery documented in the boring log.
Samples from 1997 (C-1 to C-29) and 2009 (C-30 to C-44) are given equivalent consideration.
Cores where no insulation material was found are generally given equivalent consideration (in sq. ft.) when surrounded by cores where insulation was present (C-31, C-11 and C-35).
Dimensions are averaged for irregularly shaped areas for a resulting total square footage representative of the polygon.
Contaminant mass and volume presented in the RIR were based on averages, not individually characterized areas as presented here

Tables 1-10
2350 Fifth Avenue
New York, NY
Notes

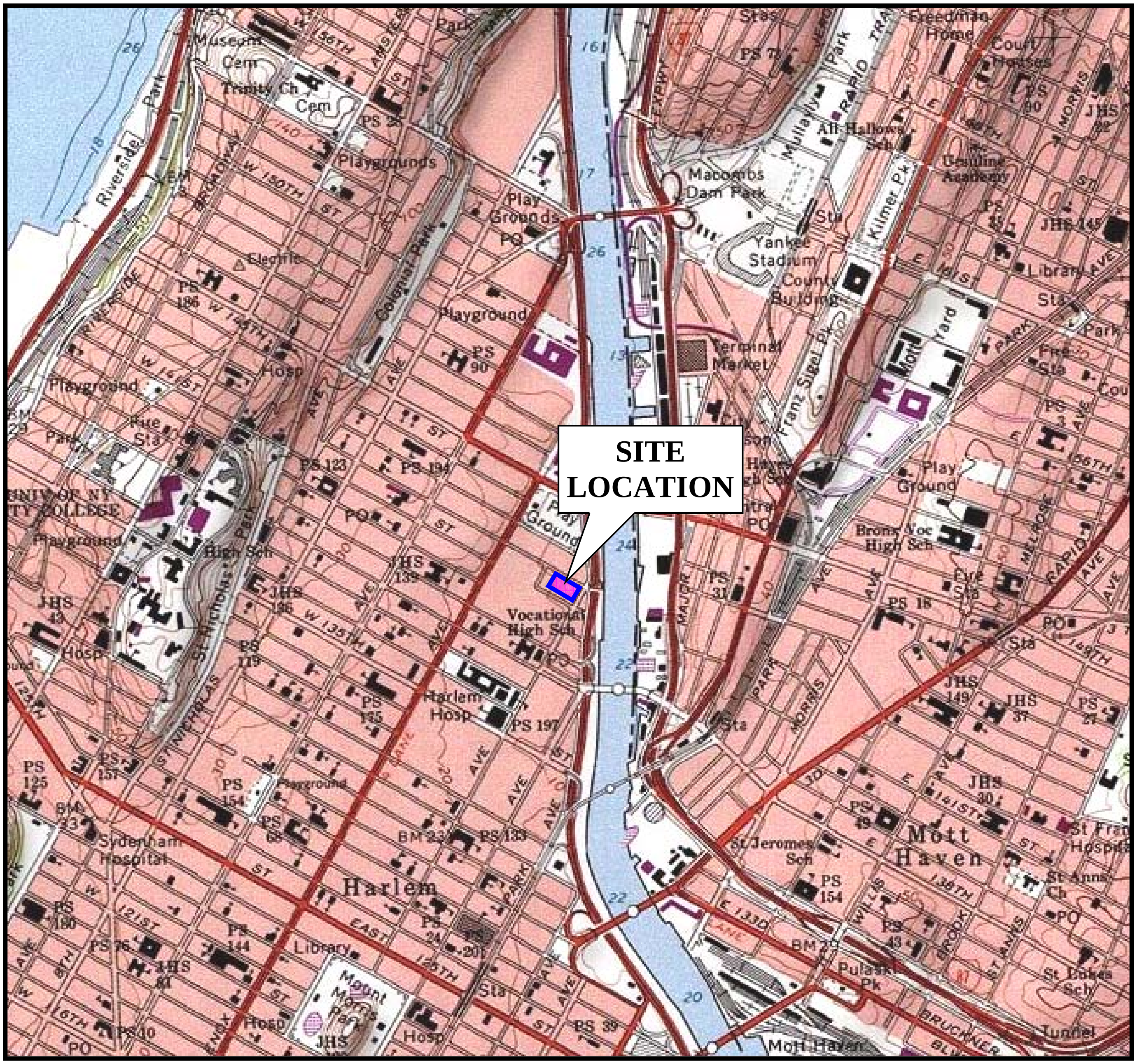
GENERAL

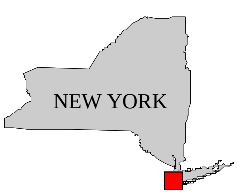
NS :	No standard listed
ND :	No Detect
NA :	Not analyzed
U :	The analyte was not detected at the indicated concentration
SB :	Site Background
J :	Estimated Value, below quantification limit
B :	Compound found in the blank
D :	Value from sample run at a secondary dilution
M :	Manually intergrated compound
M1 :	Matrix interference due to coelution with a non-target compound; results may be biased high.
E :	Estimated value because of interference
H :	Sample was analyzed after specified hold time
b.g.s. :	Below ground surface

Exceedences of Standards, Criteria, and Guidance (SCGs) are highlighted in bold font.

SOIL	(Table 4)
NYSDEC Part 375 SCO for Unrestricted Use	Soil Cleanup Objectives (SCOs) for unrestricted use listed in New York State Department of Environmental Conservation (NYSDEC) Subpart 375-6.5
mg/kg :	milligrams per kilogram = parts per million (ppm)
B :	Result is less than the reporting CRDL/reporting limit, but greater than or equal to the instrument detection limit/method detection limit
H :	Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit
GROUNDWATER	(Table 5)
NYSDEC Class GA Standard :	New York State Department of Environmental Conservation Technical and Operational Guidance Series (1.1.1): Class GA Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.
μg/L :	micrograms per liter = parts per billion (ppb)
SOIL VAPOR	(Table 6)
NOTE :	There is no standard to evaluate soil vapor on its own; however soil vapor is evaluated in conjunction with indoor air data in NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006).
μg/m^3 :	micrograms per cubic meter of air
GC/MS	Gas Chromatography/Mass Spectrometry

FIGURES





SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’

N

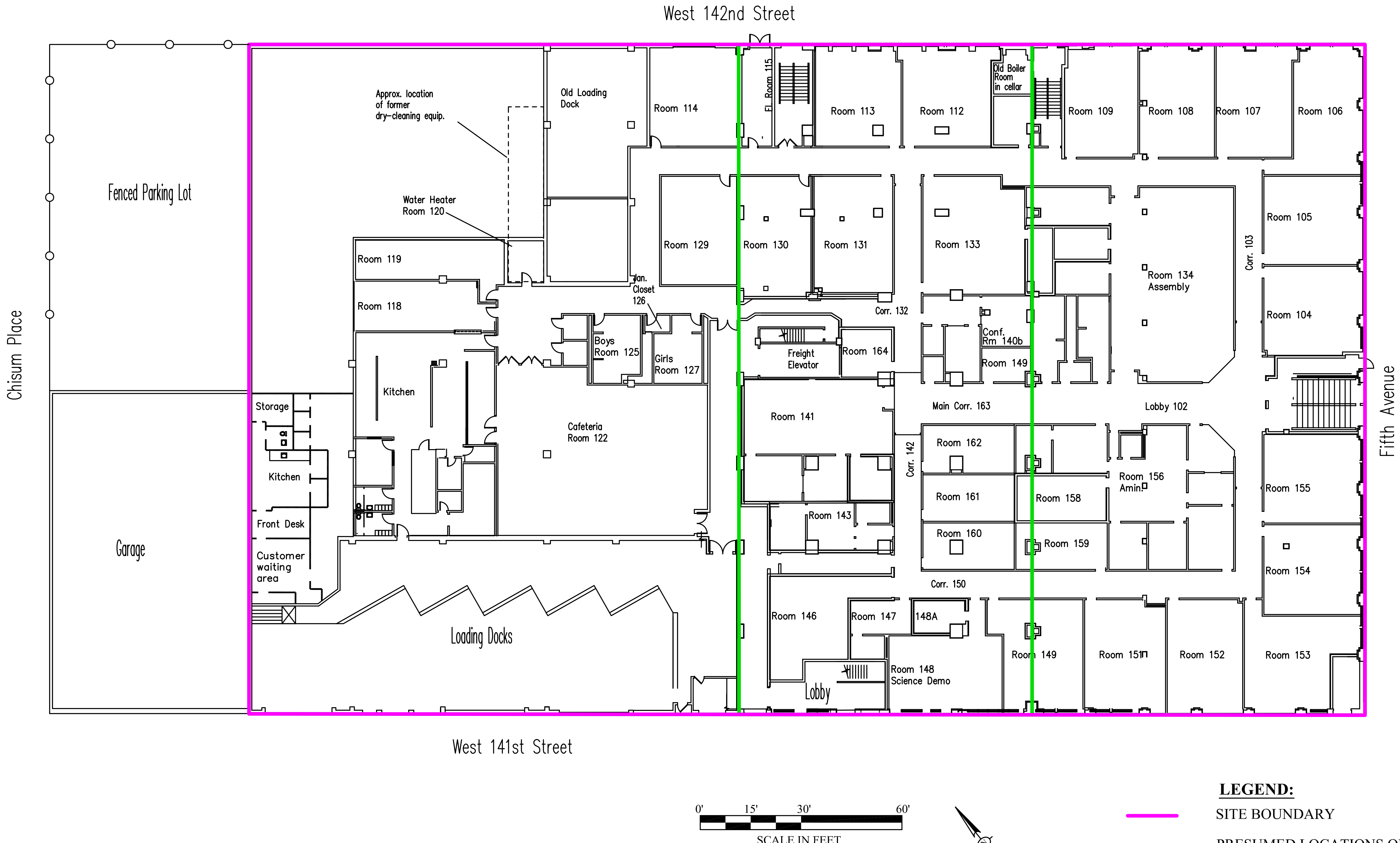
SOURCE:
7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: CENTRAL PARK, NY 1995

2350 FIFTH AVENUE
NEW YORK, NEW YORK

PROJECT SITE LOCATION

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	PROJECT No.	SCALE	FIGURE
1.20.11	**08010**	**as shown**	**1**



LEGEND:

SITE BOUNDARY

PRESUMED LOCATIONS OF BUILDING FOUNDATION WALLS

FENCE

AKRF
Environmental Consultants
440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

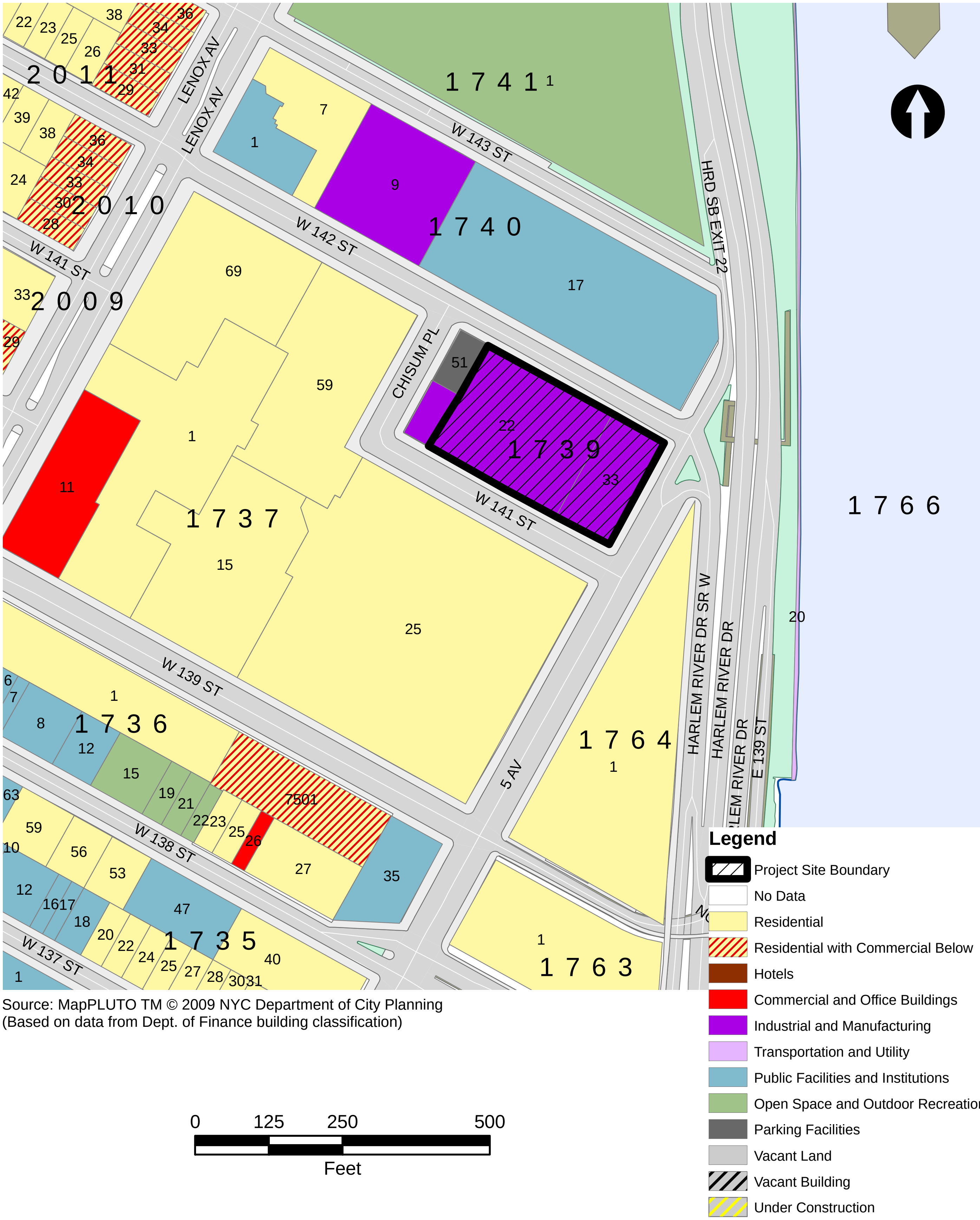
SITE PLAN

DATE
6.27.11

PROJECT NO.
08010

SCALE
1"=30'

FIGURE
2



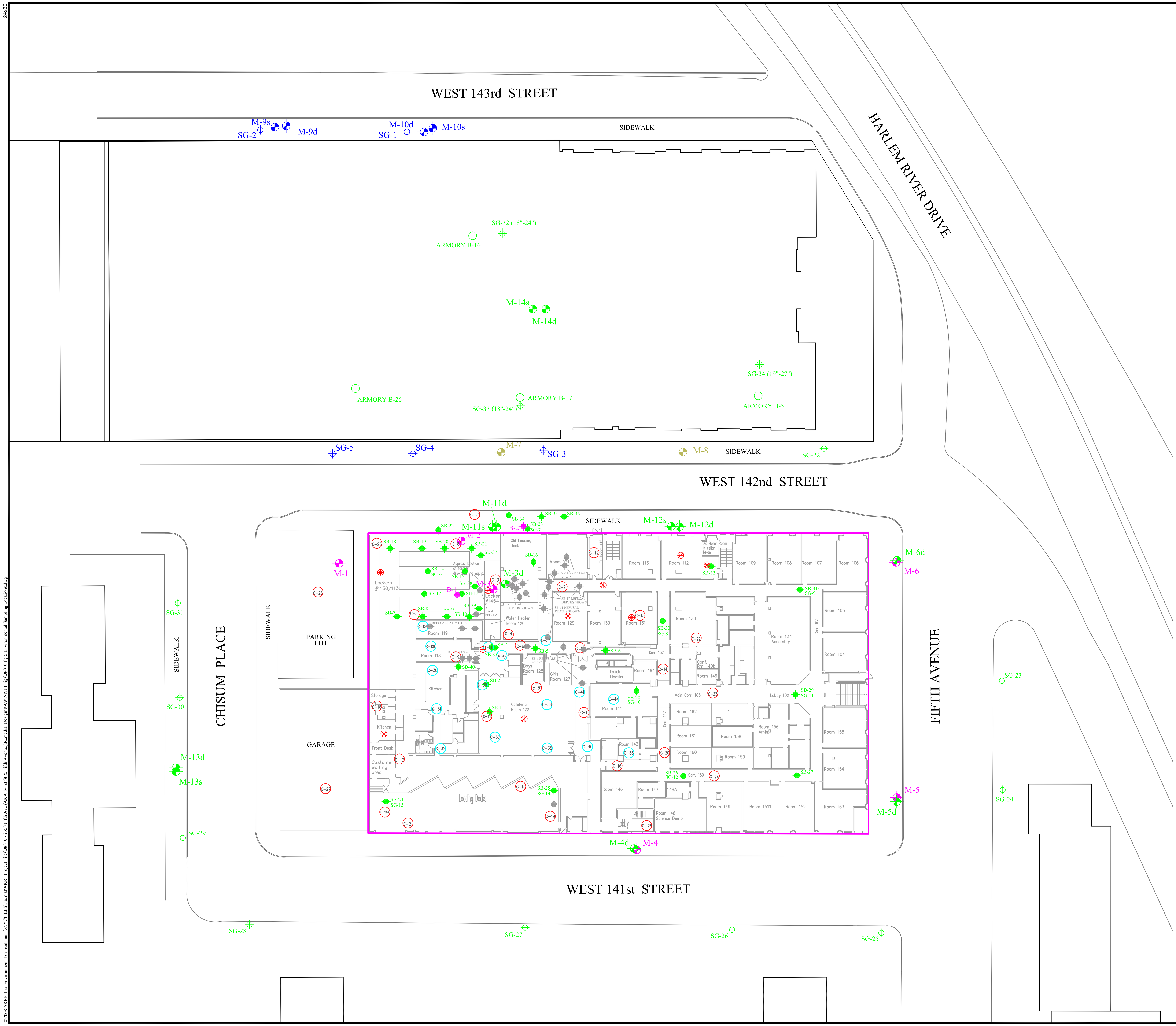
Source: MapPLUTO TM © 2009 NYC Department of City Planning
(Based on data from Dept. of Finance building classification)

2350 FIFTH AVENUE
NEW YORK, NEW YORK

LAND USE MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE 6.18.10
PROJECT No. **08010**
FIGURE **3**



SYMBOL LEGEND:

SITE BOUNDARY

M-5 MONITORING WELL LOCATION

SG-3 SOIL VAPOR SAMPLE LOCATION

SB-27 SOIL BORING LOCATION

SB-27 SG-11 SOIL BORING/SOIL VAPOR SAMPLE LOCATION

DRILLING REFUSAL LOCATION AND DEPTH

SHALLOW (SUB-SLAB) CORE DRILLING LOCATION (1997)

SHALLOW (SUB-SLAB) CORE DRILLING LOCATION (2009)

ARMORY B-5 INDOOR AIR SAMPLE (2009)

INDOOR AIR SAMPLE (2008 - 2011)

COLOR LEGEND:

INITIAL INVESTIGATION CONDUCTED BY RIVERPOINT - 1997

PRELIMINARY SITE ASSESSMENT CONDUCTED BY AKRF - JANUARY/FEBRUARY 1998

REMEDIAL INVESTIGATION PHASE I CONDUCTED BY AKRF - APRIL 2002

SUPPLEMENTAL OFF-SITE INVESTIGATION CONDUCTED BY AKRF - AUGUST/OCTOBER 2006

REMEDIAL INVESTIGATION CONDUCTED BY AKRF - OCTOBER 2007 THROUGH DECEMBER 2009

GENERAL NOTES:

1. BASE MAPS PROVIDED BY MONTROSE WITH LOCATIONS SURVEYED IN DEC 2006, JAN 2008 AND DEC 2009 OR MEASURED IN FIELD WITH TAPE MEASURE.

2. INDOOR SAMPLES HAVE BEEN COLLECTED AT THE SITE FROM FIVE LOCATIONS IN 1997, WHICH GRADUALLY INCREASED TO TEN LOCATIONS WHICH HAVE BEEN SAMPLED SINCE 2008 (PLUS A DUPLICATE SAMPLE FROM THE BOILER ROOM/BASEMENT).

0' 15' 30' 60'
SCALE IN FEET

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2350 FIFTH AVENUE
NEW YORK, NEW YORK

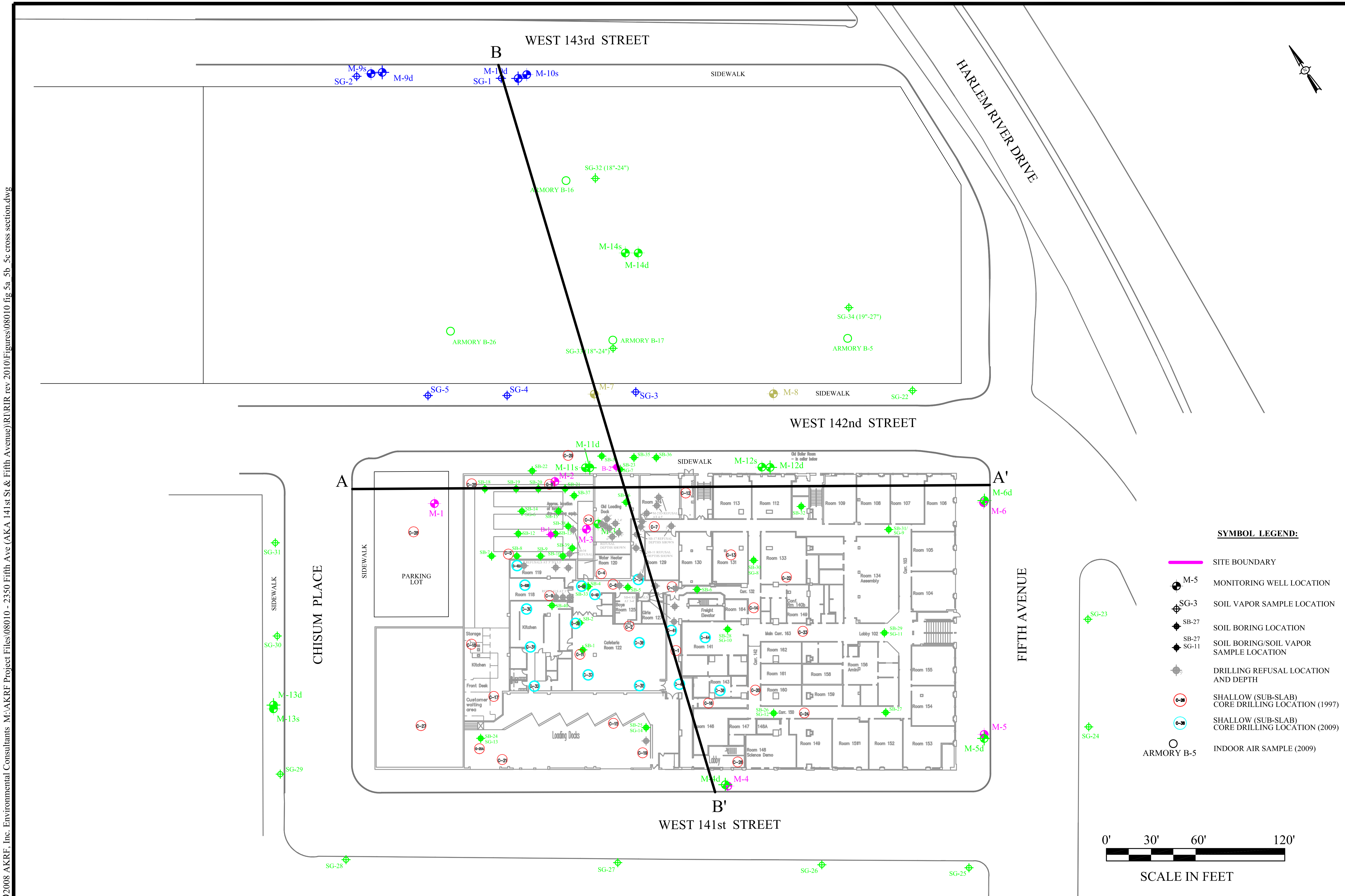
ENVIRONMENTAL SAMPLING LOCATIONS

DATE 6.20.11

SCALE as shown

PROJECT No. 08010

FIGURE 4



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2350 FIFTH AVENUE
NEW YORK, NEW YORK

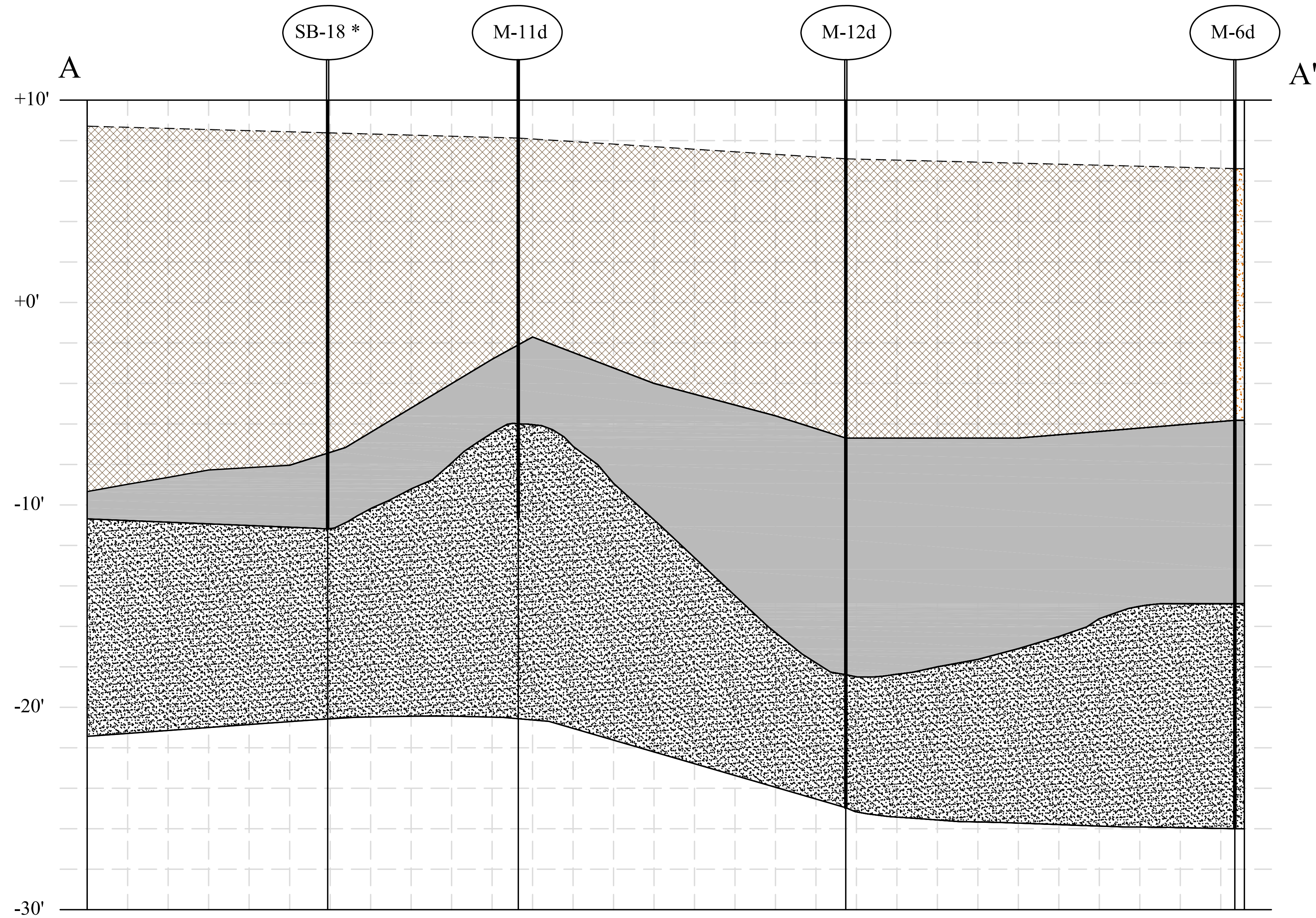
GEOLOGIC CROSS-SECTION PLAN VIEW

DATE
4.16.10

PROJECT NO.
08010

SCALE
as shown

FIGURE
5a



SECTION A - A'

VERTICAL SCALE: 0' 1.67' 3.33' 6.66' SCALE IN FEET (1"=6.66')

HORIZONTAL SCALE: 0' 12.5' 25' 50' SCALE IN FEET (1"=50')

LEGEND:

BROWN FINE TO MEDIUM SAND AND SILT (URBAN FILL)

GREY CLAY

BROWN SAND AND SILT

M-6d — MONITORING WELL LOCATION

SB-18 * — SOIL BORING LOCATION (Completed within the site building; therefore, the elevation along the cross-section line is estimated)

GENERAL NOTES:

1. BASE MAP PROVIDED BY MONTROSE. LOCATIONS SURVEYED IN DEC 2006 & JAN 2008.

2. ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREIN REFER TO THE BOROUGH OF MANHATTAN TOPOGRAPHICAL BUREAU DATUM, WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK N.J. AS ESTABLISHED BY THE U.S COAST AND GEODETIC SURVEY IN 1929.

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440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

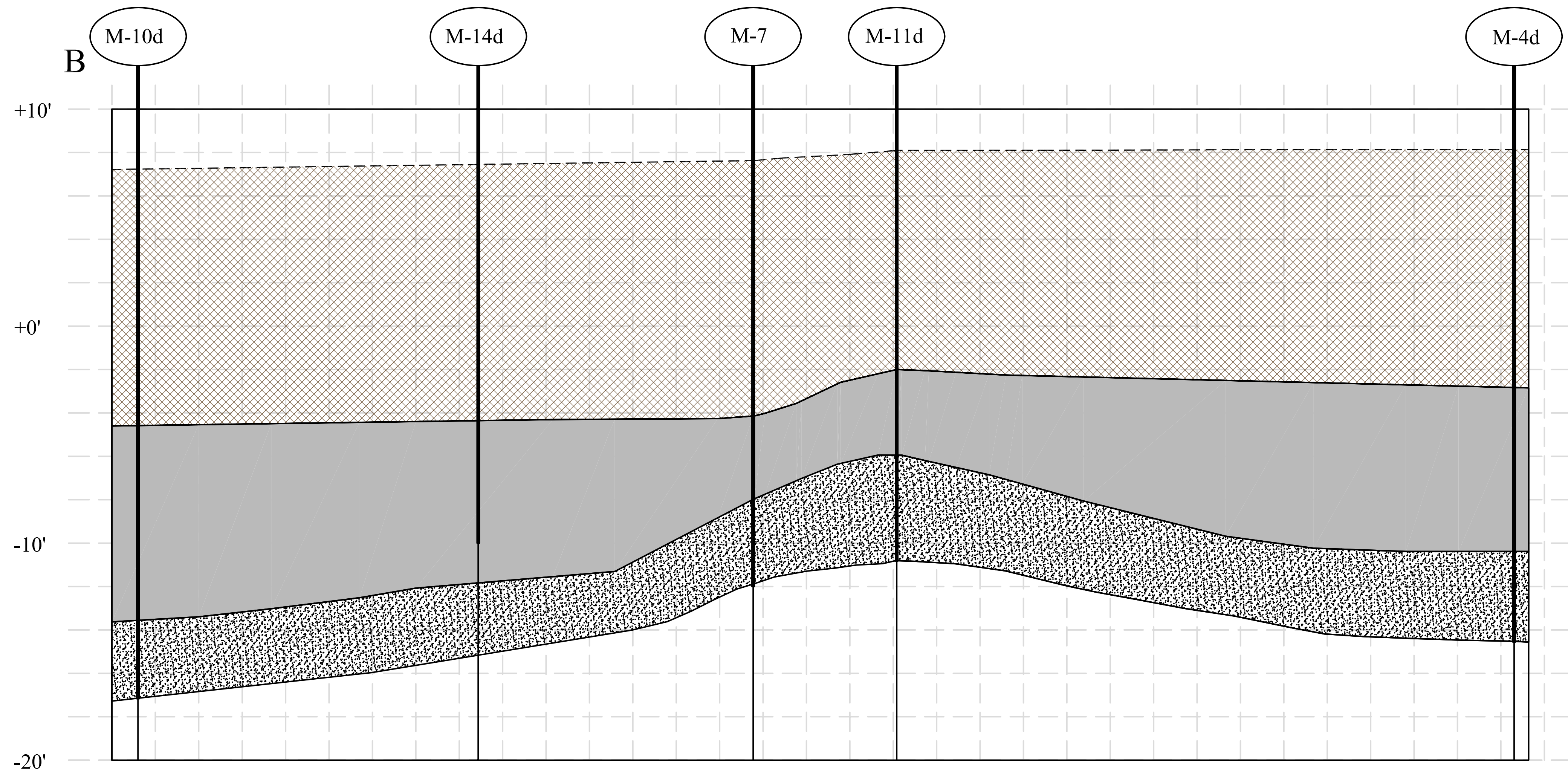
GEOLOGIC CROSS-SECTION OF SUBSURFACE CONDITIONS A-A'

DATE **4.16.10**

PROJECT NO. **08010**

SCALE **as shown**

FIGURE **5b**



SECTION B - B'

LEGEND:

BROWN FINE TO MEDIUM SAND AND SILT (URBAN FILL)

GREY CLAY

BROWN SAND AND SILT

M-6d — MONITORING WELL LOCATION

GENERAL NOTES:

1. BASE MAP PROVIDED BY MONTROSE. LOCATIONS SURVEYED IN DEC 2006, JAN 2008 & DEC 2009.

2. ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREIN REFER TO THE BOROUGH OF MANHATTAN TOPOGRAPHICAL BUREAU DATUM, WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK N.J. AS ESTABLISHED BY THE U.S COAST AND GEODETIC SURVEY IN 1929.

VERTICAL SCALE: 0' 1.67' 3.33' 6.66' SCALE IN FEET (1"=6.66')

HORIZONTAL SCALE: 0' 12.5' 25' 50' SCALE IN FEET (1"=50')

AKRF Environmental Consultants
440 Park Avenue South, New York, NY 10016

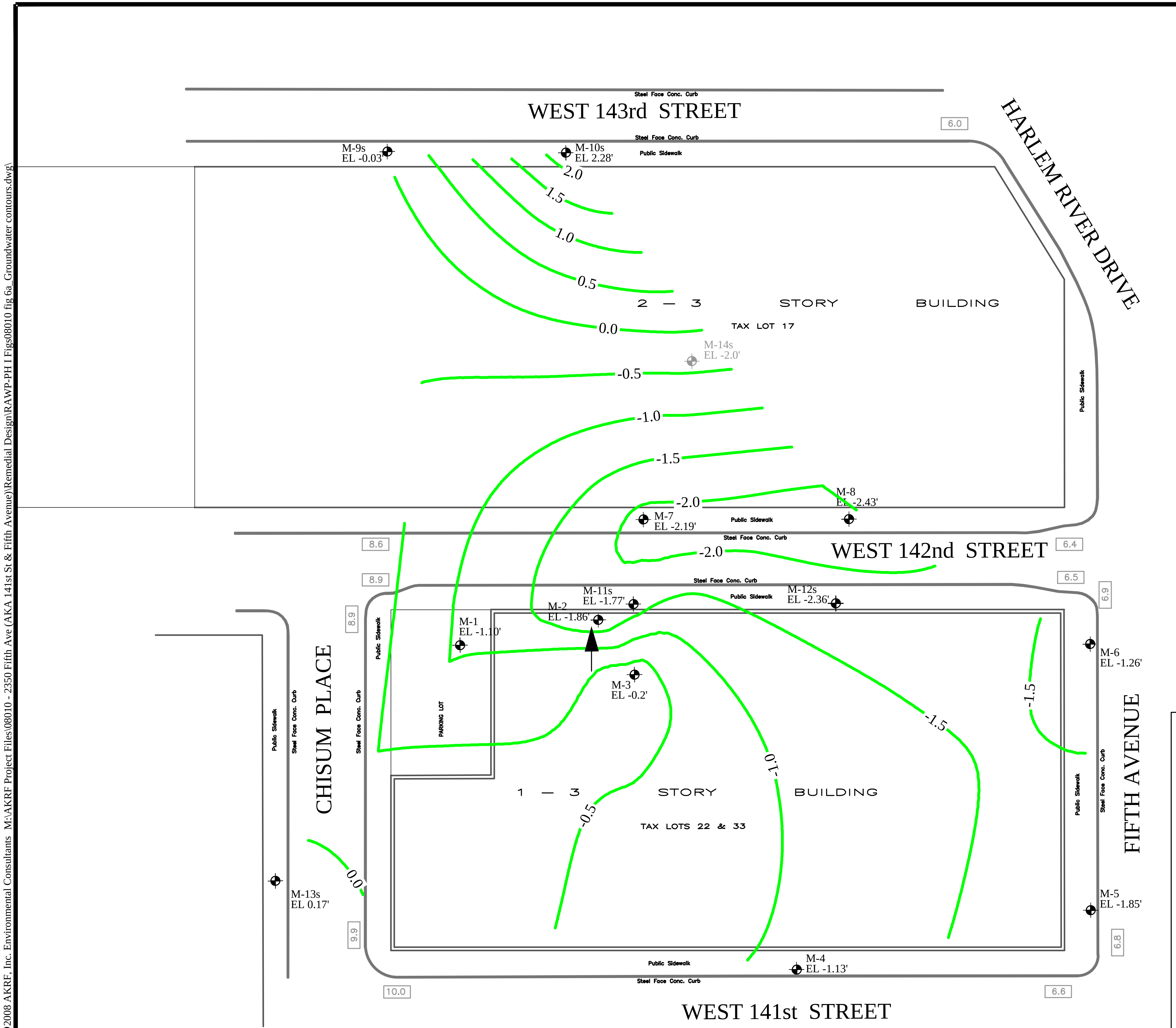
2350 FIFTH AVENUE
NEW YORK, NEW YORK
GEOLOGIC CROSS-SECTION OF SUBSURFACE CONDITIONS B-B'

DATE **4.16.10**

PROJECT NO. **08010**

SCALE **as shown**

FIGURE **5c**



GENERAL NOTES:

1. BASE MAP PROVIDED BY MONTROSE ADDITIONAL LOCATIONS SURVEYED IN JANUARY 2008 & NOVEMBER 2009.

2. WATER TABLE DEPTHS MEASURED BY AKRF ON 11/6/09 & 12/7/09

3. GROUNDWATER ELEVATION CONTOURS SHOWN INCLUDE DATA FROM 11/6/09 ONLY.

4. ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREON REFER TO THE BOROUGH OF MANHATTAN TOPOGRAPHICAL BUREAU DATUM WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK N.J. AS ESTABLISHED BY THE U.S COAST AND GEODETIC SURVEY IN 1929.

LEGEND:

M-4 EL -1.13' — MONITORING WELL WITH GROUNDWATER ELEVATION LEVEL MEASUREMENT ON 11/06/09

M-14s EL -2.0' — MONITORING WELL WITH GROUNDWATER ELEVATION LEVEL MEASUREMENT ON 12/07/09

6.0 — LEGAL GRADE

GROUNDWATER ELEVATION CONTOURS FOR 11/06/09

ANTICIPATED GROUNDWATER FLOW DIRECTION

AKRF Environmental Consultants
440 Park Avenue South, New York, NY 10016

2350 Fifth Avenue
NEW YORK, NEW YORK

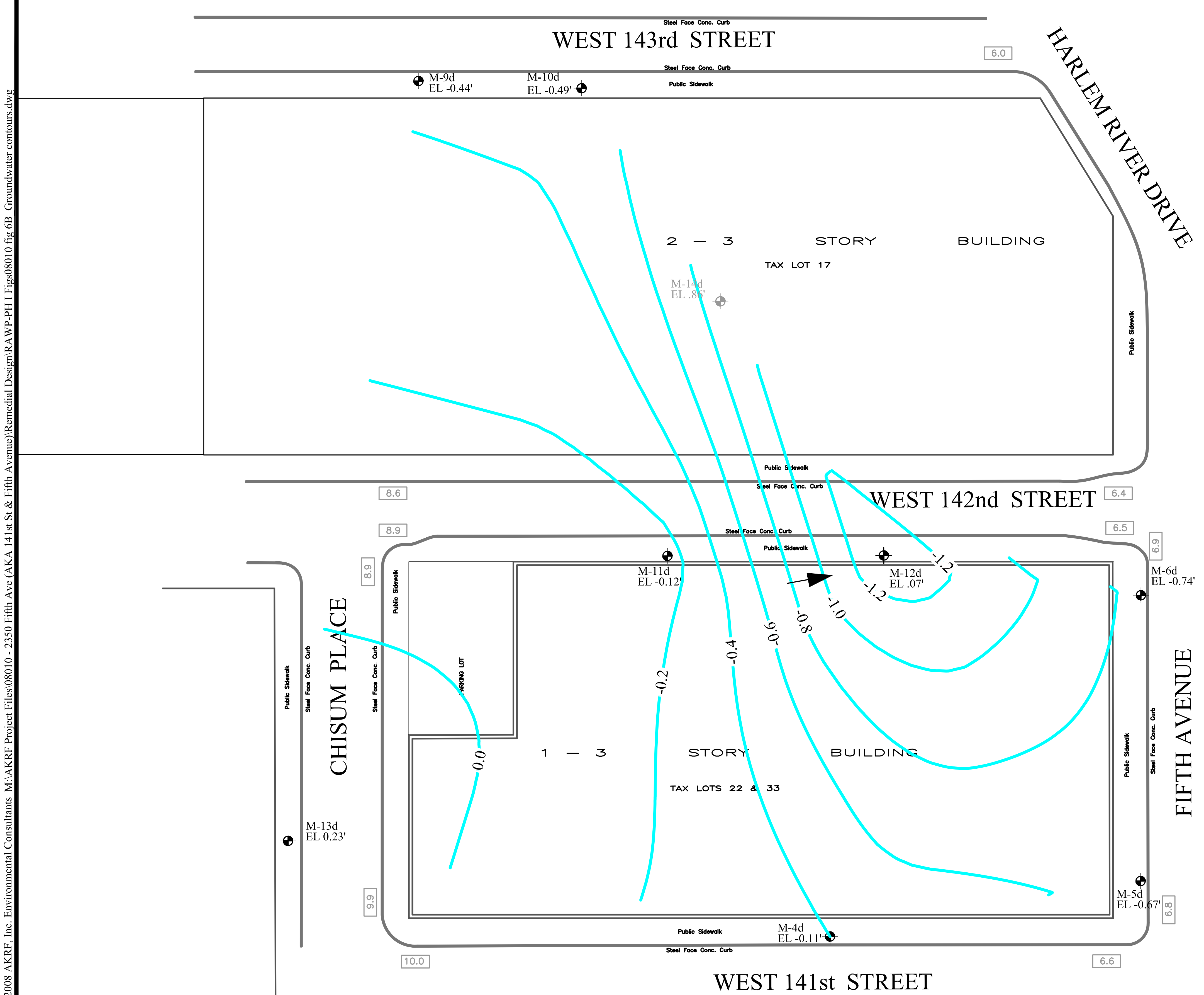
SHALLOW MONITOR WELL GROUNDWATER ELEVATION CONTOURS

DATE 7.05.11

PROJECT NO. 08010

SCALE 1"=60'

FIGURE 6a



0' 30' 60' 120'

SCALE IN FEET

GENERAL NOTES:

1. BASE MAP PROVIDED BY MONTROSE ADDITIONAL LOCATIONS SURVEYED IN JANUARY 2008 & NOVEMBER 2009.

2. WATER TABLE DEPTHS MEASURED BY AKRF ON 11/6/09.

3. GROUNDWATER ELEVATION CONTOURS SHOWN INCLUDE DATA FROM 11/6/09 ONLY.

4. ELEVATIONS AND ESTABLISHED GRADES SHOWN HEREON REFER TO THE BOROUGH OF MANHATTAN TOPOGRAPHICAL BUREAU DATUM WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK N.J. AS ESTABLISHED BY THE U.S COAST AND GEODETIC SURVEY IN 1929.

LEGEND:

M-4 EL -1.13' — MONITORING WELL WITH GROUNDWATER ELEVATION LEVEL MEASUREMENT ON 11/06/09

M-14d EL .86' — MONITORING WELL WITH GROUNDWATER ELEVATION LEVEL MEASUREMENT ON 12/07/09

6.0 — LEGAL GRADE

GROUNDWATER ELEVATION CONTOURS FOR 11/06/09

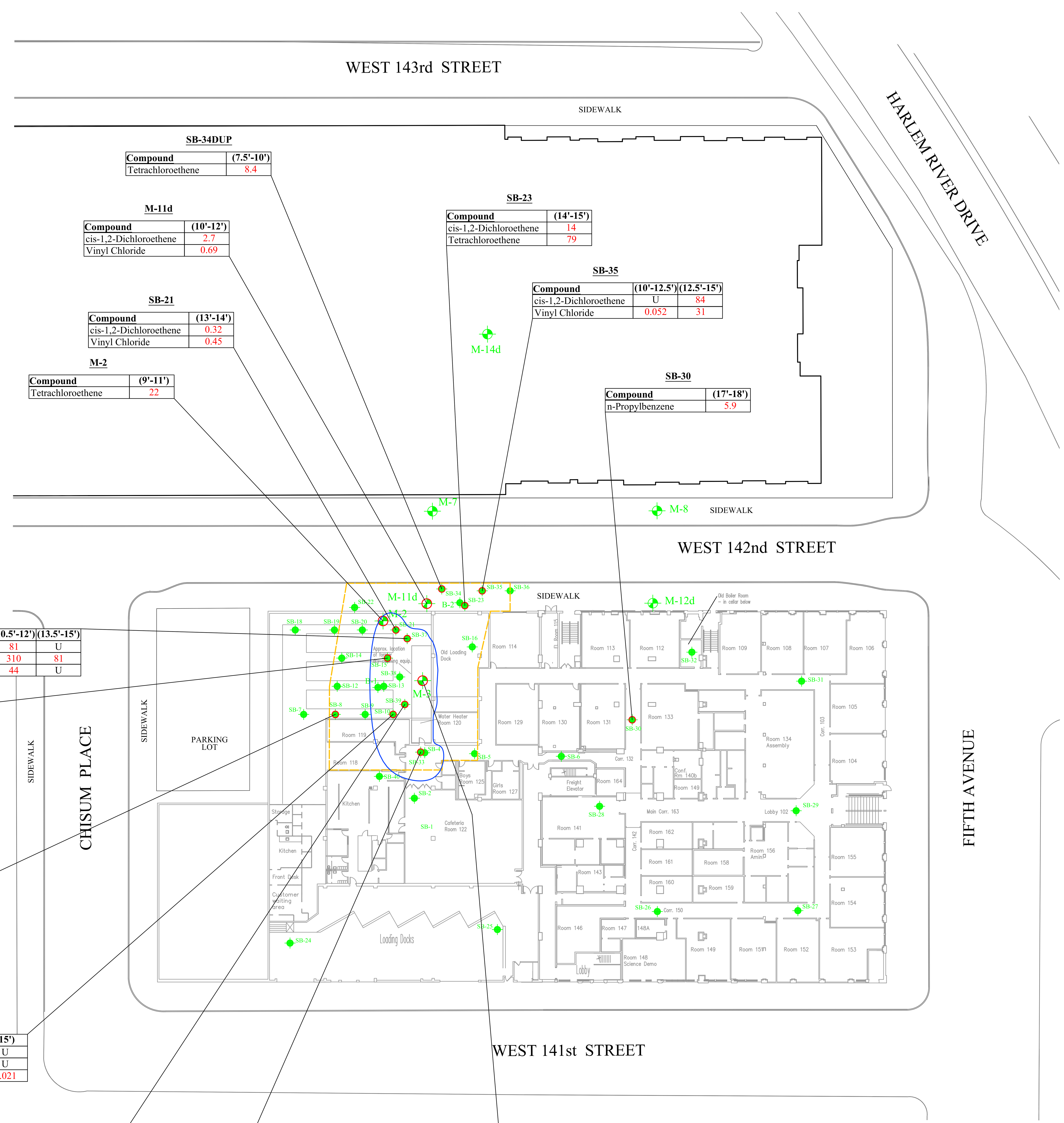
ANTICIPATED GROUNDWATER FLOW DIRECTION

AKRF
Environmental Consultants
440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

DEEP MONITOR WELL GROUNDWATER ELEVATION CONTOURS

DATE	7.05.11
PROJECT NO.	08010
SCALE	1"=60'
FIGURE	6b



SB-34DUP

Compound	(7.5'-10')
Tetrachloroethene	8.4

M-11d

Compound	(10'-12')
cis-1,2-Dichloroethene	2.7
Vinyl Chloride	0.69

SB-21

Compound	(13'-14')
cis-1,2-Dichloroethene	0.32
Vinyl Chloride	0.45

M-2

Compound	(9'-11')
Tetrachloroethene	22

SB-23

Compound	(14'-15')
cis-1,2-Dichloroethene	14
Tetrachloroethene	79

SB-35

Compound	(10'-12.5')	(12.5'-15')
cis-1,2-Dichloroethene	U	84
Vinyl Chloride	0.052	31

SB-30

Compound	(17'-18')
n-Propylbenzene	5.9

SB-37

Compound	(4.5'-6')	(10.5'-12')	(13.5'-15')
cis-1,2-Dichloroethene	U	81	U
Tetrachloroethene	89	310	81
Trichloroethene	U	44	U

SB-15

Compound	(18')
cis-1,2-Dichloroethene	0.35
Vinyl Chloride	0.15

SB-8

Compound	(15'-16')
2-Butanone	0.13

SB-10

Compound	(8')	(15')
cis-1,2-Dichloroethene	0.3	U
Tetrachloroethene	27	U
Vinyl Chloride	U	0.021

SB-39

Compound	(10.5'-12')	(13.5'-15')
2-Butanone	U	0.12
Vinyl Chloride	0.021	U

SB-33

Compound	(6'-8')
Tetrachloroethene	920

M-3

Compound	(0.5'-2')	(3'-5')	(6'-8')	(8'-10')	(10'-12')
Tetrachloroethene	20	6.3	10	84	11
Vinyl Chloride	U	U	U	U	0.51

SYMBOL LEGEND:

- M-8 — MONITORING WELL LOCATION - COMPOUNDS NOT DETECTED ABOVE SCO
- M-3 — MONITORING WELL LOCATION - COMPOUNDS DETECTED ABOVE SCO
- SB-16 — SOIL BORING LOCATION - COMPOUNDS NOT DETECTED ABOVE SCO
- SB-35 — SOIL BORING LOCATION - COMPOUNDS DETECTED ABOVE SCO
- 10 — COMPOUND DETECTED EXCEEDS SCO FOR UNRESTRICTED USE
- U — COMPOUND NOT DETECTED ABOVE LABORATORY REPORTING LIMIT
- TARGETED CHEMICAL OXIDATION AND SOIL TREATMENT AREA
- TARGETED SOIL VAPOR EXTRACTION TREATMENT AREA

GENERAL NOTES:

1. BASE MAPS PROVIDED BY MONTROSE WITH LOCATIONS SURVEYED IN DEC 2006, JAN 2008 AND DEC 2009 OR MEASURED IN FIELD WITH TAPE MEASURE.

2. SOIL SAMPLES COLLECTED AS PART OF REMEDIAL INVESTIGATION ACTIVITIES PERFORMED IN JANUARY/FEBRUARY 1998, APRIL 2002, AUGUST/OCTOBER 2006, AND OCTOBER 2007 THROUGH DECEMBER 2009.

3. DATA ONLY SHOWN FOR SAMPLES AND DEPTHS WITH COMPOUNDS IN EXCEEDANCE OF NYSDEC PART 375 SOIL CLEANUP OBJECTIVES FOR UNRESTRICTED USE.

4. CONCENTRATIONS SHOWN IN MILLIGRAMS PER KILOGRAM (mg/Kg).

5. EXCEEDANCES FOR ACETONE AND METHYLENE CHLORIDE ARE NOT SHOWN. DETECTIONS WITHIN METHOD BLANKS INDICATED THAT THESE COMPOUNDS ARE ATTRIBUTED TO SAMPLE PREPARATION IN THE LABORATORY, AND ARE NOT REPRESENTATIVE OF THE SITE SOIL.

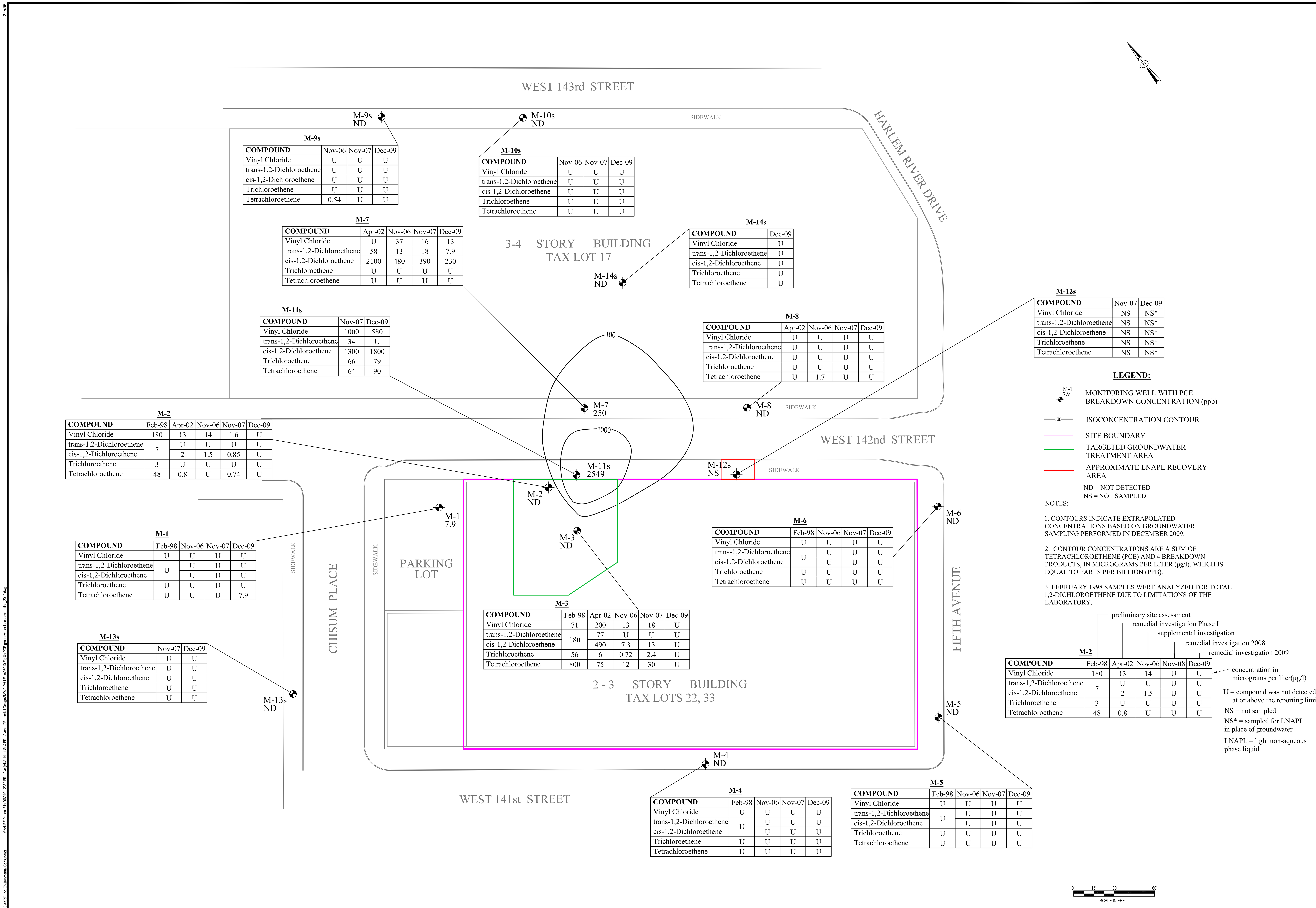
0' 15' 30' 60'
SCALE IN FEET

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

CONCENTRATIONS OF PCE AND BREAKDOWN PRODUCTS IN SOIL SAMPLES

DATE	6.22.11
SCALE	as shown
PROJECT No.	08010
FIGURE	7



M-9s

COMPOUND	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U
trans-1,2-Dichloroethene	U	U	U
cis-1,2-Dichloroethene	U	U	U
Trichloroethene	U	U	U
Tetrachloroethene	0.54	U	U

M-10s

COMPOUND	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U
trans-1,2-Dichloroethene	U	U	U
cis-1,2-Dichloroethene	U	U	U
Trichloroethene	U	U	U
Tetrachloroethene	U	U	U

M-7

COMPOUND	Apr-02	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	37	16	13
trans-1,2-Dichloroethene	58	13	18	7.9
cis-1,2-Dichloroethene	2100	480	390	230
Trichloroethene	U	U	U	U
Tetrachloroethene	U	U	U	U

M-14s

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	U

M-11s

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	1000	580
trans-1,2-Dichloroethene	34	U
cis-1,2-Dichloroethene	1300	1800
Trichloroethene	66	79
Tetrachloroethene	64	90

M-8

COMPOUND	Apr-02	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
cis-1,2-Dichloroethene	U	U	U	U
Trichloroethene	U	U	U	U
Tetrachloroethene	U	1.7	U	U

M-12s

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	NS	NS*
trans-1,2-Dichloroethene	NS	NS*
cis-1,2-Dichloroethene	NS	NS*
Trichloroethene	NS	NS*
Tetrachloroethene	NS	NS*

M-2

COMPOUND	Feb-98	Apr-02	Nov-06	Nov-07	Dec-09
Vinyl Chloride	180	13	14	1.6	U
trans-1,2-Dichloroethene	7	U	U	U	U
cis-1,2-Dichloroethene		2	1.5	0.85	U
Trichloroethene	3	U	U	U	U
Tetrachloroethene	48	0.8	U	0.74	U

M-1

COMPOUND	Feb-98	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
cis-1,2-Dichloroethene		U	U	U
Trichloroethene	U	U	U	U
Tetrachloroethene	U	U	U	7.9

M-13s

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-3

COMPOUND	Feb-98	Apr-02	Nov-06	Nov-07	Dec-09
Vinyl Chloride	71	200	13	18	U
trans-1,2-Dichloroethene	180	77	U	U	U
cis-1,2-Dichloroethene		490	7.3	13	U
Trichloroethene	56	6	0.72	2.4	U
Tetrachloroethene	800	75	12	30	U

M-6

COMPOUND	Feb-98	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
cis-1,2-Dichloroethene		U	U	U
Trichloroethene	U	U	U	U
Tetrachloroethene	U	U	U	U

M-4

COMPOUND	Feb-98	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
cis-1,2-Dichloroethene		U	U	U
Trichloroethene	U	U	U	U
Tetrachloroethene	U	U	U	U

M-5

COMPOUND	Feb-98	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U	U
trans-1,2-Dichloroethene	U	U	U	U
cis-1,2-Dichloroethene		U	U	U
Trichloroethene	U	U	U	U
Tetrachloroethene	U	U	U	U

LEGEND:

M-1 7.9 MONITORING WELL WITH PCE + BREAKDOWN CONCENTRATION (ppb)

100 ISOCONCENTRATION CONTOUR

SITE BOUNDARY

TARGETED GROUNDWATER TREATMENT AREA

APPROXIMATE LNAPL RECOVERY AREA

ND = NOT DETECTED
NS = NOT SAMPLED

NOTES:

1. CONTOURS INDICATE EXTRAPOLATED CONCENTRATIONS BASED ON GROUNDWATER SAMPLING PERFORMED IN DECEMBER 2009.

2. CONTOUR CONCENTRATIONS ARE A SUM OF TETRACHLOROETHENE (PCE) AND 4 BREAKDOWN PRODUCTS, IN MICROGRAMS PER LITER (µg/l), WHICH IS EQUAL TO PARTS PER BILLION (PPB).

3. FEBRUARY 1998 SAMPLES WERE ANALYZED FOR TOTAL 1,2-DICHLOROETHENE DUE TO LIMITATIONS OF THE LABORATORY.

preliminary site assessment (Feb-98)
remedial investigation Phase I (Apr-02)
supplemental investigation (Nov-06)
remedial investigation 2008 (Nov-08)
remedial investigation 2009 (Dec-09)

M-2

COMPOUND	Feb-98	Apr-02	Nov-06	Nov-08	Dec-09
Vinyl Chloride	180	13	14	U	U
trans-1,2-Dichloroethene	7	U	U	U	U
cis-1,2-Dichloroethene		2	1.5	U	U
Trichloroethene	3	U	U	U	U
Tetrachloroethene	48	0.8	U	U	U

concentration in micrograms per liter(µg/l)

U = compound was not detected at or above the reporting limit

NS = not sampled

NS* = sampled for LNAPL in place of groundwater

LNAPL = light non-aqueous phase liquid

AKRF Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

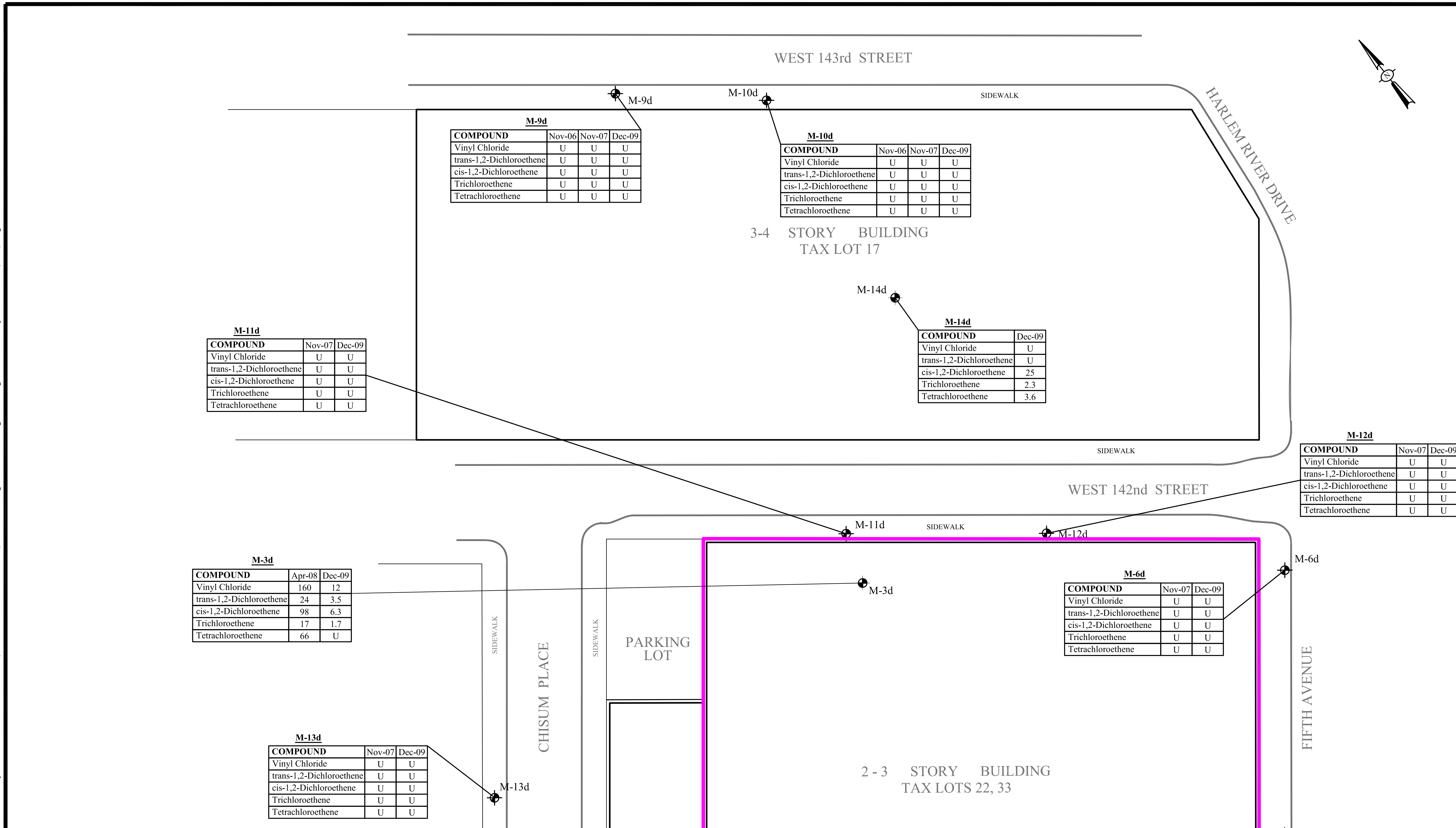
GROUNDWATER CONCENTRATION MAP (SHALLOW AQUIFER)

DATE 4.16.10

SCALE as shown

PROJECT No. 08010

FIGURE 8a



M-9d

COMPOUND	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U
trans-1,2-Dichloroethene	U	U	U
cis-1,2-Dichloroethene	U	U	U
Trichloroethene	U	U	U
Tetrachloroethene	U	U	U

M-10d

COMPOUND	Nov-06	Nov-07	Dec-09
Vinyl Chloride	U	U	U
trans-1,2-Dichloroethene	U	U	U
cis-1,2-Dichloroethene	U	U	U
Trichloroethene	U	U	U
Tetrachloroethene	U	U	U

M-14d

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	25
Trichloroethene	2.3
Tetrachloroethene	3.6

M-11d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-12d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-3d

COMPOUND	Apr-08	Dec-09
Vinyl Chloride	160	12
trans-1,2-Dichloroethene	24	3.5
cis-1,2-Dichloroethene	98	6.3
Trichloroethene	17	1.7
Tetrachloroethene	66	U

M-6d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-13d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-4d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

M-5d

COMPOUND	Nov-07	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	U	U

LEGEND:

well location

preliminary site assessment

remedial investigation Phase I

supplemental investigation

remedial investigation 2008

remedial investigation 2009

M-2

COMPOUND	Feb-98	Apr-02	Nov-06	Nov-08	Dec-09
Vinyl Chloride	180	13	14	U	U
trans-1,2-Dichloroethene	7	U	U	U	U
cis-1,2-Dichloroethene		2	1.5	U	U
Trichloroethene	3	U	U	U	U
Tetrachloroethene	48	0.8	U	U	U

concentration in micrograms per liter(µg/l)

U = compound was not detected at or above the reporting limit

NOTE: ANALYSES UNDER THE PSA IN FEBRUARY 1998 INCLUDED TOTAL 1,2-DICHLOROETHENE, ANALYSIS FOR SEPARATE ISOMERS OF 1,2-DICHLOROETHENE WAS PERFORMED SUBSEQUENTLY.

 M:AKRF Project Files\08010 - 2350 Fifth Ave (AKA 141st St & Fifth Avenue)\Remedial Design\RAWP-PH I Figs\08010 fig 9b VOCs in deep Groundwater (2010).dwg

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440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

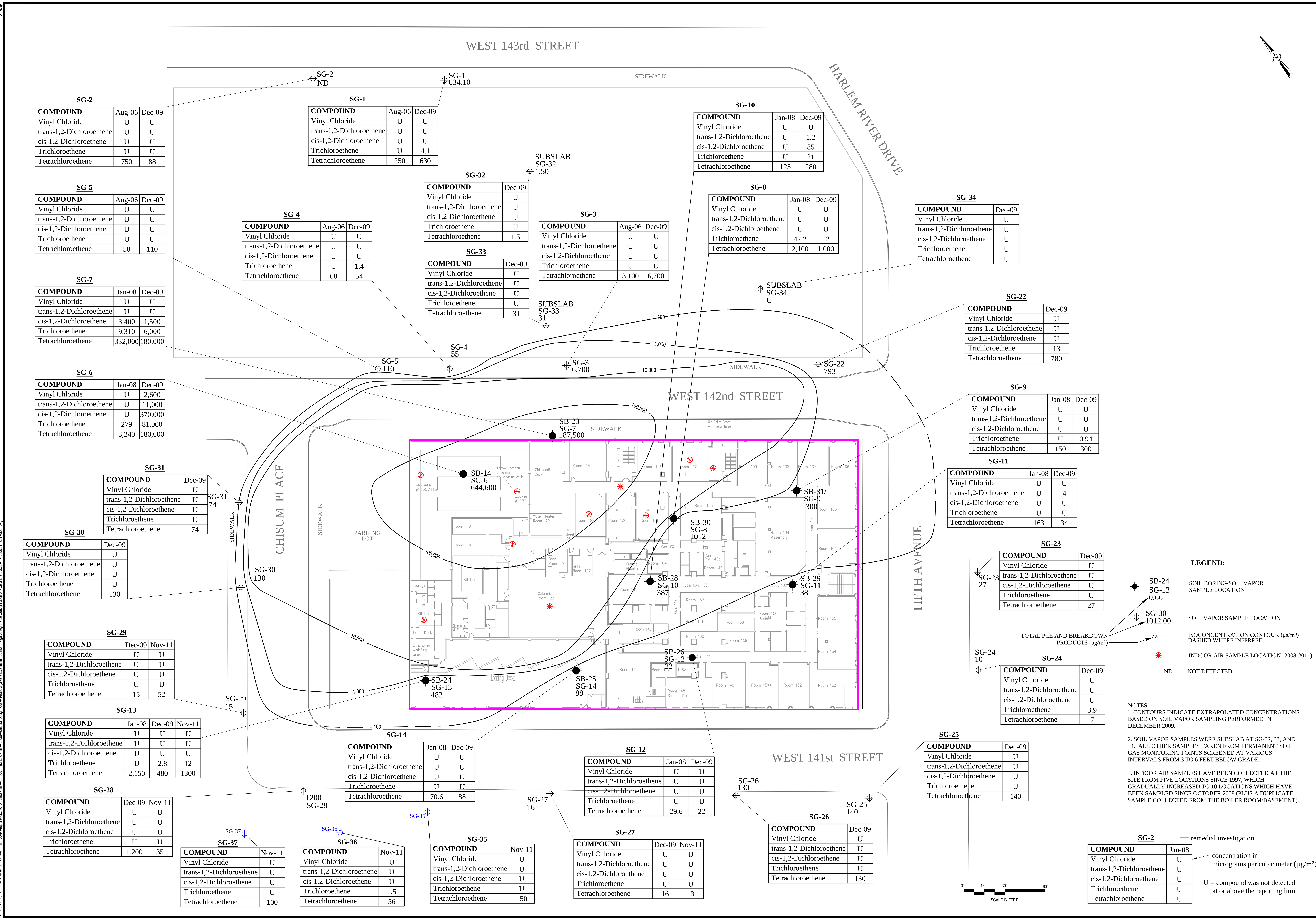
GROUNDWATER CONCENTRATION MAP (DEEP AQUIFER)

DATE
4.16.10

PROJECT NO.
08010

SCALE
as shown

FIGURE
8b



SG-2

COMPOUND	Aug-06	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	750	88

SG-1

COMPOUND	Aug-06	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	4.1
Tetrachloroethene	250	630

SG-10

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	1.2
cis-1,2-Dichloroethene	U	85
Trichloroethene	U	21
Tetrachloroethene	125	280

SG-5

COMPOUND	Aug-06	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	58	110

SG-32

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	1.5

SG-8

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	47.2	12
Tetrachloroethene	2,100	1,000

SG-34

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	U

SG-4

COMPOUND	Aug-06	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	1.4
Tetrachloroethene	68	54

SG-3

COMPOUND	Aug-06	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	3,100	6,700

SG-33

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	31

SG-7

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	3,400	1,500
Trichloroethene	9,310	6,000
Tetrachloroethene	332,000	180,000

SG-22

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	13
Tetrachloroethene	780

SG-6

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	2,600
trans-1,2-Dichloroethene	U	11,000
cis-1,2-Dichloroethene	U	370,000
Trichloroethene	279	81,000
Tetrachloroethene	3,240	180,000

SG-9

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	0.94
Tetrachloroethene	150	300

SG-11

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	4
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	163	34

SG-31

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	74

SG-30

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	130

SG-23

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	27

SG-29

COMPOUND	Dec-09	Nov-11
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	15	52

SG-24

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	3.9
Tetrachloroethene	7

SG-13

COMPOUND	Jan-08	Dec-09	Nov-11
Vinyl Chloride	U	U	U
trans-1,2-Dichloroethene	U	U	U
cis-1,2-Dichloroethene	U	U	U
Trichloroethene	U	2.8	12
Tetrachloroethene	2,150	480	1300

SG-14

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	70.6	88

SG-12

COMPOUND	Jan-08	Dec-09
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	29.6	22

SG-25

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	140

SG-28

COMPOUND	Dec-09	Nov-11
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	1,200	35

SG-37

COMPOUND	Nov-11
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	100

SG-36

COMPOUND	Nov-11
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	1.5
Tetrachloroethene	56

SG-35

COMPOUND	Nov-11
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	150

SG-27

COMPOUND	Dec-09	Nov-11
Vinyl Chloride	U	U
trans-1,2-Dichloroethene	U	U
cis-1,2-Dichloroethene	U	U
Trichloroethene	U	U
Tetrachloroethene	16	13

SG-26

COMPOUND	Dec-09
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	130

LEGEND:

SB-24 SG-13 0.66 — SOIL BORING/SOIL VAPOR SAMPLE LOCATION

SG-30 1012.00 — SOIL VAPOR SAMPLE LOCATION

TOTAL PCE AND BREAKDOWN PRODUCTS (µg/m³)

100 — ISOCONCENTRATION CONTOUR (µg/m³) DASHED WHERE INFERRED

INDOOR AIR SAMPLE LOCATION (2008-2011)

ND — NOT DETECTED

SG-2 — remedial investigation

COMPOUND	Jan-08
Vinyl Chloride	U
trans-1,2-Dichloroethene	U
cis-1,2-Dichloroethene	U
Trichloroethene	U
Tetrachloroethene	U

concentration in micrograms per cubic meter (µg/m³)

U = compound was not detected at or above the reporting limit

NOTES:
1. CONTOURS INDICATE EXTRAPOLATED CONCENTRATIONS BASED ON SOIL VAPOR SAMPLING PERFORMED IN DECEMBER 2009.

2. SOIL VAPOR SAMPLES WERE SUBSLAB AT SG-32, 33, AND 34. ALL OTHER SAMPLES TAKEN FROM PERMANENT SOIL GAS MONITORING POINTS SCREENED AT VARIOUS INTERVALS FROM 3 TO 6 FEET BELOW GRADE.

3. INDOOR AIR SAMPLES HAVE BEEN COLLECTED AT THE SITE FROM FIVE LOCATIONS SINCE 1997, WHICH GRADUALLY INCREASED TO 10 LOCATIONS WHICH HAVE BEEN SAMPLED SINCE OCTOBER 2008 (PLUS A DUPLICATE SAMPLE COLLECTED FROM THE BOILER ROOM/BASEMENT).

SCALE IN FEET

AKRF Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

2350 FIFTH AVENUE
NEW YORK, NEW YORK

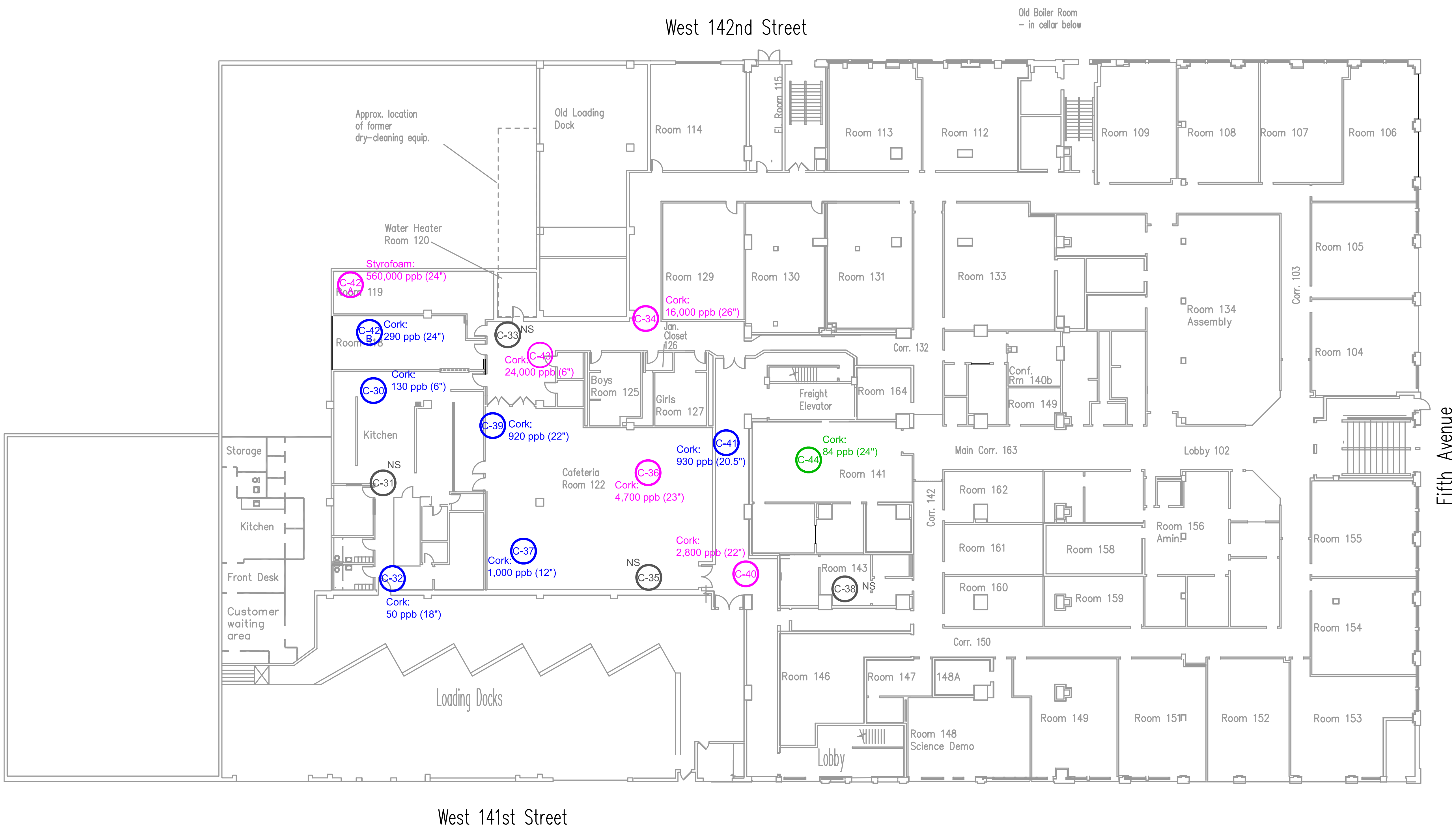
CONCENTRATIONS OF PCE AND BREAKDOWN PRODUCTS IN SOIL VAPOR

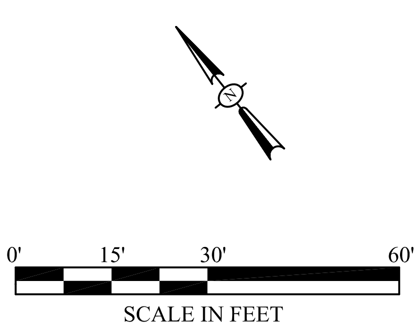
DATE 5.10.2012

SCALE as shown

PROJECT No. 08010

FIGURE 9





LEGEND:

MATERIAL TYPE

DEPTH TO TOP OF INSULATION

C-36 Cork: 4,700 ppb (30")

PCE CONCENTRATION

C-1 NO INSULATION

C-1 SUB-SLAB INSULATION WITH LOW LEVELS OF CONTAMINATION (PCE < 100 PPB)

C-1 SUB-SLAB INSULATION WITH MEDIUM LEVELS OF CONTAMINATION (PCE = 100 TO 1,000 PPB)

C-1 SUB-SLAB INSULATION WITH ELEVATED LEVELS OF CONTAMINATION (PCE > 1,000 PPB)

PPB = PARTS PER BILLION

NS = NOT SAMPLED (NO CORK)

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2350 FIFTH AVENUE, NEW YORK, NY

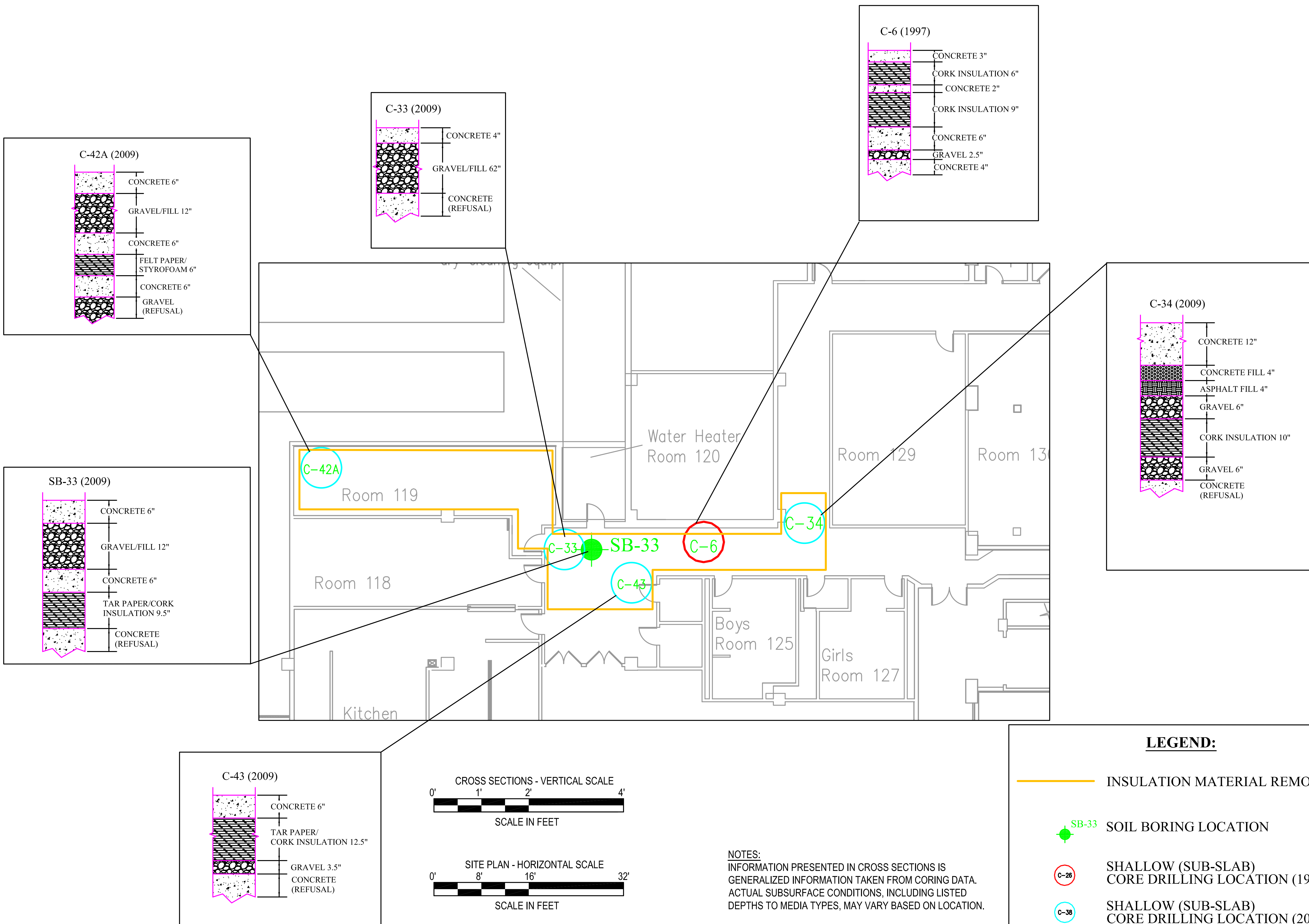
2009 CORE SAMPLES - PCE LEVELS IN SUB-SLAB INSULATION

DATE 4.16.10

PROJECT NO. 08010

SCALE 1"=30'

FIGURE 10



NOTES:
INFORMATION PRESENTED IN CROSS SECTIONS IS GENERALIZED INFORMATION TAKEN FROM CORING DATA. ACTUAL SUBSURFACE CONDITIONS, INCLUDING LISTED DEPTHS TO MEDIA TYPES, MAY VARY BASED ON LOCATION.

LEGEND:

- INSULATION MATERIAL REMOVAL AREA
- SB-33 SOIL BORING LOCATION
- C-26 SHALLOW (SUB-SLAB) CORE DRILLING LOCATION (1997)
- C-38 SHALLOW (SUB-SLAB) CORE DRILLING LOCATION (2009)

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2350 FIFTH AVENUE
NEW YORK, NEW YORK

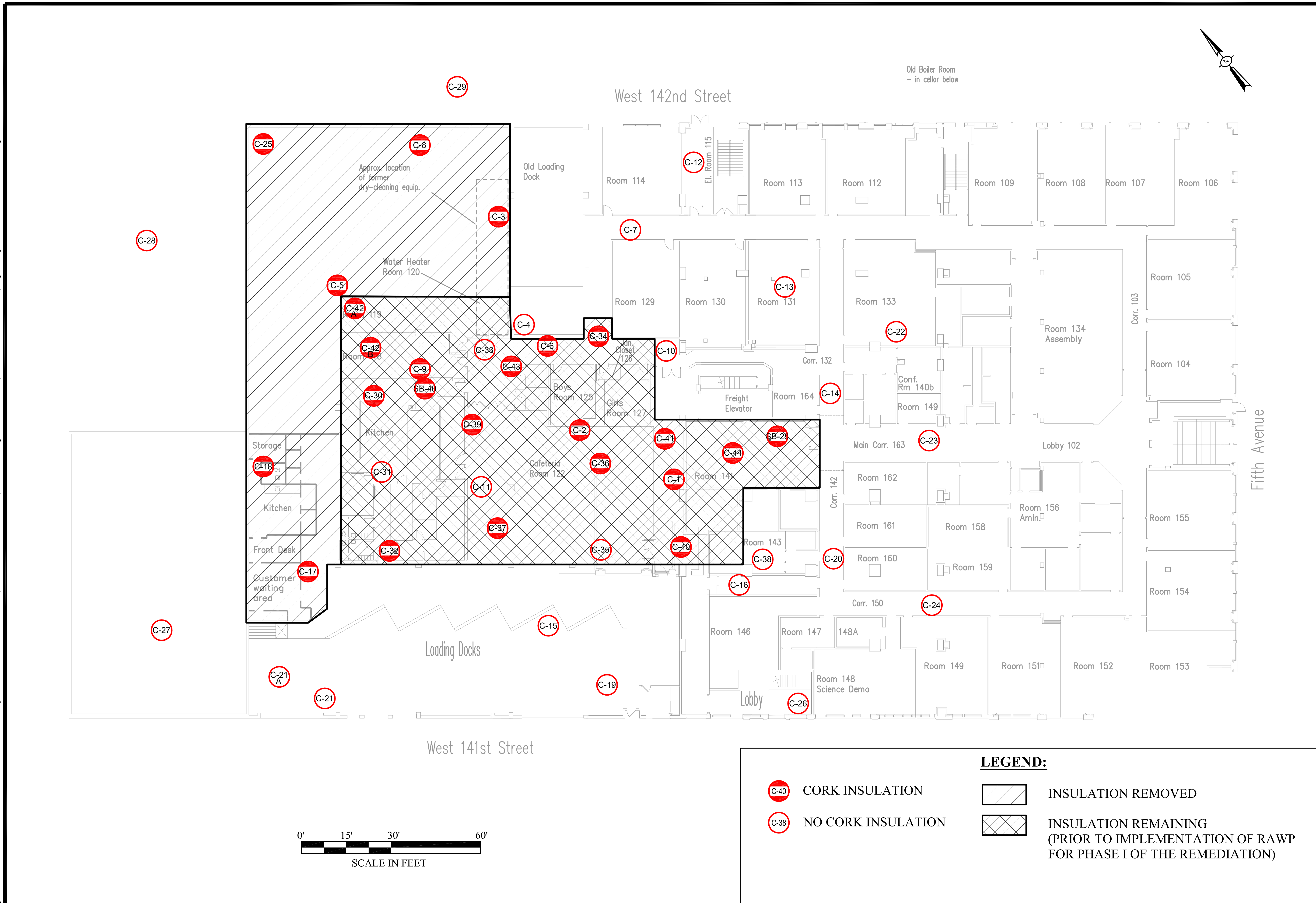
CROSS SECTION OF INSULATED FLOORS

DATE 6.3.11

PROJECT NO. 08010

SCALE as shown

FIGURE 11



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Environmental Consultants
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2350 FIFTH AVENUE
NEW YORK, NEW YORK

AREAS OF SUB-SLAB INSULATION

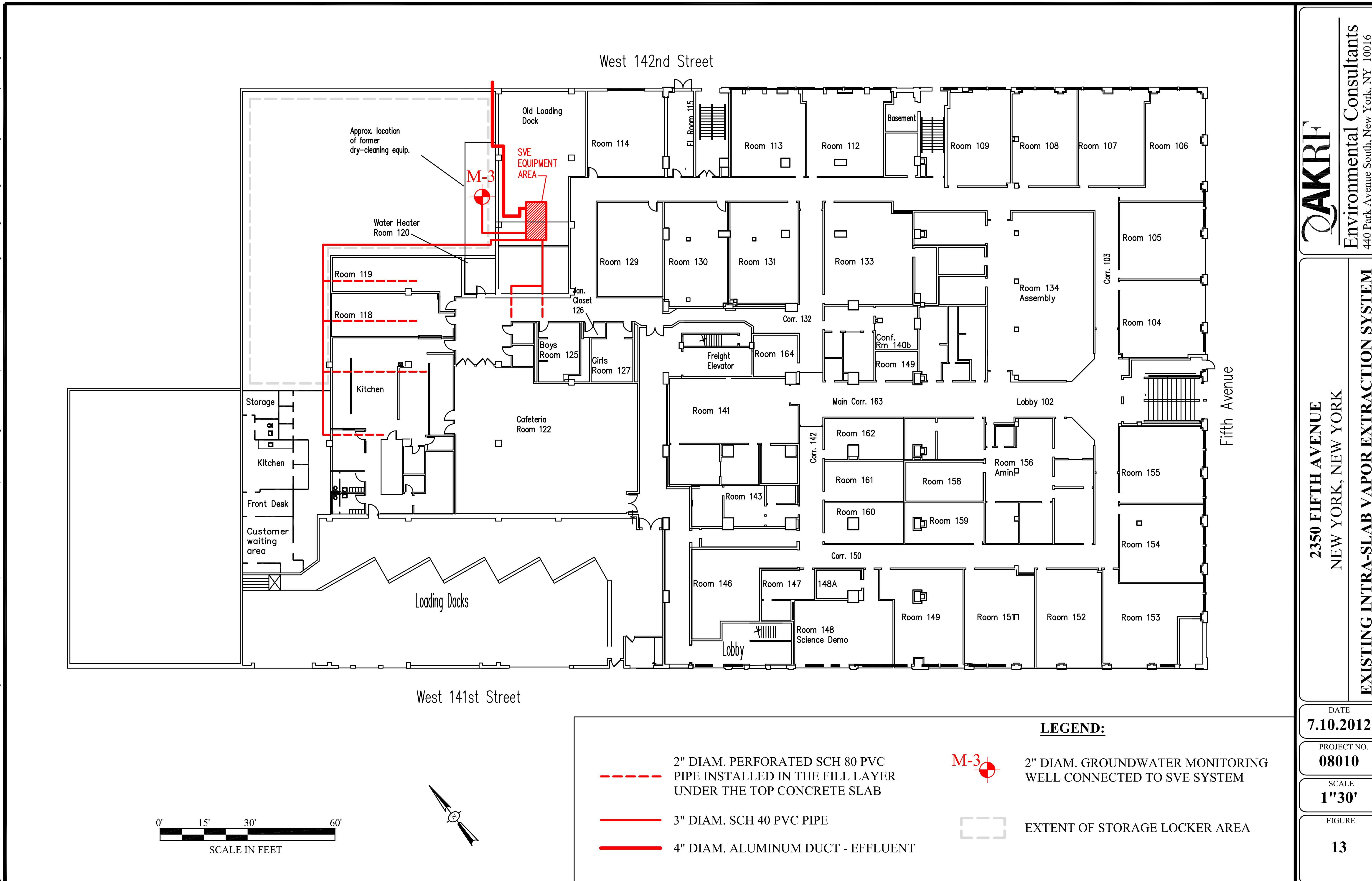
DATE
5/9/12

PROJECT NO.
08010

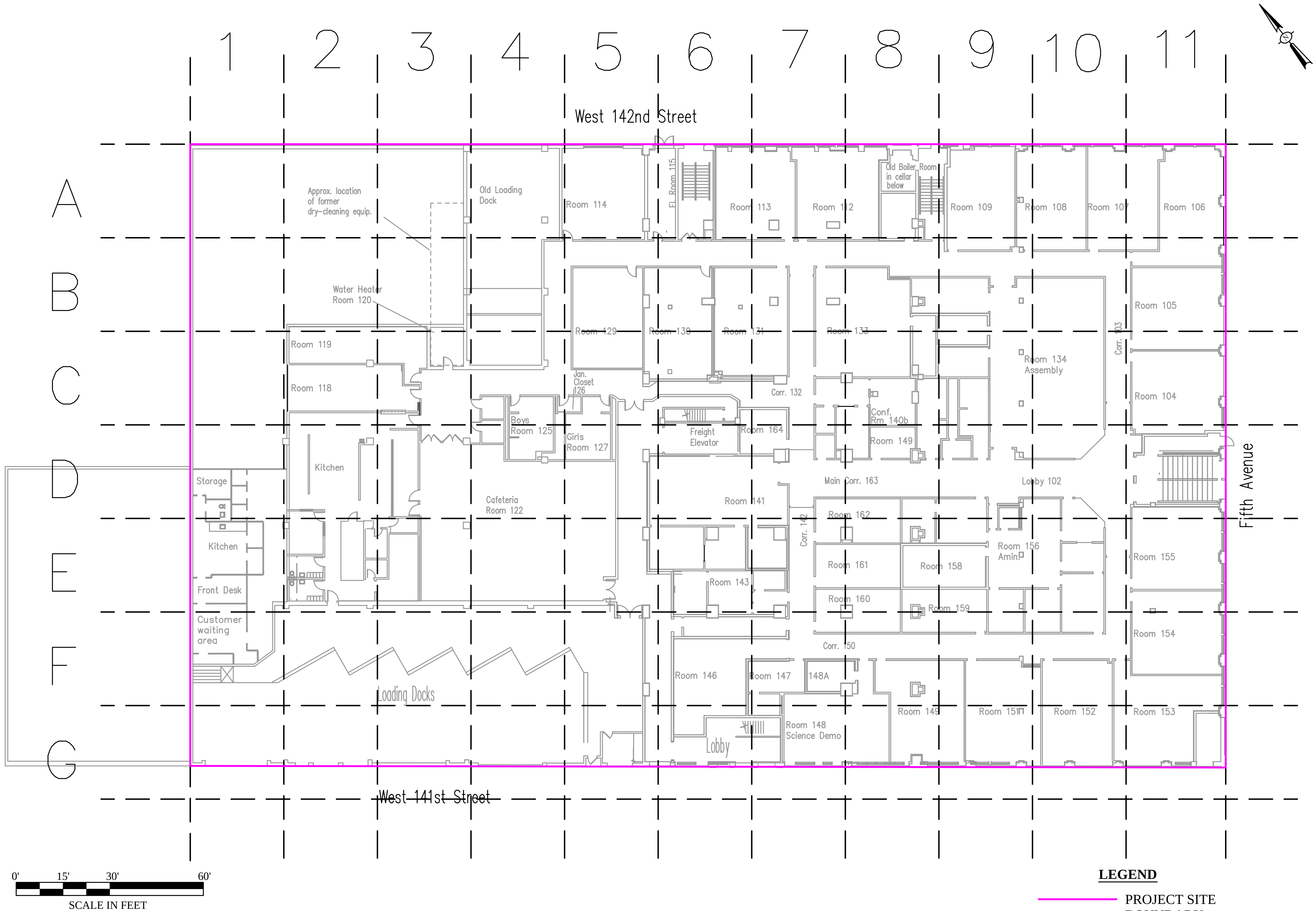
SCALE
1"30'

FIGURE
12

M:\AKRF Project Files\08010 - 2350 Fifth Ave (AKA 141st St & Fifth Avenue)\Remedial Design\RAWP Phase 2 (SVE-SSDS-insitu treatment)\Figures\Fig 12 Sub Slab Insluation Areas.dwg



West 142nd Street
West 141st Street
Fifth Avenue
Approx. location of former dry-cleaning equip.
Old Loading Dock
SVE EQUIPMENT AREA
M-3
Water Heater Room 120
Room 114
Fl. Room 115
Room 113
Room 112
Basement
Room 109
Room 108
Room 107
Room 106
Room 119
Room 118
Room 129
Room 130
Room 131
Room 133
Room 105
Room 134 Assembly
Corr. 103
Jan. Closet 126
Corr. 132
Boys Room 125
Girls Room 127
Freight Elevator
Room 164
Conf. Rm 140b
Room 149
Room 104
Kitchen
Storage
Kitchen
Front Desk
Customer waiting area
Cafeteria Room 122
Room 141
Main Corr. 163
Lobby 102
Room 162
Corr. 142
Room 156 Amin.
Room 161
Room 158
Room 155
Room 143
Room 160
Room 159
Room 154
Corr. 150
Loading Docks
Room 146
Room 147
148A
Room 149
Room 151
Room 152
Room 153
Room 148 Science Demo
Lobby
LEGEND:
2" DIAM. PERFORATED SCH 80 PVC PIPE INSTALLED IN THE FILL LAYER UNDER THE TOP CONCRETE SLAB
3" DIAM. SCH 40 PVC PIPE
4" DIAM. ALUMINUM DUCT - EFFLUENT
M-3
2" DIAM. GROUNDWATER MONITORING WELL CONNECTED TO SVE SYSTEM
EXTENT OF STORAGE LOCKER AREA
0'
15'
30'
60'
SCALE IN FEET
AKRF
Environmental Consultants
440 Park Avenue South, New York, NY 10016
2350 FIFTH AVENUE
NEW YORK, NEW YORK
EXISTING INTRA-SLAB VAPOR EXTRACTION SYSTEM
DATE
7.10.2012
PROJECT NO.
08010
SCALE
1"30'
FIGURE
13



LEGEND

PROJECT SITE BOUNDARY

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440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE, NEW YORK, NY

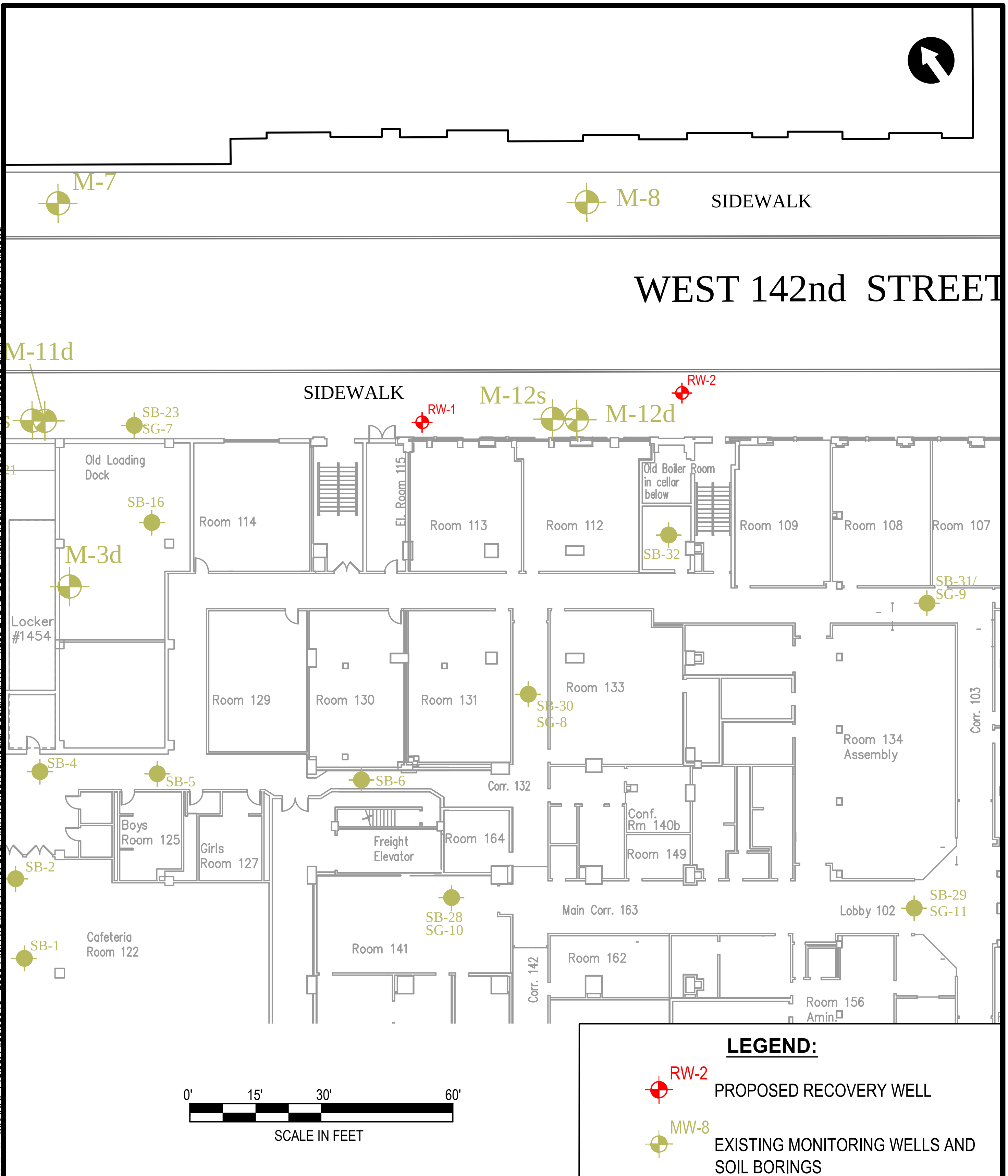
ALPHANUMERIC GRID MAP

DATE **5/9/12**

PROJECT NO. **08010**

SCALE **1"=30'**

FIGURE **14**



2350 FIFTH AVENUE

NEW YORK, NEW YORK

PROPOSED LNAPL DELINEATION WELLS

AKRF

Environmental Consultants

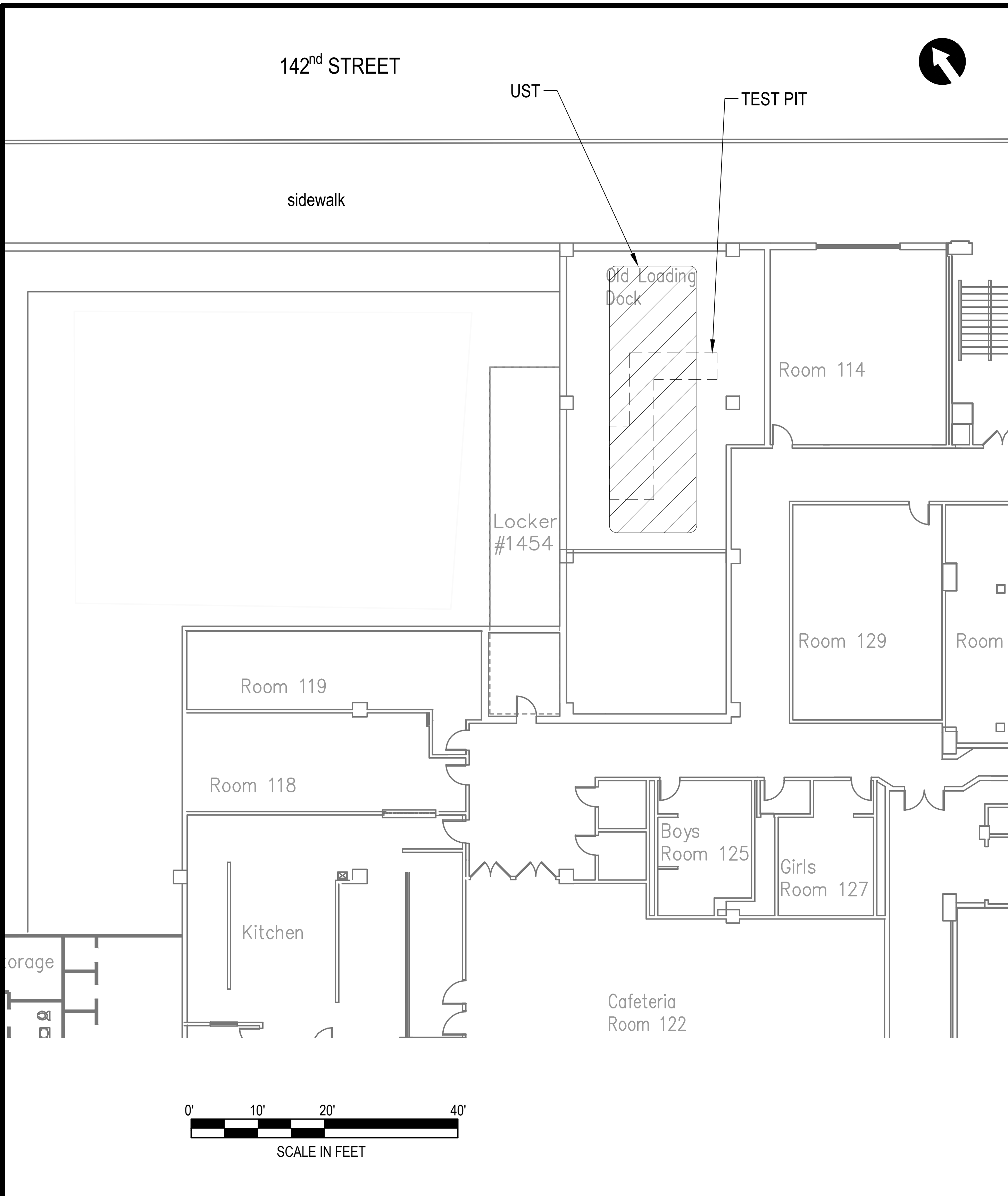
440 Park Avenue South, New York, N.Y. 10016

DATE
4.10.2013

PROJECT No.
08010

SCALE
as shown

FIGURE
15



2350 FIFTH AVENUE

NEW YORK, NEW YORK

TANK LOCATION

AKRF

Environmental Consultants

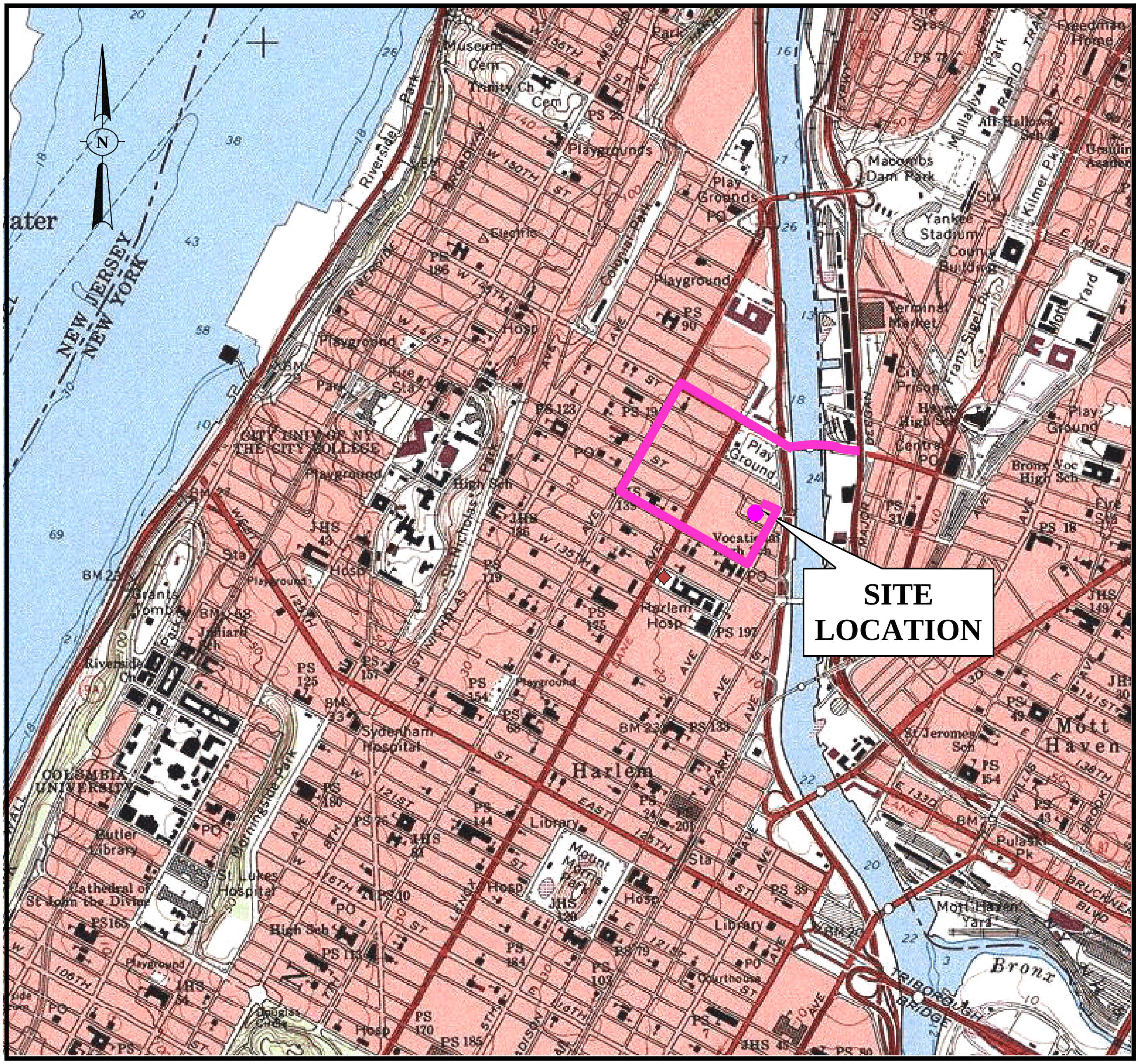
440 Park Avenue South, New York, N.Y. 10016

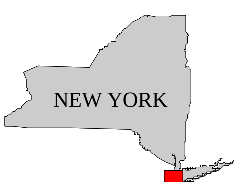
DATE **7.10.2012**

PROJECT No. **08010**

SCALE **as shown**

FIGURE **16**





SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’

TRUCK ROUTE (TO MAJOR DEEGAN EXPRESSWAY)

NOTE:

SUBJECT TO CHANGE BASED ON AVAILABLE ROUTES AT THE TIME OF WORK AND CONTRACTOR INPUT AS TO CITY-MAPPED TRUCK ROUTES.

SOURCE:

7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP QUADRANGLE: CENTRAL PARK, NY 1995

2350 FIFTH AVENUE
NEW YORK, NEW YORK

TRUCK ROUTE MAP

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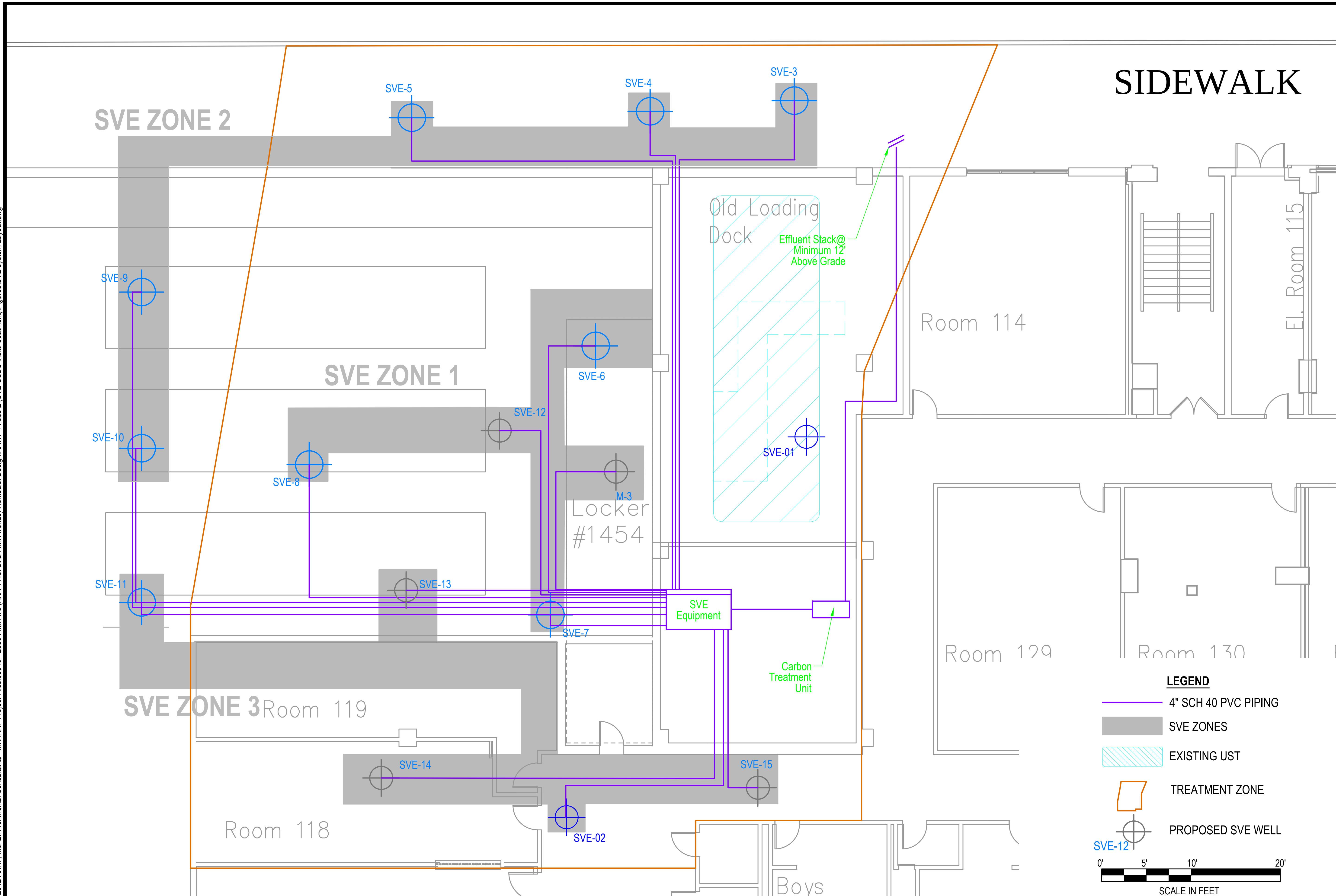
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE **6.22.11**

PROJECT No. **08010**

SCALE **AS SHOWN**

FIGURE **17**



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Environmental Consultants
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2350 FIFTH AVENUE
NEW YORK, NEW YORK

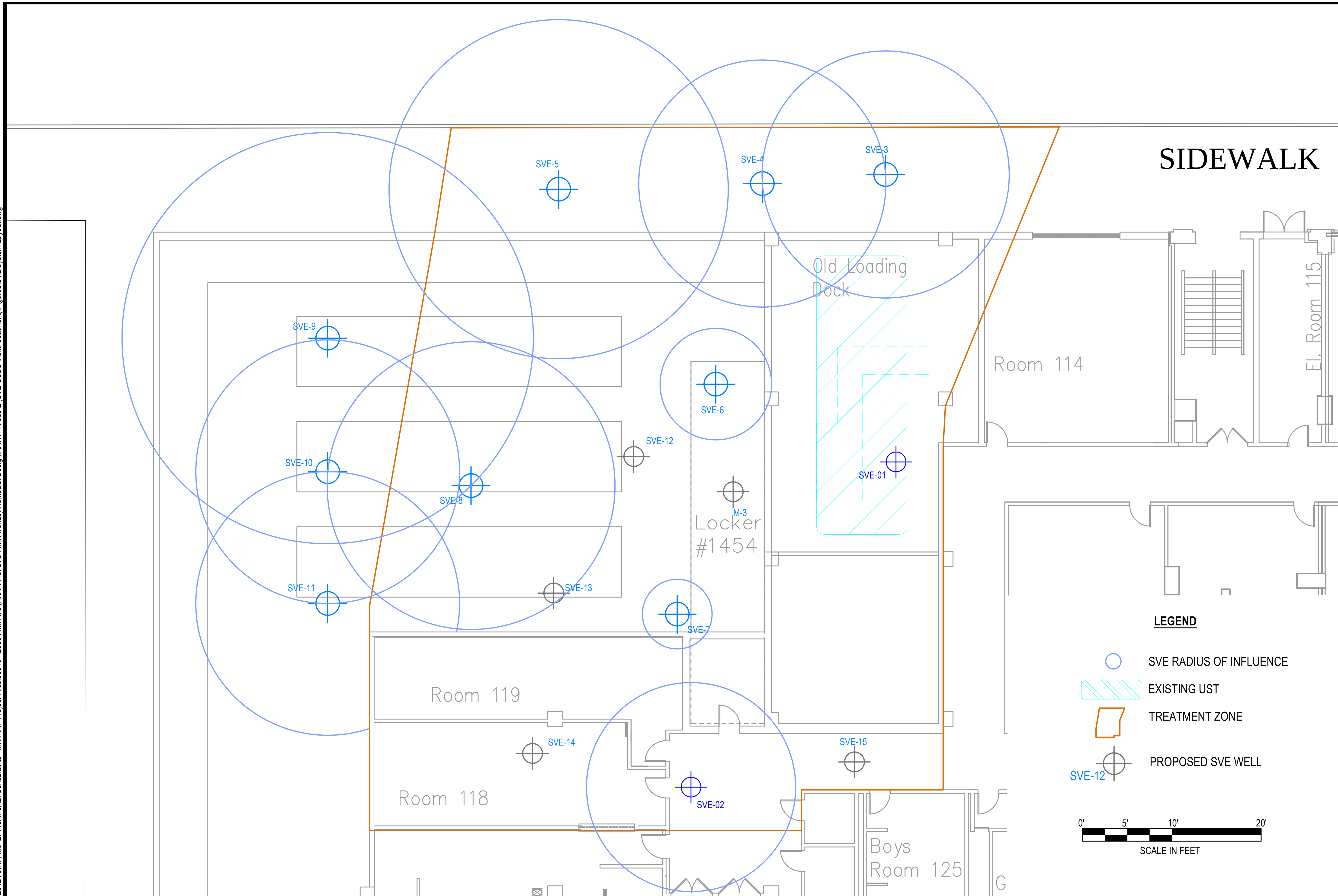
SOIL VAPOR EXTRACTION SYSTEM LAYOUT

DATE
7.23.2013

PROJECT NO.
08010

SCALE
as shown

FIGURE
18



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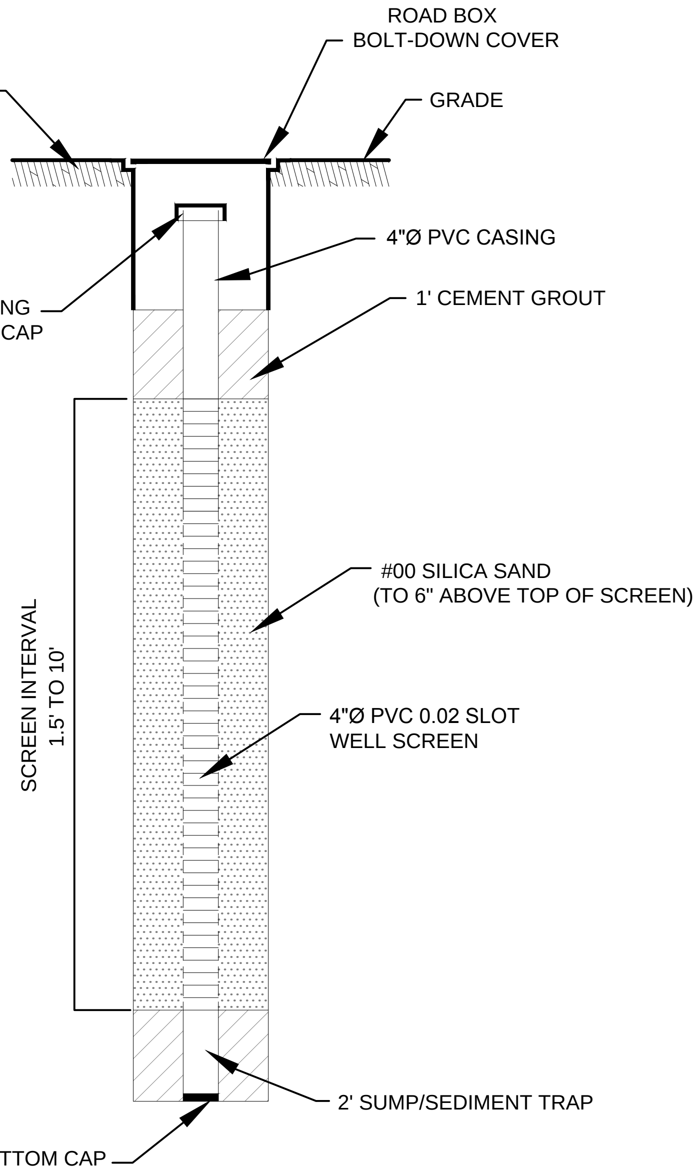
2350 FIFTH AVENUE, NEW YORK, NEW YORK

SOIL VAPOR EXTRACTION SYSTEM
RADIUS OF INFLUENCE DIAGRAM

DATE	7.24.2013
PROJECT NO.	08010
SCALE	as shown
FIGURE	19



TYPICAL EXTRACTION WELL CONSTRUCTION

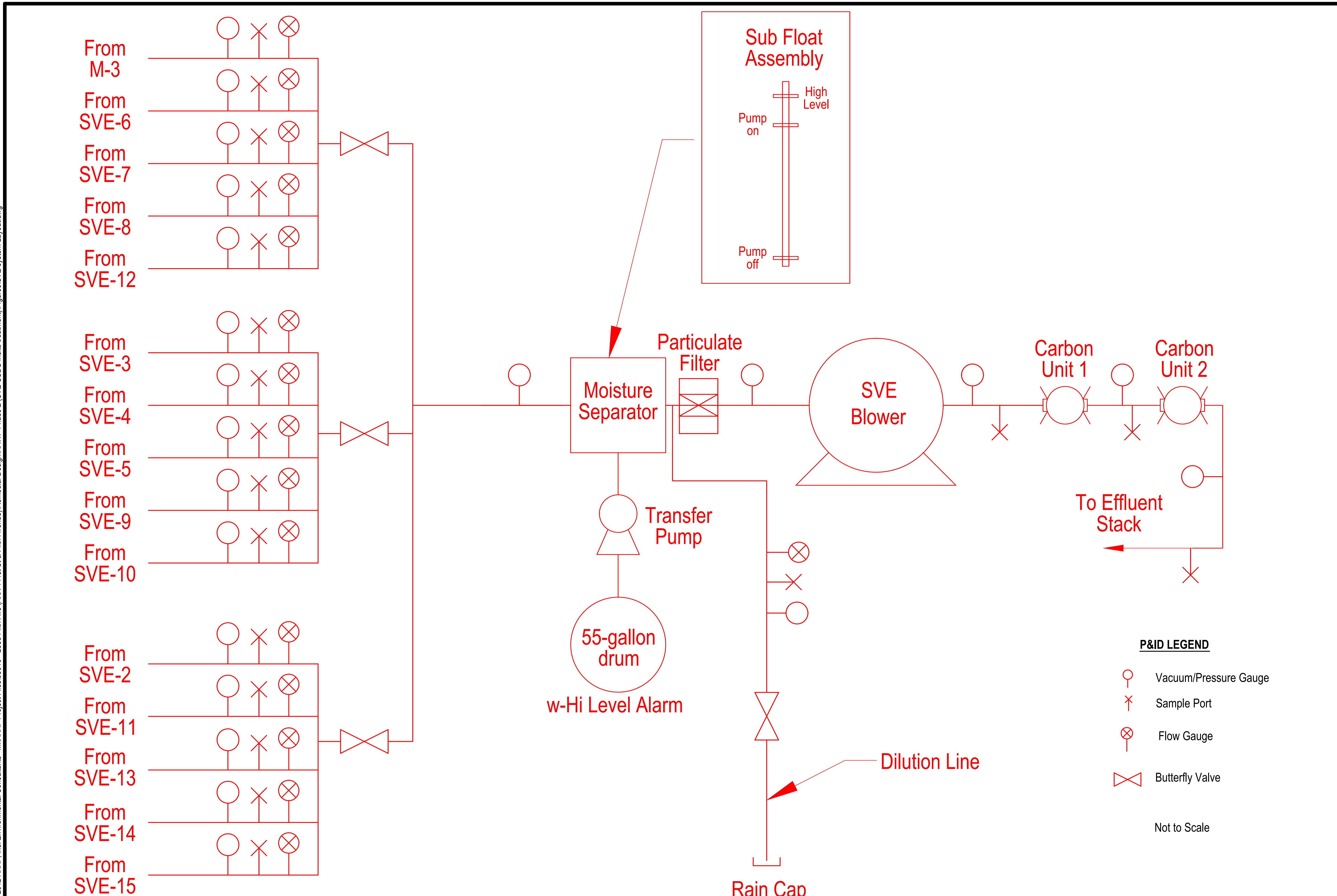
NOT TO SCALE

2350 Fifth Avenue
NEW YORK, NEW YORK

TYPICAL SOIL VAPOR EXTRACTION WELL CONSTRUCTION

AKRF Engineering P.C.
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE **06.20.12**
PROJECT No. **08010**
SCALE **NTS**
FIGURE **20**



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2350 FIFTH AVENUE, NEW YORK, NEW YORK

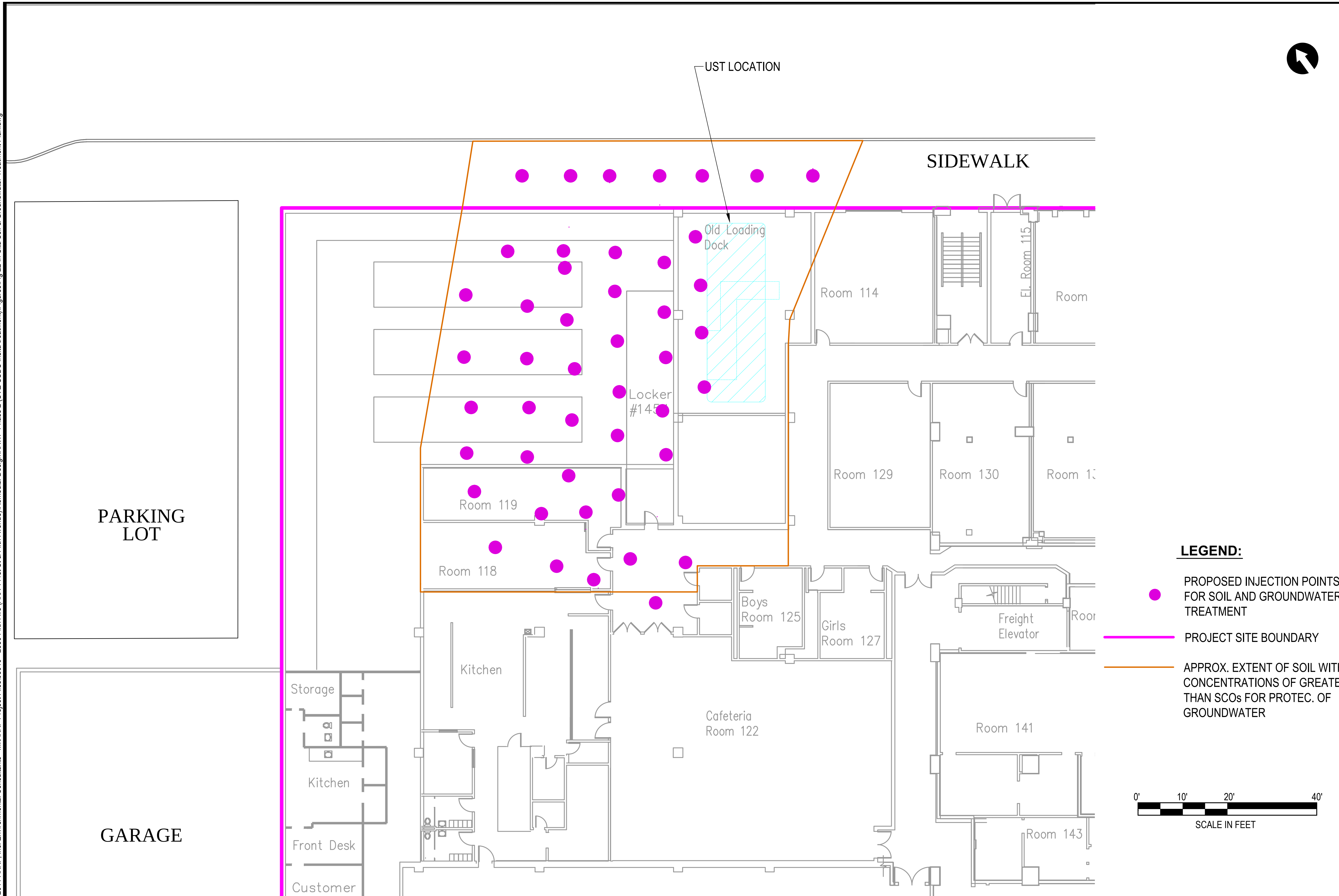
SOIL VAPOR EXTRACTION SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

DATE 4.7.2013

PROJECT NO. 08010

SCALE as shown

FIGURE 21



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2350 FIFTH AVENUE
NEW YORK, NEW YORK

IN-SITU SOIL & GROUNDWATER TREATMENT PLAN

DATE
7.24.2013

PROJECT NO.
08010

SCALE
as shown

FIGURE
22

AKRF Environmental Consultants
440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE, NEW YORK, NEW YORK

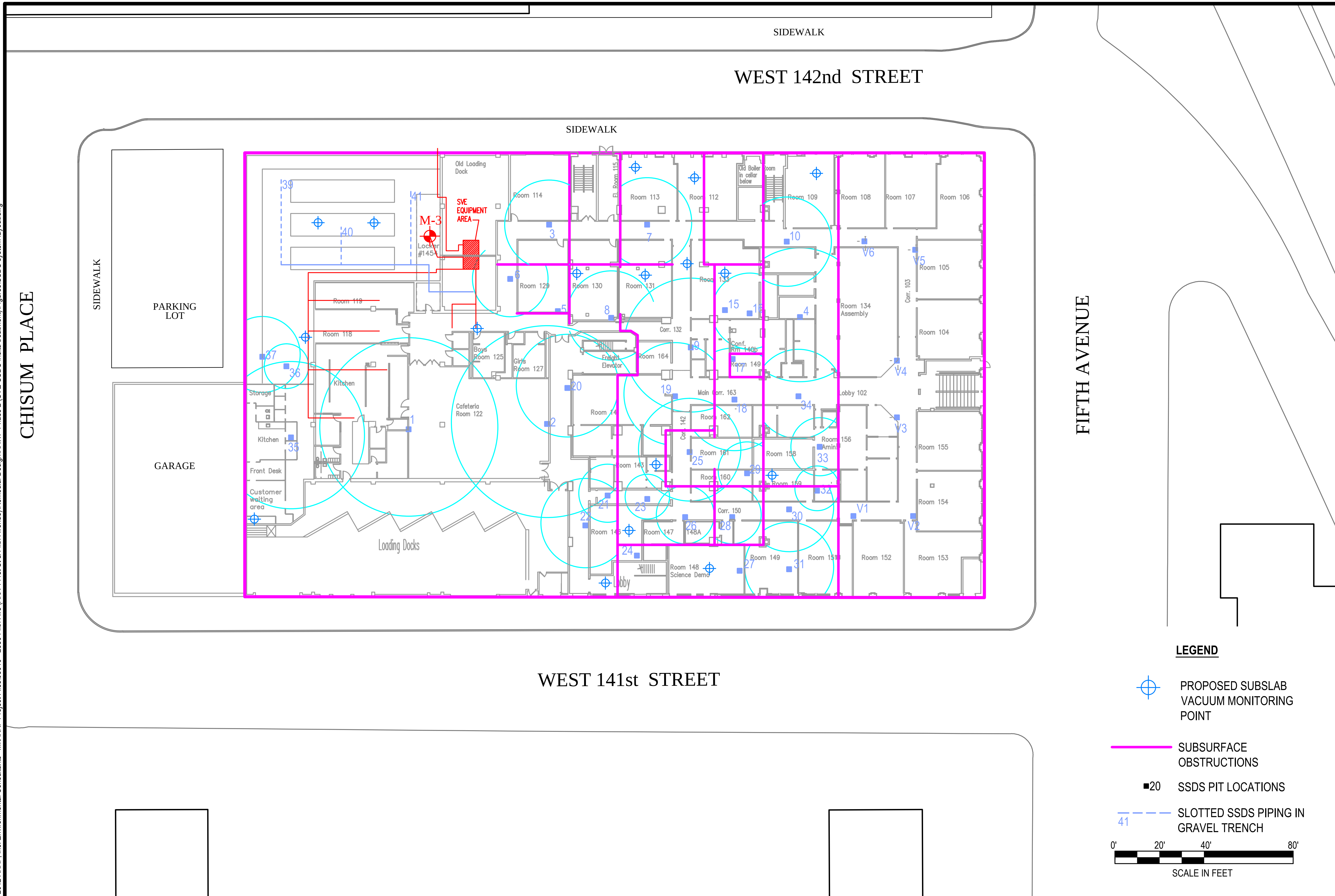
SUBSLAB DEPRESSURIZATION SYSTEM PIT AND TRENCH LOCATIONS

DATE 6.20.2013

PROJECT NO. 08010

SCALE as shown

FIGURE 23



LEGEND

PROPOSED SUBSLAB VACUUM MONITORING POINT

SUBSURFACE OBSTRUCTIONS

■20 SSDS PIT LOCATIONS

41 SLOTTED SSDS PIPING IN GRAVEL TRENCH

0' 20' 40' 80'

SCALE IN FEET

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Environmental Consultants
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2350 FIFTH AVENUE, NEW YORK, NEW YORK

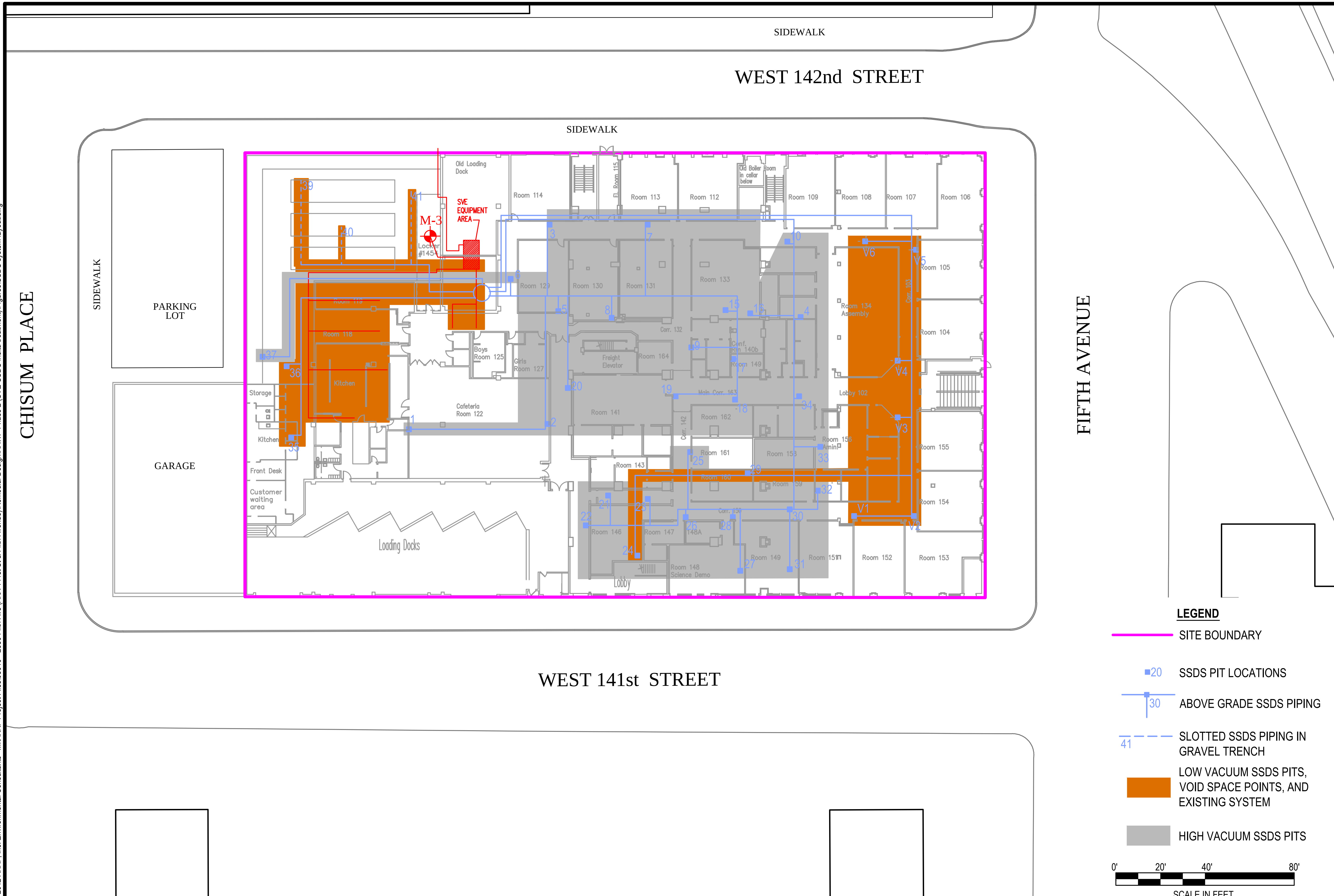
SUBSLAB DEPRESSURIZATION SYSTEM RADII OF INFLUENCE AND SUBSURFACE OBSTRUCTIONS

DATE 6.20.2013

PROJECT NO. 08010

SCALE as shown

FIGURE 24



AKRF Environmental Consultants
440 Park Avenue South, New York, NY 10016

2350 FIFTH AVENUE, NEW YORK, NEW YORK
SUBSLAB DEPRESSURIZATION SYSTEM AND PIPING DIAGRAM

DATE 7.24.2013

PROJECT NO. 08010

SCALE as shown

FIGURE 25

LEGEND:

- Vacuum/Pressure Gauge
- Flow Gauge
- Throtling Valve
- Sample Port

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2350 FIFTH AVENUE, NEW YORK, NEW YORK

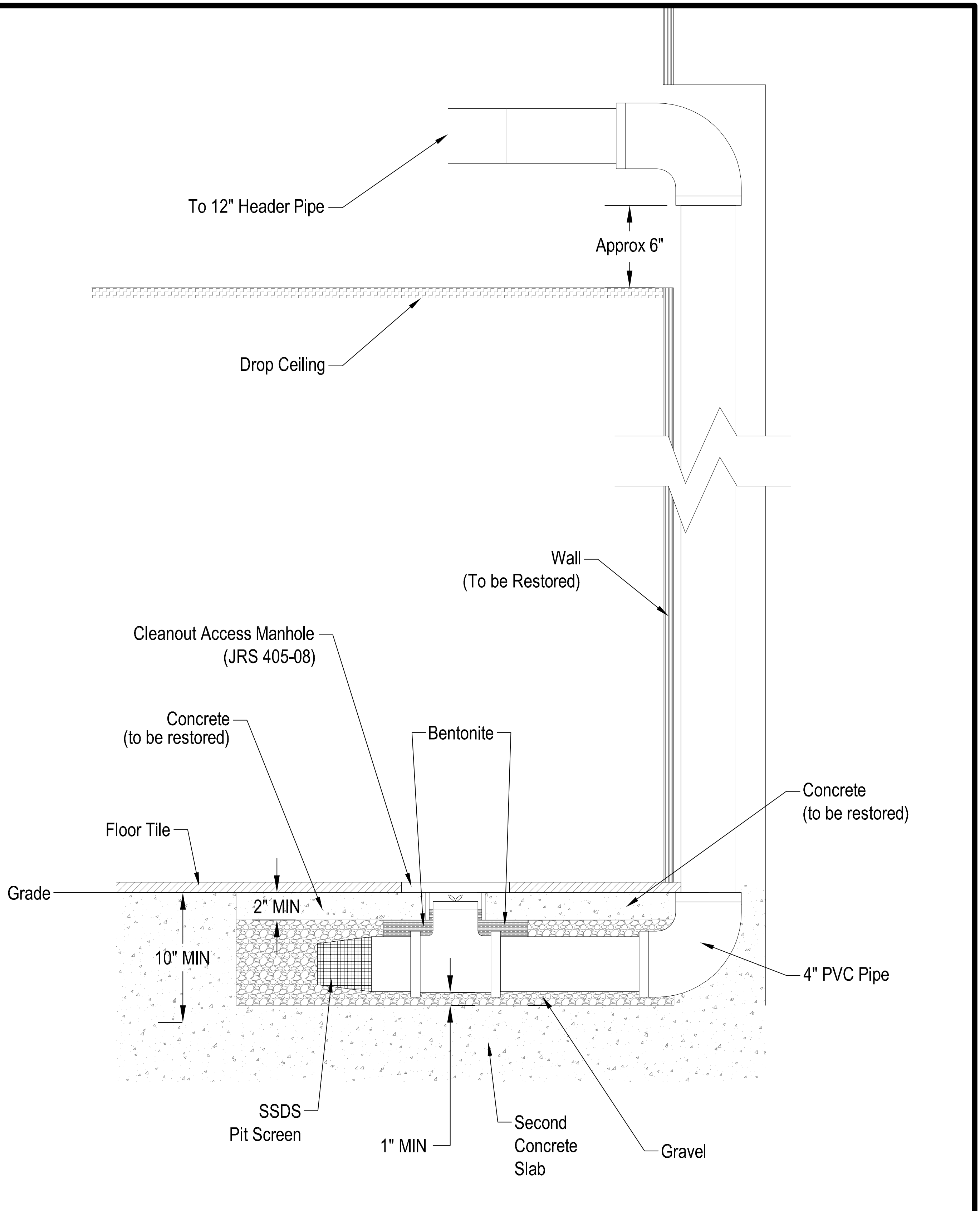
CONCEPTUAL SUBSLAB DEPRESSURIZATION SYSTEM P&ID

DATE
4.10.2012

PROJECT NO.
08010

SCALE
n.t.s

FIGURE
26



2350 FIFTH AVENUE

NEW YORK, NEW YORK

DETAIL FOR 10" DEPTH PITS

AKRF

Environmental Consultants

440 Park Avenue South, New York, N.Y. 10016

DATE	4.2.2012
PROJECT No.	08010
SCALE	nts
FIGURE	27

APPENDIX A

METES AND BOUNDS

MONTROSE **SURVEYING CO., LLP.**	**CITY & LAND SURVEYORS**

116-20 METROPOLITAN AVE • RICHMOND HILL, NY 11418-1090
PHONE (718) 849-0600 • FAX (718) 849-0401 • EMAIL INFO @MONTROSESURVEYING.COM

Legal Description
Tax Block 1739 Tax Lot 33 & part of lot 22
MSC. Survey No. 58564-2

ALL that certain plot, piece or parcel of land situate, lying and being in the Borough of Manhattan, County, City and State of New York, bounded and described as follows;

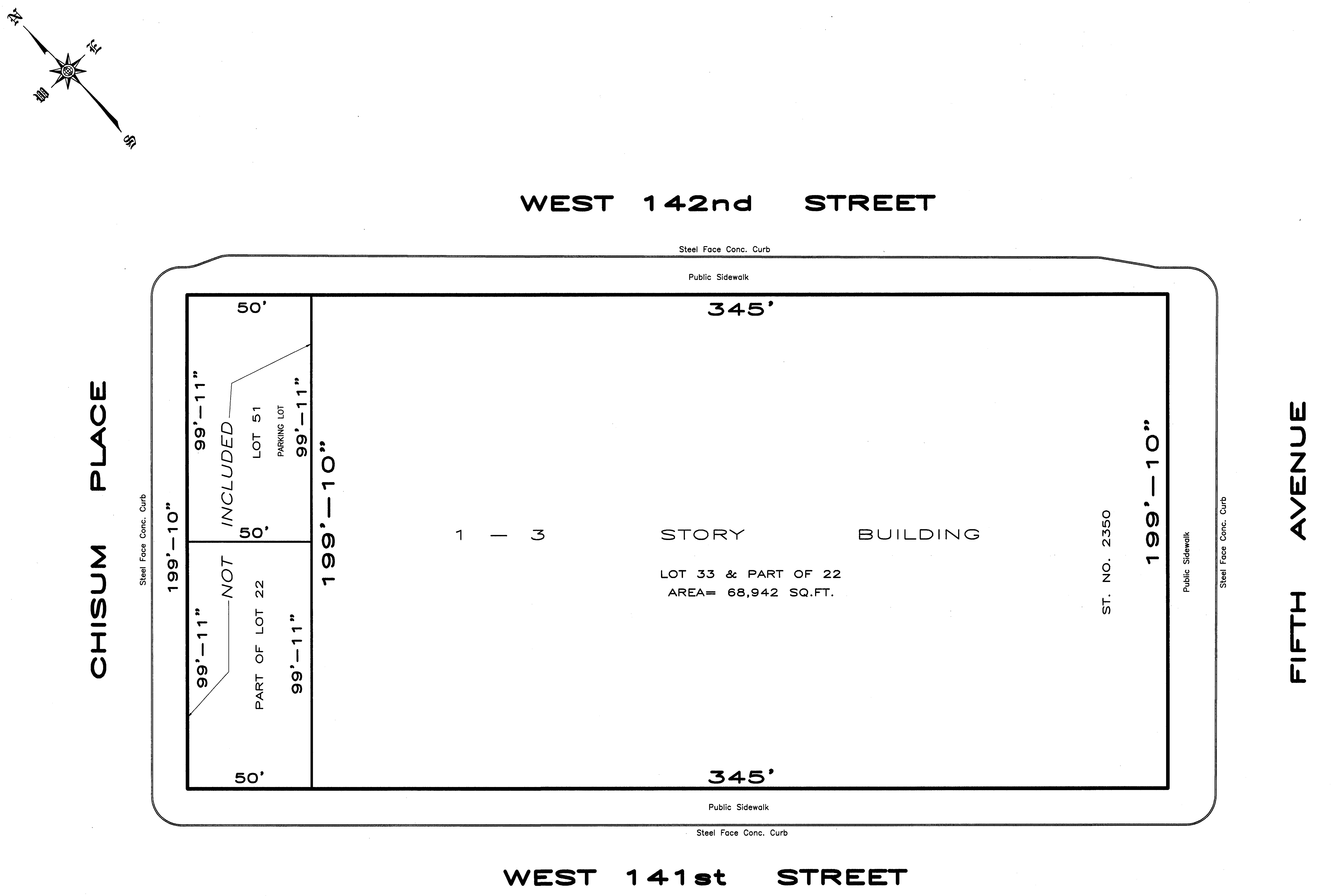
BEGINNING at the corner formed by the intersection of the westerly side of 5th Avenue, with the northerly side of West 141st Street;

RUNNING THENCE northerly, along the westerly side of 5th Avenue, 199 feet 10 inches to the corner formed by the intersection of the westerly side of 5th Avenue, with the southerly side of West 142nd Street;

RUNNING THENCE westerly, along the southerly side of West 142nd Street, 345 feet to a point;

RUNNING THENCE southerly, parallel with the westerly side of 5th Avenue, 199 feet 10 inches to the northerly side of West 141st Street;

RUNNING THENCE easterly, along the northerly side of West 141st Street, 345 feet to the corner, the point or place of BEGINNING.



ESTABLISHED 1876 * SUCCESSOR TO:

B.G. MEINIKHEIM C.S.*C.U. POWELL C.E.,C.S.*L.C.L. SMITH C.S.*NATHAN CAMPBELL C.E.,C.S.*A.U. WHITSON C.E.,C.S.*
WILLIAM L. SAVACOOL C.E.,L.S.,C.S.*A.U. WHITSON INC. C.E.,C.S.*G. WEBER L.S.,C.S.*C. STIDOLPH R.A.,L.S.*WHITSON &
POWELL INC. P.E.,L.S.,C.S.*KELLER & POWELL P.E.,L.S.,C.S.*LOUIS MONTROSE C.E.,L.S.,C.S.*FRED J. POWELL P.E.,L.S.,C.S.*

SURVEY NO. 58564-2

58564-2.DWG

REV	DATE	DESCRIPTION	ck
—	3-15-11	PARCEL DIAGRAM	

COUNTY : NEW YORK

SCALE 1" = 30'

TAX BLOCK 1739

TAX LOT 22 & 33

STANDARD U.S.

DRN: M.S.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW

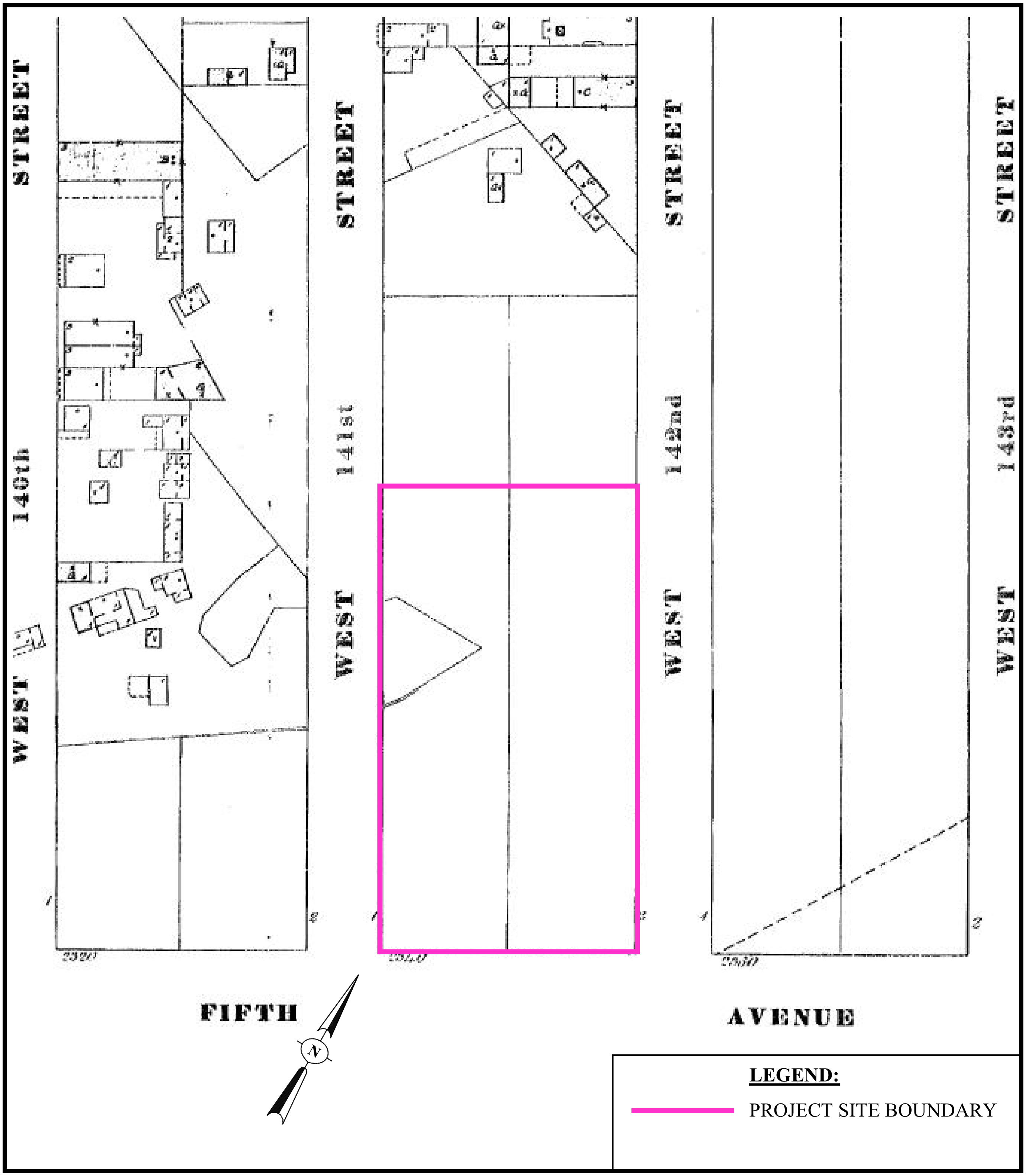
ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S INKED SEAL OR HIS EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES

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, CERTIFICATIONS ARE NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS

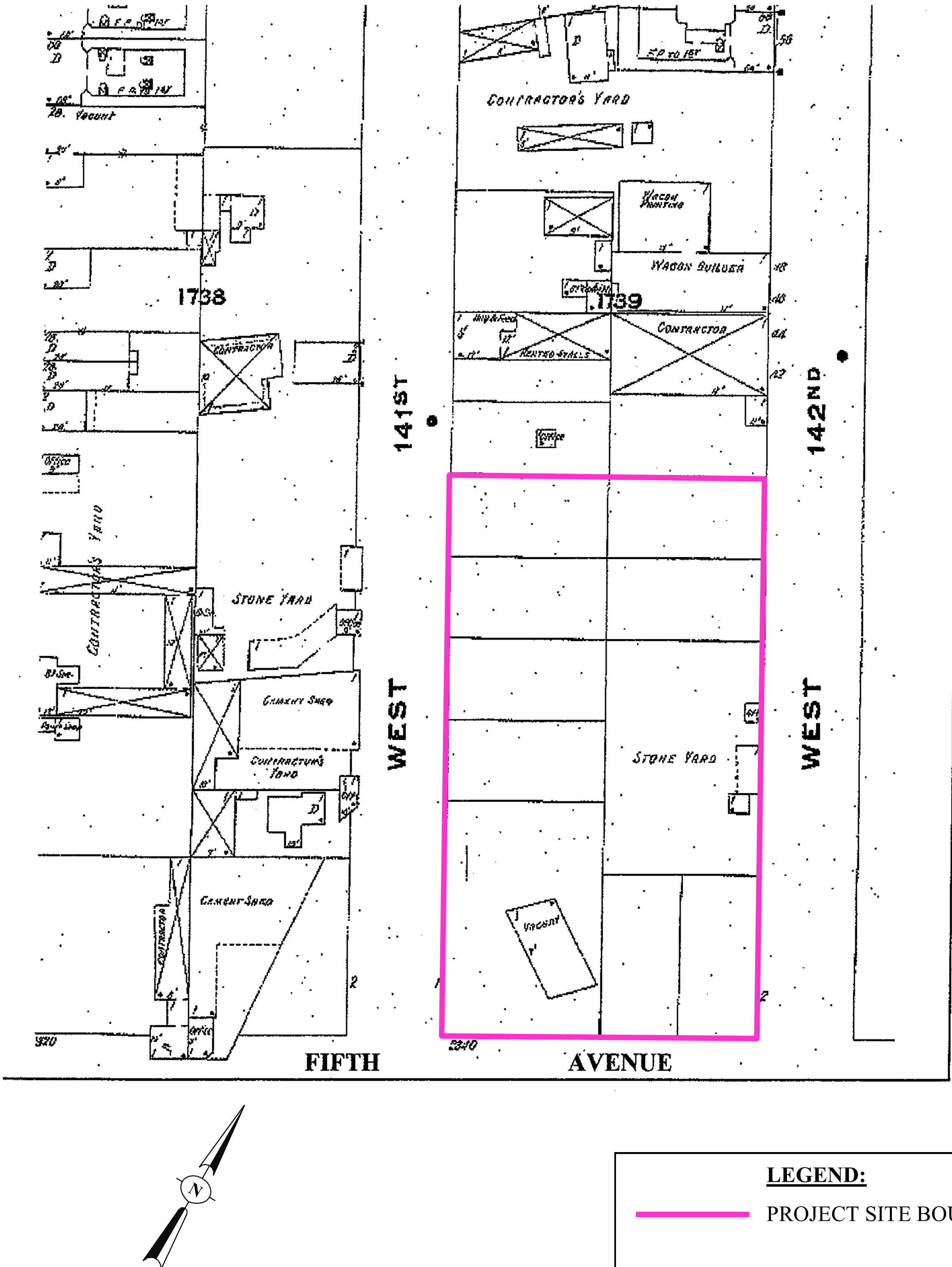
MONTROSE
SURVEYING CO., LLP.
CITY & LAND SURVEYORS
116 20 METROPOLITAN AVE * RICHMOND HILL NY 11418-1090 * (718) 849-0600

APPENDIX B

SANBORN MAPS



2350 FIFTH AVENUE NEW YORK, NEW YORK	DATE **4.16.10**
1893 SANBORN MAP	PROJECT No. **08010**
AKRF Environmental Consultants 440 Park Avenue South, New York, N.Y. 10016	SCALE **NTS**
	FIGURE **Appx b**



LEGEND:

PROJECT SITE BOUNDARY

2350 FIFTH AVENUE
NEW YORK, NEW YORK

1909 SANBORN MAP

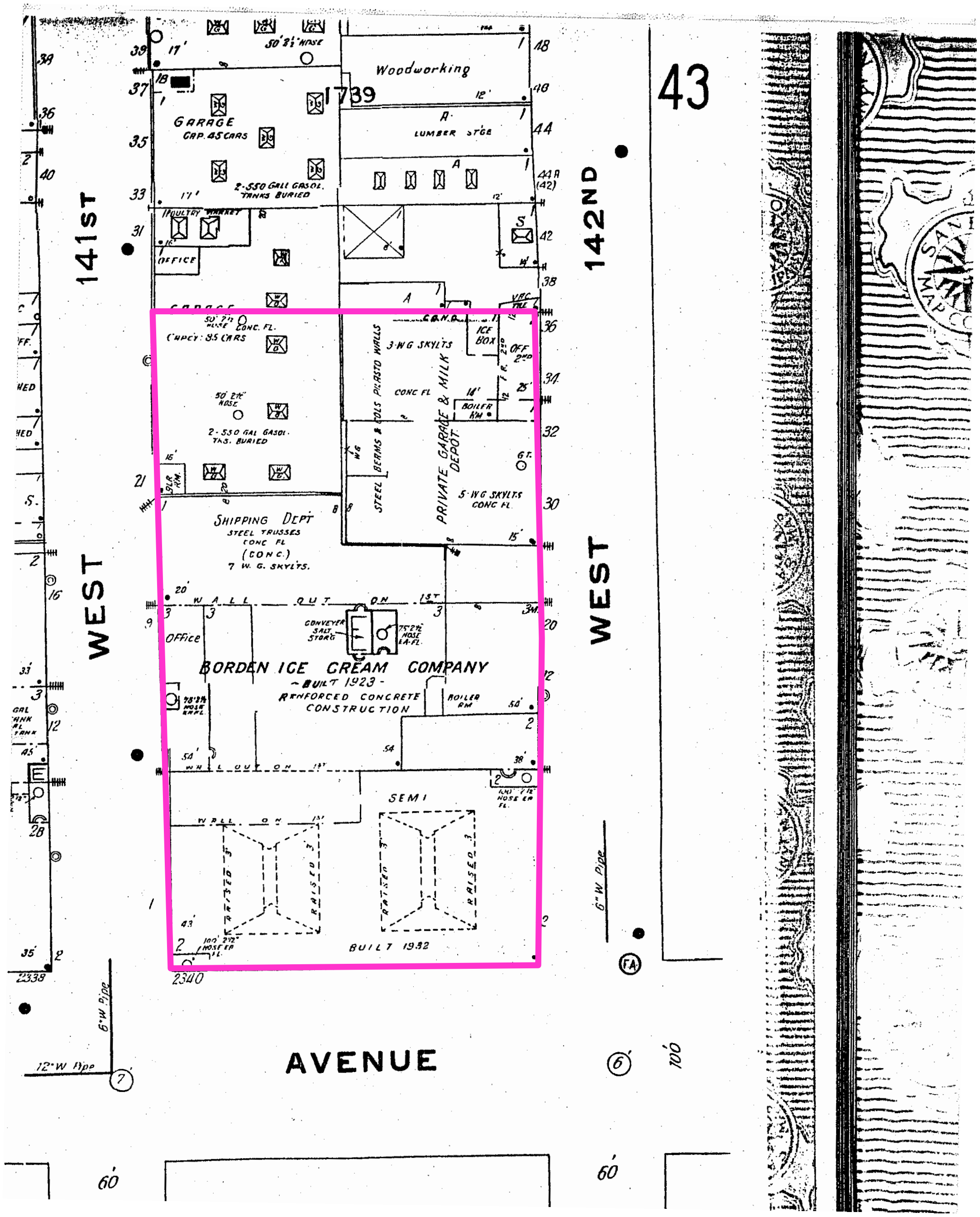
AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE **4.16.10**

PROJECT No. **08010**

SCALE **NTS**

FIGURE **Appx b**



LEGEND:

PROJECT SITE BOUNDARY

2350 FIFTH AVENUE
NEW YORK, NEW YORK

1939 SANBORN MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	**4.16.10**
PROJECT No.	**08010**
SCALE	**NTS**
FIGURE	**Appx b**

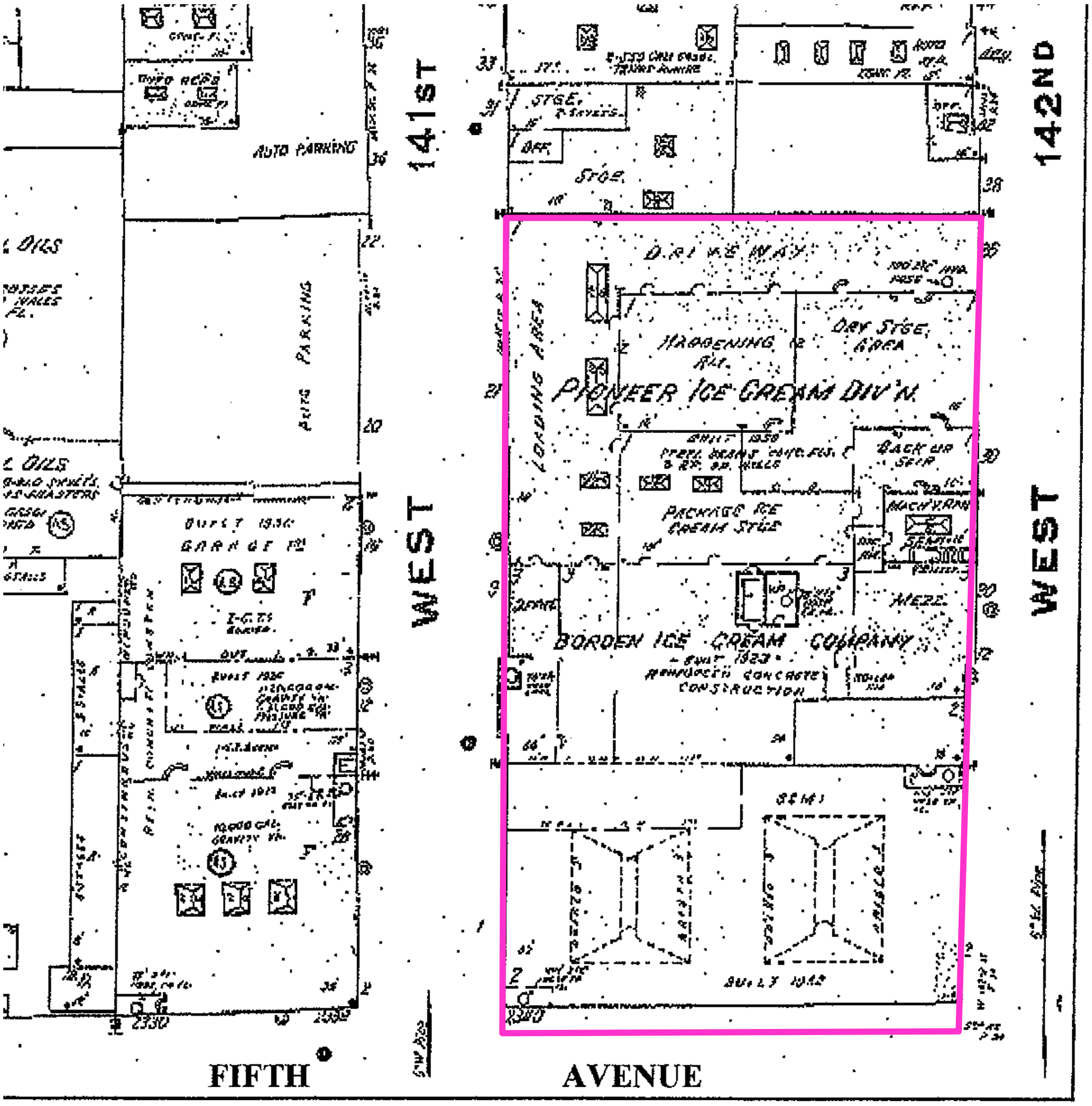


FIGURE II-4
1951 SANBORN MAP

LEGEND:

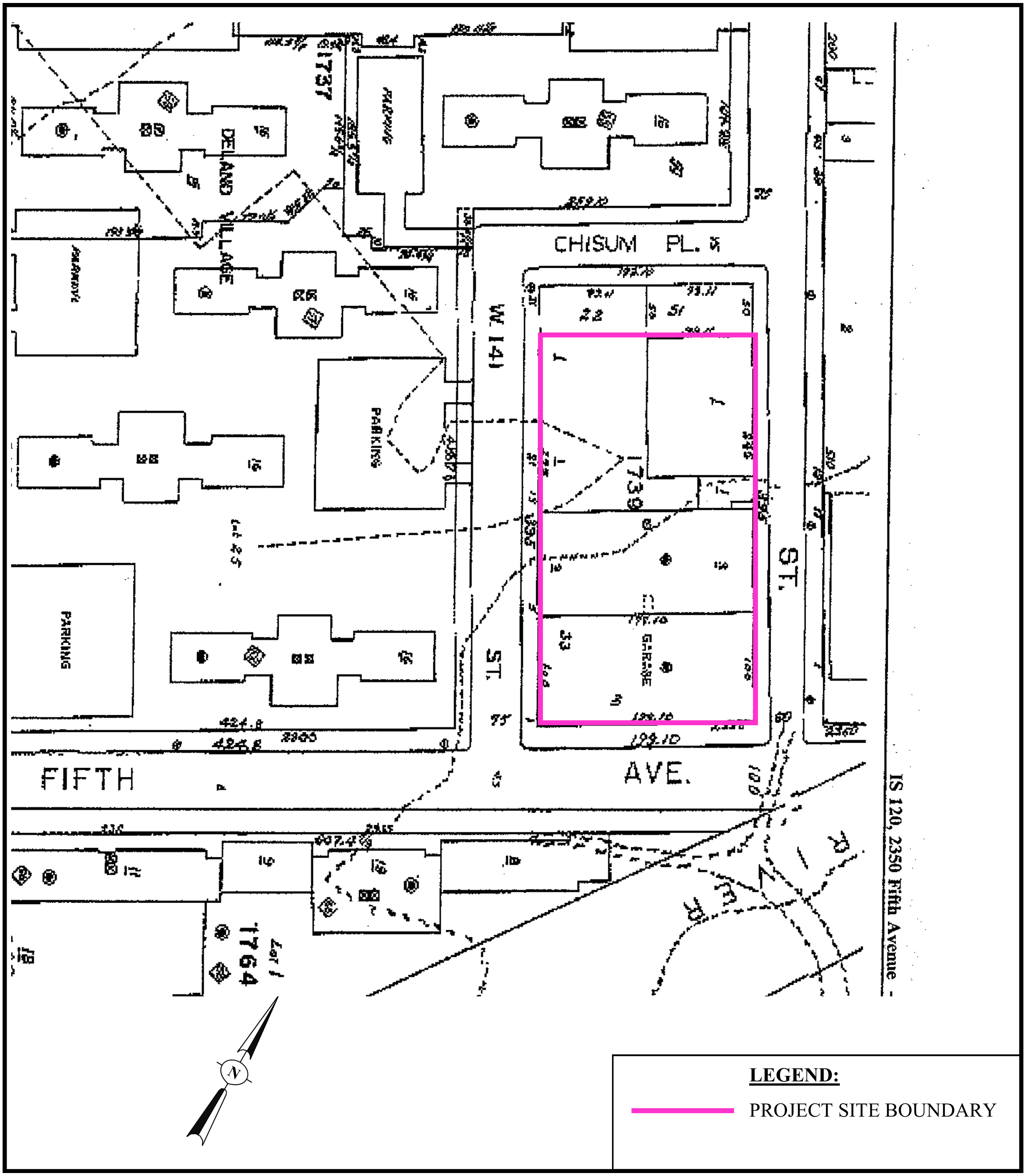
PROJECT SITE BOUNDARY

2350 FIFTH AVENUE
NEW YORK, NEW YORK

1951 SANBORN MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	4.16.10
PROJECT No.	08010
SCALE	NTS
FIGURE	Appx b

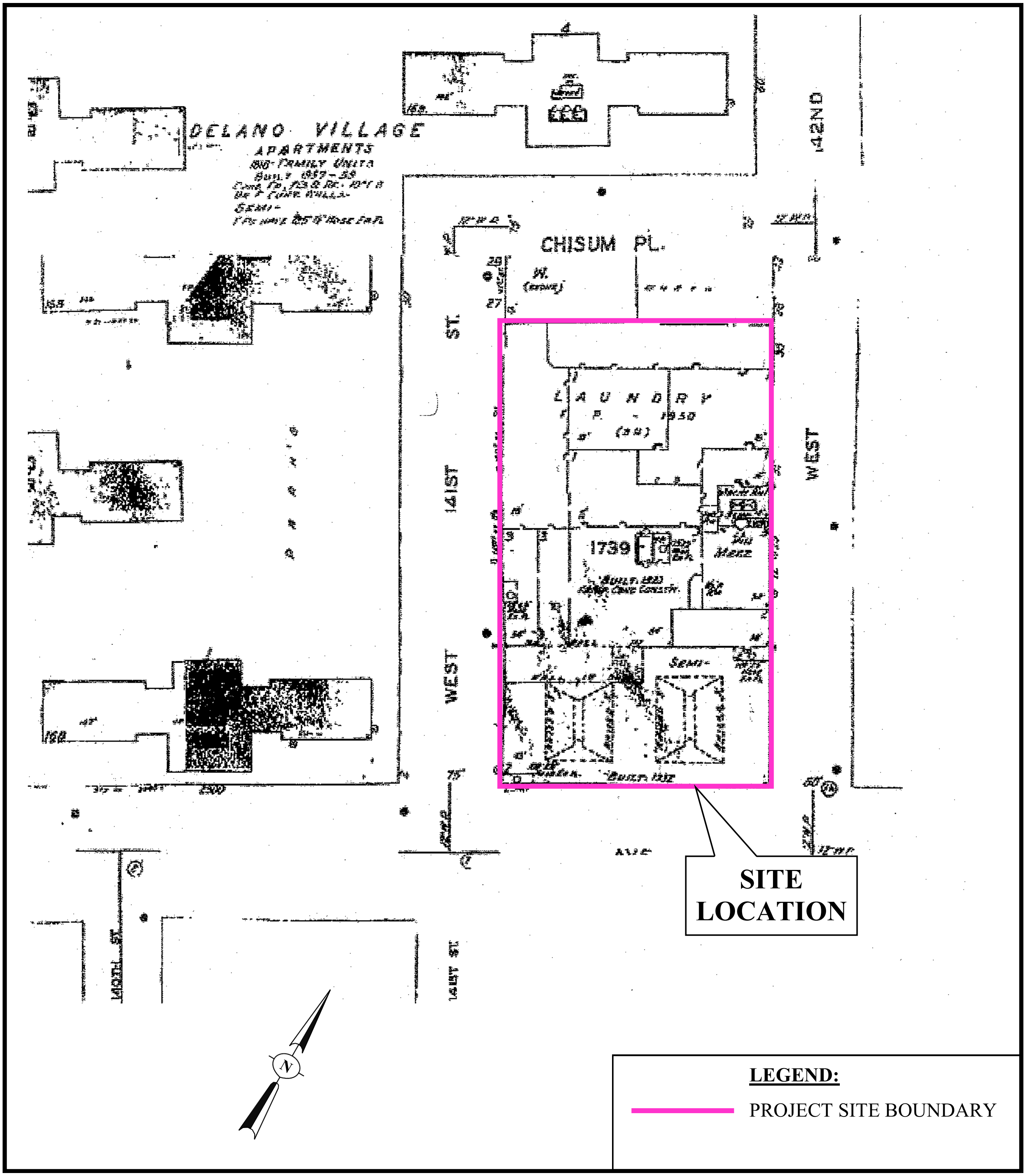


2350 FIFTH AVENUE
NEW YORK, NEW YORK

1976 SANBORN MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE **4.16.10**
PROJECT No. **08010**
SCALE **NTS**
FIGURE **Appx b**



2350 FIFTH AVENUE
NEW YORK, NEW YORK

1996 SANBORN MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	**4.16.10**
PROJECT No.	**08010**
SCALE	**NTS**
FIGURE	**Appx b**

APPENDIX C

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

2350 Fifth Avenue

New York, New York

AKRF Project Number: 08010

NYSDEC Site #2-31-004

Prepared by:

AKRF Engineering, P.C.

440 Park Avenue South, 7th Floor
New York, NY 10016
(212) 696-0670

Prepared for:

2350 Fifth Avenue Corporation
309 East 94th Street, Ground Floor
New York, New York 10128

SEPTEMBER 2013

APPROVALS

By their signature, the undersigned hereby certify that this HASP has been reviewed and approved for use at the 2350 Fifth Avenue, New York, New York Site.

	September 17, 2013
Marc Godick, LEP – AKRF	DATE
	September 17, 2013
Kathleen Brunner - AKRF	DATE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan was prepared for pre-remedial design investigation and remediation activities at the 2350 Fifth Avenue Site in the Borough of Manhattan, New York, New York. The Site is bounded by Fifth Avenue on the east, West 141st Street on the south, a garage and paved parking area on the west, and West 142nd Street on the north. (See Figure 1 for the project Site location.) The western boundary of the Site is about 50 feet east of Chisum Place. The Site extends about 200 feet north-south and about 345 feet east-west. The Harlem River is 100 to 200 feet to the east of the Site.

The surrounding area consists of high-rise residential buildings on the blocks to the west, south, and southeast of the Site. The Harlem River Drive is to the northeast, and a National Guard Armory occupies the block to the north, between West 142nd and West 143rd Streets. The Site is owned by 2350 Fifth Avenue Corporation and managed under the oversight of the New York State Department of Environmental Conservation (NYSDEC) under Order on Consent Index No. W2-0792-11-04 (and previous Order on Consent W2-0792-98-07 and W2-0792-97-05).

This Health and Safety Plan (HASP) addresses the health and safety practices that will be employed by workers participating in investigation and remediation activities at the Site by AKRF Engineering, P.C. (AKRF) and licensed contractor (the 'Contractor') specified and retained by the property owner. The HASP takes into account the specific hazards inherent to the Site, and presents procedures to be followed by AKRF, the Contractor, and all Site visitors in order to avoid and if necessary, protect against health and/or safety hazards. Activities performed under this HASP will comply with applicable parts of OSHA Regulations, primarily 29 CFR Parts 1910 and 1926. A copy this HASP will be maintained on-Site for the duration of active remedial work.

All workers who may participate in activities at the Site that are under the direction of AKRF or the Contractor are required to comply with the provisions specified in this HASP. All Site visitors who enter designated work zones must also comply with this HASP. Refusal or failure to comply with the HASP or violation of any safety procedures by field personnel and/or subcontractors performing work covered by this HASP may result in immediate removal from the Site following consultation with the Owner's Representative. No personnel are permitted to enter permit confined spaces under this HASP.

1.2 Scope

This HASP has been developed to address the health and safety concerns during Site investigation and remedial actions at the Site that are under the direction of AKRF and the Contractor as specified in the Remedial Action Work Plan (RAWP) - Phase 2 dated September 2013. Although the HASP addresses all activities listed herein, work at the individual locations may include all, or only some of these tasks. Work anticipated under the RAWP - Phase 2 includes the following remedial tasks:

- Installation of a soil vapor extraction (SVE) system equipped with activated carbon treatment (or other air treatment as applicable) beneath the building in the northwestern portion of the Site;
- Injections of a chemical oxidation product beneath the building for in-situ soil treatment in the northwestern portion of the Site;

- Injections of a reductive dechlorination enhancement product beneath the building for in-situ groundwater treatment in the northwestern portion of the Site;
- Removal of light non-aqueous phase liquid (LNAPL) around existing groundwater well MW-12s to the extent practicable; and
- Installation of a sub-slab depressurization system (SSDS) throughout the existing site building;
- Closure in-place of an underground storage tank (UST) located beneath the loading dock in the northwestern portion of the Site; and
- Maintenance of the existing composite cover consisting of asphalt or concrete.

1.3 Application

The HASP applies to all personnel involved in the above tasks, that are under the direction of the Contractor or AKRF, who wish to gain access to active work areas, including but not limited to:

- Owner’s representatives, contractors, and subcontractors performing tasks under the direction of AKRF or the Contractor;
- Federal, State or local representatives;
- AKRF or the Contractor’s employees; and
- AKRF or the Contractor’s subcontractors.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section specifies the project team’s Project Organization:

2.1 Project Manager (PM)

The Project Manager is anticipated to be Kate Brunner of AKRF. The PM responsibilities include the following:

- Plans, schedules, and manages implementation of remediation activities;
- Coordinates with the Site Manager (SM), Site Supervisor, and Project Environmental Safety Manager (PESM) to ensure that health and safety requirements are met;
- Ensures that field work is scheduled with adequate personnel and equipment resources to complete the job safely and enforce Site health and safety rules;
- Conducts periodic inspections;
- Participates in incident investigations;
- Ensures the HASP has all of the required approvals before any Site work is conducted;
- Ensures that the Site Manager is informed of project changes that require modifications of the HASP; and
- Has overall project responsibility for Project Health and Safety.

2.2 Site Manager (SM)

The Site Manager is anticipated to be Steve Grens or Greg Baird of AKRF. The SM responsibilities include the following:

- Manages day-to-day implementation of the Site safety measures specified in the HASP;
- Ensures that adequate communication between field crews, health and safety monitoring personnel, and emergency response personnel is maintained;
- Confirms that field Site personnel are adequately trained and qualified to work at the Site and that proper personal protective equipment is utilized by field teams;
- Investigates and report all accidents/incidents to the PM and Project Environmental Safety Manager (PESM);
- Conducts and documents periodic safety briefings;
- Stops work if necessary based on health and safety monitoring;
- Acts as the primary point of contact for Site-related activities and coordination with non project-related Site operations;
- Identifies operational changes that require potential modifications to health and safety procedures and Site safety plans, and reports such changes to the PM and PESM;
- Conducts health and safety monitoring activities;
- Determines upgrades or downgrades of personal protective equipment (PPE) based on Site conditions and/or real-time monitoring results;
- Ensures that monitoring instruments are calibrated; and
- Reports to the PM and PESM to provide summaries of field operations and progress.

2.3 Project Environmental and Safety Manager (PESM)

The PESM is a qualified health and safety professional with experience in hazardous waste Site remediation activities. The PESM is anticipated to be Marc Godick of AKRF. The PESM responsibilities include the following:

- Provides for the development and approval of the HASP;
- Serves as the primary contact to review health and safety matters that may arise;
- Approves revised or new safety protocols for field operations;
- Coordinates revisions of this HASP with field personnel;
- Coordinates upgrading or downgrading of personal protective equipment with the SM;
- Assists in the investigation of all accidents/incidents; and
- Enforces work stoppage following reporting of on-site activities from the PM and SM.

2.4 Site Supervisor

The Site Supervisor will be appointed from the Owner's Contractor. The Site Supervisor responsibilities include the following:

- Provide for the necessary training of field crews in accordance with OSHA regulations and provides proof of training to the SM prior to entering the Site;
- Conduct routine safety inspections of their work areas;
- Conduct incident investigations and together with the SM, prepares appropriate reports;
- Enforces health and safety rules and compliance with the HASP; and
- Plans field work using appropriate safe procedures and equipment.

2.5 Site Personnel

The Site Personnel responsibilities include the following:

- Report any unsafe or potentially hazardous conditions to the SM;
- Maintain knowledge of the information, instructions and emergency response actions contained in the HASP;
- Comply with rules, regulations and procedures as set forth in this HASP and any revisions;
- Prevent admittance to work Sites by unauthorized personnel; and
- Inspect all tools and equipment, including PPE, prior to use.

3.0 SITE HISTORY AND BACKGROUND

The existing building was originally constructed in segments as an ice cream factory by the Bordens Ice Cream Company. The three-story section was built in 1923; the two-story section was built in 1932; and the one-story section was built in 1950. The floor slab at the western end of the building (the one-story section built in 1950) was constructed with various layers of insulating materials related to the original use of the building as a refrigerated ice cream plant. At the westernmost section of the building, there was most typically a layer of tar paper directly under the slab (now buried), with a thin (two inches or less) layer of cork underneath. Under the cork was a layer of styrofoam eight to ten inches thick. Under the styrofoam was a layer of fill, more tar paper, and another concrete slab about four inches thick. There was fill beneath this slab, and at some locations brick and/or other concrete slabs were encountered within the fill. These were probably remains of earlier structures. An area just east of the section with the cork/styrofoam insulation (the location of the current insulation removal) had a thicker layer of cork four to ten inches thick under the slab, but no styrofoam. The insulation material was identified only beneath the western portion of the building used for refrigeration.

Following its use as an ice cream factory, the building was occupied by a commercial laundry from 1970 to 1994. The laundry operated under a variety of names including Budge-Wood Service, Bluebird Laundry, and Swiss-American Laundry. The facility included a dry cleaning operation utilizing tetrachloroethene (PCE) as a cleaning solvent. The dry cleaning operation was located near the northern side of the one-story portion of the building, in the former refrigerated portion of the building just west of the 142nd Street loading dock. PCE was stored in the same area. The operations initially used first-generation machines with separate washers and dryers. Around 1984, these were replaced by second-generation machines, which were single units that perform all of the washing, extraction, and drying operations. It was likely that most of the on-Site leaks and spills of PCE were associated with the use of the first generation machines, which involved more handling of PCE that the later machines. The facility had an U.S. Environmental Protection Agency (EPA) ID number as a generator of hazardous waste (NYD071026173).

A preliminary Site assessment and remedial investigation, consisting of several phases of groundwater, soil, soil vapor and indoor air sampling, were performed on the subject Site from 1996 to 2009. The major contaminant of concern identified on the Site was PCE and its breakdown products (trichloroethene, dichloroethene, and vinyl chloride), which appear to be largely limited to the northwestern portion of the Site in and around the area of the former dry cleaning activities. Some evidence of petroleum contamination was also detected, including light non-aqueous phase liquid (LNAPL) in one site monitoring well (MW-12s).

One out-of-service underground fuel oil tank on the Site is located under the West 142nd Street loading dock, immediately east of the former dry cleaning area. This tank will be closed-in-place as part of the work under the RAWP for Phase 2.

4.0 POTENTIAL HAZARDS AT THE SITE

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered during the tasks specified under HASP Section 1.2.

4.1 Properties of Chemical Contamination

4.1.1 Chemical Hazards in Subslab Insulation Material, Soil and/or Groundwater

Potential chemical issues related to work at this Site include but are not limited to: dermal contact and/or ingestion hazards associated with the handling of PCE contaminated material; vapor phase volatile organic compounds encountered during soil and insulation disturbance; and dissolved phase PCE, its breakdown products, and petroleum related contamination in on Site groundwater.

- Volatile organic chemicals (VOCs), such as PCE, trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride may be present as soil, insulation, and groundwater contaminants. These compounds generally have a depressant effect on the central nervous system (CNS), may cause chronic liver and kidney damage, and some are suspected human carcinogens. PCE is a known human carcinogen. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation.
- The Site potentially contains asbestos-containing materials (ACM) in the forms of ACM pipe insulation, caulks, mastics, and other building materials. The primary route of exposure for asbestos is inhalation. Chronic exposure to asbestos may cause asbestosis and mesothelioma.

The potential health effects from on-Site contamination are summarized in Table 1 and detailed in the U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR) fact sheets attached in Appendix A.

4.1.2 Other Chemical Hazards

Chemicals not identified in this HASP may be used during investigation and remediation activities. Prior to the initiation of these tasks, Material Safety Data Sheets (MSDSs) will be obtained for each of the chemicals to be used and all Site workers and visitors who may potentially be exposed will be made aware of these hazards.

4.2 Physical Hazards

Physical hazards will be addressed as necessary. More detailed safety procedures are provided as appendices to this HASP, where applicable.

4.2.1 Cold Stress

At certain times of the year, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, poor judgment and unauthorized procedural changes. The procedures to be followed as part of the cold stress program are included in Appendix B.

4.2.2 Heat Stress

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. A heat stress prevention program will be implemented when ambient temperatures exceed 70ºF for personnel wearing impermeable clothing. The procedures to be followed as part of the heat stress program are found in Appendix C.

4.2.3 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Operations that require the use of hearing protection include operation of heavy equipment, generators, jackhammers, chain saws, sheetpile drivers, dewatering equipment, and pressure washers. Site workers who will perform suspected high noise tasks and operations will be provided with earplugs. Workers not performing those tasks but working in close proximity to that equipment will also be required to wear hearing protection. If deemed necessary by the SM, the PESM will be consulted on the need for additional hearing protection and the need to monitor sound levels for Site activities.

4.2.4 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel at all times when utilizing hand and power tools, and GFI-equipped circuits will be used for all power tools.

4.2.5 Slips, Trips, and Falls

Working in and around the Site will pose slip, trip and fall hazards due to slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Excavation at the Sites will cause uneven footing in the trenches and around the spoil piles. Care should be exercised when walking at the Site, especially when carrying equipment.

4.2.6 Fire and Explosion

When conducting excavating activities, the opportunity of encountering fire and explosion hazards exists from contamination in the soil and the possibility of free product in the underground pipelines. This will be especially hazardous if pipelines are sawed or broken to grout the ends. Additionally, the use of a diesel engine on excavating equipment could present the possibility of encountering fire and explosion hazards.

4.2.7 Manual Lifting

Manual lifting of heavy objects such as sections of pipe may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers will be instructed to use power equipment to lift heavy loads whenever possible and to evaluate loads before trying to lift them (i.e., they should be able to easily tip the load and then return it to its original position). Heavy loads should be carried with a buddy and the following proper lifting techniques will be stressed: 1) make sure footing is solid, 2) make back straight with no curving or slouching, 3) center body over feet, 4) grasp the object firmly and as close to your body as possible, 5) lift with legs, and 6) turn with your feet, don't twist. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery periods. In addition, hand digging for pipes may present lifting/ergonomic hazards.

4.2.8 Steam, Heat, Splashing

Exposure to steam/heat/splashing hazards can occur during steam cleaning activities. Exposure to steam/heat/splashing can result in scalding/burns, eye injury, and puncture wounds. Proper PPE will be worn during all steam cleaning activities such as rain gear or Tyvek, hardhat equipped with splashguard, and water resistant gloves and boots.

4.2.9 Utilities (Electrocution and Fire Hazards)

Underground utilities at the Site pose fire, explosion, and electrocution hazards. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death. Underground utilities, facilities, equipment, and structures will be located prior to start of remedial excavation activities. The Underground Utilities Call Center will be notified a minimum of three (3) days before any subsurface disturbance. Care shall be exercised to avoid damage to utilities beneath the surface slab.

4.3 Task Hazard Analysis

The scope of work described in Section 1.2 will be accomplished with the following tasks:

1. <u>Mobilization/Demobilization:</u> mobilize equipment; establish Site security, work zones, and staging areas.
2. <u>Site Preparation/Construction Activities:</u> locate utilities; construct decontamination pad; construct negative pressure environmental enclosure around excavation area.
3. <u>Soil Excavation and Loading:</u> remove floor slab in designated removal area; excavate and segregate shallow overburden materials; remove any subgrade slabs encountered above the insulation material; excavate subsurface contaminated soil (within environmental enclosure); load dump trucks; decontaminate heavy equipment; backfill excavations.

4. Site Restoration Activities: restore flooring in excavation area and any damaged adjacent floors/walls to original condition.

All of these tasks include the potential for the chemical and physical hazards, and care should be taken within the work zone to avoid these hazards as described above. There is a higher potential for chemical hazards to occur during activities that involve the removal and handling of contaminated material; however, exposure to vapors may occur to a lesser degree as soon as the top concrete slab is removed. Protection of building occupants and visitors would be accomplished through excavation within a negative pressure environmental enclosure, which would involve additional hazards including the buildup of combustible gases and carbon monoxide**.** Levels of carbon monoxide (CO) and breathable oxygen (O_2) will be monitored within the enclosure to maintain O_2 levels above 19.5% and CO levels below 5 ppm. All tasks should be conducted using the appropriate Personal Protective Equipment (PPE) for the associated exposure, as described in Section 6.0.

5.0 PROCESS SAFETY MANAGEMENT

Process Safety Management is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control and mitigate those hazards. Process Safety Management guidelines will be developed for all activities as necessary, prior to start-up. Process Safety Management will be used to train work crews in proper safety procedures during phase preparatory meetings.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various remediation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear." All on-Site Site personnel shall wear, at a minimum, Level D personal protective equipment. When work is conducted in areas where potential NAPL contamination is present, workers shall wear, at a minimum, Level D modified personal protective equipment. The protection will be based on the air monitoring described in Section 7.0. Table 2 lists the required PPE for the anticipated remediation tasks:

TABLE 2

PERSONAL PROTECTIVE EQUIPMENT SELECTION

LEVEL OF PROTECTION & PPE		WORK ACTIVITY/CONDITIONS
Level D (x) Steel Toe Boots (x) Hard Hat (x) Leather Work Gloves (as needed) (x) Reflective Vest	(x) Safety Glasses -or- (x) Face Shield (x) Ear Plugs (as needed) (x) Latex Gloves (as needed)	• All activities except those noted under Levels D modified and C

TABLE 2
PERSONAL PROTECTIVE EQUIPMENT SELECTION

LEVEL OF PROTECTION & PPE		WORK ACTIVITY/CONDITIONS
Level D – Modified ***(in addition to Level D)*** (x) Nitrile Gloves (x) Overboots	(x) Tyvek Coveralls (as needed) -or- (x) Saranex/Polyethylene-coated Tyvek Coveralls (as needed)	• Excavation/removal and trenching • Dewatering • Backfilling • Heavy equipment decontamination • Other activities with potential for contact with PCE contaminated material
Level C – ***(in addition to Level D – Modified)*** (x) Half-Face Respirator ( ) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge (P100) ( ) Organic Cartridge (x) Dual Organic/Particulate Cartridge	• If PID > 10 ppm and/or • If PM10 > 1.8 mg/m^3
Level C - Modified ***(in addition to Level D – Modified)*** ( ) Half-Face Respirator (x) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge (P100) ( ) Organic Cartridge (x) Dual Organic/Particulate Cartridge	• If PID >50 ppm; or • Eye irritation occurs
Notes: Vapor (PID) and particulate (PM_{10}) measurements are work zone action levels sustained for >15 minutes		

The personal protective equipment (PPE) specified in Table 2 reflects the hazard analysis presented in Section 4.0 and PPE selection required by 29 CFR 1910.132. For the purposes of PPE selection, the PESM and SM are considered competent persons. The signatures on the front of the HASP constitute certification of the hazard assessment. For activities not covered by Table 2, the SM will conduct the hazard assessment and select the PPE in consultation with the PESM.

6.1 OSHA Requirements for Personal Protective Equipment

All personal protective equipment used during the course of this field investigation must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1967

ANSI = American National Standards Institute

Any on-Site personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The PESM will maintain such information on file for on-Site personnel. The SM will obtain such information from the subcontractor's Site supervisor prior to the initiation of any such work. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations

(29 CFR 1910.1025; 29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations; and
- If contaminant levels exceed designated use concentrations.

When work is conducted in areas where exposed sub-slab insulation material is anticipated, workers shall wear, at a minimum, Level D modified personal protective equipment. The level of respiratory protection will be based on the air monitoring described in Section 7.0.

7.0 MONITORING

7.1 Monitoring Requirements

Environmental Health and Safety Monitoring will be performed during all soil disturbance activities in accordance with this section.

7.1.1 Work Zone Monitoring

The following monitoring instruments will be available for use during field operation as necessary:

- Photoionization detector (PID), Thermo 580B with 10.6 eV lamp or equivalent;
- Dust meter, TSI DustTrak or equivalent;
- Combustible gas indicator (CGI) (minimum %LEL and O_2), QRAE or equivalent;
- Sound Level Meter if deemed necessary by the SM and PESM, type to be appropriate to the activities performed; and
- QRAE or equivalent (CO monitoring).

All air monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements and the Monitoring Instruments: Use, Care, and Calibration program included in Appendix D. All calibrations will be recorded by the SM in the daily log.

Organic vapor concentrations shall be measured using the PID during excavating and other intrusive activities. During intrusive operations, organic vapor concentrations shall be taken at least once every hour. Organic vapor concentrations shall be measured upwind of the work Site(s) to determine background concentrations at least twice a day, (once in the morning and once in the afternoon). The SM will interpret monitoring results using professional judgment.

A dust meter will be used to measure airborne particulate matter during intrusive activities. Monitoring will be at least once per hour and readings will be averaged over a 15-minute period for comparison with the action levels. Monitoring personnel will make a best effort to collect dust monitoring data from downwind of the intrusive activity. If off-Site sources are considered to be the source of the measured dust, upwind readings will also be collected.

A CGI/O_2 meter will be used to monitor for combustible gases (%LEL) and oxygen (O_2) content within the environmental enclosure surrounding the insulation removal area, and elsewhere as necessary. The CGI will also be equipped with a carbon monoxide (CO) meter. Percent LEL, O_2, and CO will be monitored in the enclosure continuously during removal activities.

All trenches and excavations will be monitored before potential entry at the beginning of each shift. Trenches are not expected to be entered on a regular basis during the remediation.

Guidelines have been established by the National Institute for Occupational Safety and Health (NIOSH) concerning the action levels for work in a potentially explosive environment. These guidelines are as follows: 10% LEL - Limit all activities to those which do not generate sparks, 20% LEL - Cease all activities in order to allow time for the combustible gases to vent.

Measurements will be taken prior to commencement of work and periodically or continuously during the work, depending on the contaminant being monitored, as outlined in Table 3 below. Measurements will be made as close to the workers as practicable and at the breathing height of the workers.

The SM shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in the following table:

TABLE 3
WORK ZONE AIR MONITOING ACTION LEVELS

Air Monitoring Instrument	Monitoring Location	Action Level (sustained for >15 min)	Site Action
PID	Breathing Zone	0 - 10 ppm	No respiratory protection is required
		10 – 500 ppm	Upgrade to Level C PPE. OR Stop work, withdraw from work area.
		> 500 ppm	Stop Work. Resume work when readings are less than 500 ppm.
Dust Meter	Excavation	< 5 mg/m^3	No respiratory protection is required Implement work practices to reduce/minimize airborne dust generation, e.g., spray/misting of soil with water
		Between 5 mg/m^3 and 125 mg/m^3	Upgrade to Level C PPE. Apply additional dust suppression measures. If < 2.5 mg/m^3 resume work using level D. Otherwise, use level C.

TABLE 3
WORK ZONE AIR MONITOING ACTION LEVELS

Air Monitoring Instrument	Monitoring Location	Action Level (sustained for >15 min)	Site Action
		> 125 mg/m^3	Stop Work. Apply additional dust suppression measures. Resume work when less than 125 mg/m^3.
Oxygen Meter	Breathing Zone	> 19.5%	Continue work
		< 19.5%	Stop work; withdraw from work area; notify PESM.
CGI	Excavation	< 10 % LEL	Continue work.
		Between 10% LEL and 20% LEL	Mitigate to 10% LEL. Stop Work if necessary.
		>20% LEL	STOP WORK AND EVACUATE CONTAINMENT STRUCTURE.
CO Meter	Breathing Zone	CO < 200 ppm	Continue work.
		CO > 200 ppm	Stop work. Continue monitoring, resume work when less than 200 ppm

7.2 Noise Monitoring

Work areas or tasks that pose an exposure risk greater than 85 dBA will require hearing protection. If there is a reasonable possibility that workers may be exposed to an 8-hour time-weighted average exceeding 85 dBA, noise monitoring will be conducted.

8.0 ZONES, PROTECTION, AND COMMUNICATION

8.1 Site Control

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It will include an Exclusion Zone (EZ), Contamination Reduction Zone (CRZ) and a Support Zone (SZ). Specific zones will be established on the work Site when operations begin for each task requiring such delineation (i.e., slab cutting, excavation, trenching in impacted areas of the Site, materials staging, etc.). Maps delineating the various work zones will be available at the Site and used during initial Site-specific training.

This project is being conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to Site contaminants exists, will only be allowed access after proper training and medical documentation is provided to the SM. These records will be maintained by the SM and copies should be provided to the SM prior to mobilization for project activities.

The following will be used for guidance in revising these preliminary zone designations, if necessary:

- Support Zone (SZ) - The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.
- Contamination Reduction Zone (CRZ) - The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for Exclusion Zone entry and egress in addition to access for heavy equipment and emergency support services.
- Exclusion Zone (EZ) - All activities that may involve exposure to Site contaminants, hazardous materials and/or conditions should be considered an exclusion zone. This zone will be clearly delineated by cones, tapes or other means. The SM may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the Site SM allowing adequate space for the activity to be completed, field members and emergency equipment.

8.2 Contamination Control

8.2.1 Personnel Decontamination Station

Personnel hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.

8.2.2 Minimization of Contact With Contaminants

During completion of all Site activities, personnel should attempt to minimize the degree of contact with contaminated materials. This involves a conscientious effort to keep "clean" during Site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination. This may ultimately minimize the degree of decontamination required and the generation of waste materials from Site operations.

Field procedures will be developed to control over spray and runoff and to ensure that unprotected personnel working nearby are not affected.

8.2.3 Personnel Decontamination Sequence

Consideration will be given to prevailing wind directions so that the decontamination line, the support zone, and contamination reduction zone exit is upwind from the exclusion zone and the first station of the decontamination line. Decontamination will be performed by removing all PPE used in EZ and placing in drums/trash cans within the

CRZ. Baby wipes will be available for washing hands and face after PPE removal. In addition, brushes will be available for removing mud/soil from boots.

8.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination, wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment.

If the injured person can be moved, he/she will be moved to the EZ boundary and decontaminated by Site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury) provisions shall be made to ensure that emergency response personnel will be able to respond to victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with poly to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent chemical data.

8.2.5 Heavy Equipment Decontamination

Decontamination of chemically contaminated heavy equipment will be accomplished using high-pressure steam or dry decontamination with brushes and shovels. Decontamination shall take place on a decontamination pad and all liquids used in the decontamination procedure will be collected. Vehicles or equipment brought into an exclusion zone will be treated as contaminated, and will be decontaminated prior to removal. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with federal, state and local regulations. Personnel performing this task will wear the proper PPE as prescribed in Table 2.

8.3 Communications

The following communications equipment shall be specified as appropriate:

- Telephones - A cellular telephone will be located in the SZ for communication with emergency support services/facilities and the home office. Personnel in the EZ can carry cellular telephones for communication as well if Level D PPE has been determined to be appropriate.
- Hand Signals - Hand signals shall be used by field teams along with the buddy system. They shall be known by the entire field team before operations commence and their use covered during Site-specific training. Typical hand signals are the following:

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip on a partner's wrist or placement of both hands around a partner's waist	Leave area immediately, no debate
Hands on top of head	Need assistance
Thumbs up	Okay, I’m all right, I understand
Thumbs down	No, negative

9.0 MEDICAL SURVEILLANCE PROCEDURES

All personnel performing field work where potential exposure to contaminants exists at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f) and, where applicable, expanded health standards.

9.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the SM before a worker can enter the exclusion zone. The medical release shall consider the type of work to be performed and the required PPE. The examination will be conducted annually at a minimum. Additional medical testing may be required by the PESM in consultation with the SM if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other Site conditions warrant further medical surveillance.

10.0 SAFETY CONSIDERATIONS

10.1 High Loss Potential Hazards

Activities to be conducted at the Site may involve operations that have the potential for a serious injury to occur, to include the following:

- Lockout/Tagout
- Heavy Equipment Operation
- Excavation and Trenching
- Line Breaking

10.1.1 Lockout-Tagout

Site personnel will assume that all electrical equipment at surface and overhead locations is energized, until the equipment has been designated as de-energized by a qualified representative of the remedial contractor. If the equipment cannot de-energized, work will stop and the SM will consult with the PM, PESM, and Contractor. All applications of lockout devices shall be accomplished using procedures equivalent to those shown in The Control of Hazardous Energy Program "Lockout/Tagout" included in Appendix E.

All power lines which have been de-energized must be locked out, such that the lines cannot be energized when personnel are working near them. The lines shall not be unlocked and re-energized until both AKRF and the Contractor confirm that work is completed work in the area and that all personnel are clear of the area. The lockout procedures must be equivalent in effectiveness to those found in Appendix E.

If power lines cannot be de-energized, the SM will consult with ConEd to determine the safe working distance from the energized line. Work tasks will only commence after determination that a safe working distance can be maintained and all personnel working in the area have been informed of the limitation. Caution tape, other warning devices or physical barriers will be placed at the perimeter to the safe zone.

10.1.2 Heavy Equipment Operation

Working with large motor vehicles and heavy equipment (e.g., drill rig, excavator) could be a major hazard at this Site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, or overturning of vehicles. Vehicle and heavy equipment design and operation will be in accordance with 29 CFR, Subpart O, 1926.600 through 1926.602. In particular, the following precautions will be utilized to help prevent injuries/accidents:

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked at the beginning of each shift
- The operation of heavy equipment will be limited to authorized personnel specifically trained in its operation. The contractor must provide this information to the SM.
- The operator will use the safety devices provided with the equipment, including seat belts. Backup warning indicates and horns will be operable at all times.
- While in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- A large construction motor vehicle will not be backed up unless it has a reverse signal alarm audible above the surrounding noise level; or it is backed up only when an observer signals that it is safe to do so.
- Personnel directly involved in activity will avoid moving in the path of operating equipment or any portion thereof. Areas blinded from the operator's vision will be avoided. Spotters will be used when personnel may be in areas where the operator’s view is obstructed.
- Heavy equipment cabs or motor vehicles will be kept free of all nonessential items, and all loose items will be secured.
- Large construction motor vehicles and heavy equipment will be provided with necessary safety equipment (such as seat belts, roll-over protection, emergency shut-off in case of roll-over, backup warning lights and audible alarms).
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose.

10.1.3 Excavation and Trenching

The safety requirements for each excavation must be determined by a competent person who is capable of identifying existing and predictable hazards and work conditions that are unsanitary, hazardous, or dangerous to employees. The competent person must also have the authorization to take prompt corrective measures to eliminate unsatisfactory conditions.

The following are general requirements for work activities in and around excavations:

- Prior to initiation of any excavation activity, the location of underground installations will be determined. The New York State one-call center will be contacted by the excavation subcontractor a minimum of 72 hours prior to excavation activities.
- All excavations will be inspected daily and after each period of rain by the competent person prior to commencement of work activities. Evidence of cave-ins, slides, sloughing, or surface cracks or excavations will be cause for work to cease until necessary precautions are taken to safeguard employees.

- Excavated and other materials or equipment that could fall or roll into the excavation shall be placed at least 5 feet from the edge of the excavation.
- Spoils and heavy equipment will be kept at least 5 feet from the edge to prevent cave-in.
- Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with CFR 1926.652 (b) or (c) except when excavations are less than 5 feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in or excavation is made entirely in stable rock.
- Ladders will be positioned no further than 25 feet from the furthest individual working in the trench.

11.0 DISPOSAL PROCEDURES

All discarded materials, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard or causing litter to be left on Site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal. The waste management procedures as specified in the applicable specifications and RAWP-Phase 2 for activities being performed, shall be complied with.

12.0 EMERGENCY RESPONSE / CONTINGENCY PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on-Site, record keeping, and emergency Site evacuation procedures.

12.1 Responsibilities

12.1.1 Project Environmental and Safety Manager (PESM)

The PESM oversees and approves the Emergency Response/Contingency Plan and performs audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PESM acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

12.1.2 Site Manager (SM)

The SM is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The SM is required to immediately notify the PM and PESM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the PESM can notify OSHA within the required time frame. The PESM will be notified of all OSHA recordable injuries, fires, spills, releases or equipment damage in excess of $500 within 24 hours. The SM also serves as the Alternate Emergency Coordinator.

12.1.3 Emergency Coordinator

In the event of an emergency, the Emergency Coordinator, shall make contact with Local Emergency Response personnel. In these contacts, the Emergency Coordinator will inform response personnel about the nature of work on the Site, the type of contaminants and associated health or safety effects, and the nature of the emergency, particularly if it is related to exposure to contaminants.

The Emergency Coordinator shall review this plan and verify emergency phone numbers and identify hospital routes prior to beginning work on Site. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator shall implement the Emergency Response/Contingency Plan whenever conditions at the Site warrant such action.

12.1.4 Site Personnel

Site personnel are responsible for knowing the Emergency Response/Contingency Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a Site emergency.

12.2 Communications

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

The primary form of communication during an emergency between field groups in the exclusion zone and the Emergency Coordinator will be verbal communications. During an emergency situation, the lines will be kept clear so that instructions can be received by all field teams.

12.2.1 Telephone Communications

A cellular telephone will be available on-Site.

12.2.2 Hand Signals

Hand signals will be employed by downrange field teams where necessary for communication during emergency situations. Hand signals are found in Section 8.3.

12.3 Pre-Emergency Planning

Before the field activities begin, the local emergency response personnel may be notified by the Owner’s Representative or Owner’s Contractor of the schedule for field activities and about the materials that are thought to exist on the Site so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency.

In order to be able to deal with any emergency that might occur during remedial activities at the Site, emergency telephone numbers will be readily available in the SM vehicle or the Site office. These telephone numbers are presented Section 12.16. The Emergency phone numbers listed are preliminary and will be updated as needed prior to the start of work. Immediately prior to mobilization the SM shall verify all numbers, and document any changes in the Site Logbook. Hospital route maps will also be readily available in the SM vehicle and/or Site office.

12.4 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the SM immediately. First-aid equipment such as a first aid kit and disposable eye washes will be available on-Site.

During the Site safety briefing, project personnel will be informed of the location of the first aid station(s) that have been set up. In the case of a medical emergency, the SM will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious, i.e., the person can be moved without expert emergency medical personnel, he/she should be driven to a hospital by on-Site personnel. Directions to the hospital with a hospital route map are provided in Section 12.15. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the Site or before the injured person can be transported to the hospital, will be followed closely.

12.5 Emergency Site Evacuation Routes and Procedures

In the event of a Site Emergency that would require the evacuation of personnel, the Emergency Coordinator will immediately contact the Owner's Representative (this person may or may not be on-Site). All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial Site safety meeting. If an emergency occurs at the work area, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, immediate evacuation of all personnel is necessary due to an immediate or impending danger. The following evacuation procedures will be used:

- The Field Team Leader will initiate evacuation procedures by signaling to leave the Site or exclusion zone. The signal for Site evacuation will consist of three long blasts on an air horn.
- All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at a pre-determined meeting location. The designated meeting location for the Site will be at the sidewalk in front of the 142nd Street loading dock.
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts or missing persons determined immediately.
- The Field Team Leader will then give further instruction.

If any task covered under this HASP has the potential for significant hazards, evacuation drills will be performed as deemed necessary by the SM and PESM.

12.6 Fire Prevention and Protection

In the event of a fire or explosion, the work area will be evacuated immediately and the Emergency Coordinator will notify the local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases will be stored in flammable storage cabinets away from oxidizers when not in use.

- Oxygen will be stored at least 25 feet away from acetylene cylinders when not in use. Oxygen and acetylene may not be stored on welding carts.
- No smoking in the exclusion zone or any work area.
- No hot work without a properly executed hot work permit.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds Class A, B, and C located on all heavy equipment, in all trailers and near all hot work activities.
- Monthly inspections of all fire extinguishers.

The Contractor is responsible for the maintenance of fire prevention and/or control equipment and the control of fuel source hazards.

12.7 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet will be followed as necessary. If first aid or emergency medical treatment is necessary, the Emergency Coordinator will contact the appropriate emergency facilities. All chemical exposure incidents must be reported in writing to the PESM. If a member of the field crew demonstrates symptoms of chemical exposure, another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the SM (via voice and hand signals) of the chemical exposure. The SM should contact the appropriate emergency response agency. The procedures outlined below should be followed:

SKIN AND EYE CONTACT:	Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs.
INHALATION:	Move to fresh air. Decontaminate and transport to hospital or local medical provider.
INGESTION:	Decontaminate and transport to emergency medical facility.
PUNCTURE WOUND OR LACERATION:	Decontaminate and transport to emergency medical facility.

12.8 Personal Injury

In case of personal injury at the Site, the following procedures should be followed:

- Another team member (buddy) should signal the Field Team Leader that an injury has occurred.
- A field team member trained in first aid can administer treatment to an injured worker.

- If deemed necessary, the victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- The Field Team Leader or FSO is responsible for making certain that an Incident Report Form is completed. This form is to be submitted to the AKRF HSO. Follow-up action should be taken to correct the situation that caused the accident.
- Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.
- A first-aid kit, eye-wash, and blood-born pathogens kit will be kept on-Site during the field activities.

12.9 Decontamination During Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or postponed. The SM or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on Site, a plastic barrier between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

12.10 Accident/Incident Reporting

Written confirmation of verbal reports of injuries or other emergencies are to be submitted to the PESM within 24 hours. The accident/incident report form is found in Appendix F.

In addition to the incident reporting procedures and actions described in the HASP, the SM will coordinate with the Owner’s Representative for reporting and notification for all environmental, safety, and other incidents.

If necessary, a Site safety briefing will be held to discuss accidents/incidents and any findings from the investigation of the incident. The HASP will be modified if deemed necessary by the PESM.

12.11 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, absorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An exclusion zone of 50-100 feet around the spill area should be established depending on the size and type of the spill.

The following steps should be taken by the Emergency Coordinator:

1. Determine the nature, identity and amounts of major spill components;
2. Make sure all unnecessary persons are removed from the spill area;
3. Notify appropriate response teams and authorities;
4. Use proper PPE in consultation with the SM;
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use nonsparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.);
6. If possible, try to stop the leak with appropriate material;
7. Remove all surrounding materials that can react or compound with the spill; and,
8. Notify the Owner and determine who will report the spill to the NYSDEC Hotline, as applicable.

12.12 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-Site:

- Industrial first aid kit
- Portable eye washes
- Fire extinguishers (one per vehicle and heavy equipment)
- Absorbent material

12.13 Postings

The following information shall be posted or be readily visible and available at conspicuous locations throughout the Site:

- Emergency telephone numbers
- Hospital Route Map

12.14 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers
- Refilling medical supplies
- Recharging eyewashes and/or showers
- Replenishing spill control supplies
- Replacing used air horns

12.15 Hospital Directions

The address and directions to the nearest hospital to the project Site are provided below:

Hospital Name:	Harlem Hospital Center

Phone Number:	(212) 939-1000
Address/Location:	506 Lenox Avenue – New York, New York. (Lenox Ave between 135th Street and 136th Street)
Directions:	RIGHT from Site onto West 142nd Street RIGHT on 5th Avenue to *West 135th Street* RIGHT onto *135th Street* RIGHT onto *Lenox Avenue* The hospital will be on the right

A map showing the Site evacuation meeting point and driving route to the hospital is provided as Figure 2.

12.16 Emergency Contacts

Company	Individual Name	Title	Contact Number
AKRF	Marc Godick	Project Director	914-922-2356 (office)
	Kathleen Brunner	Project Manager	646-388-9525 (office) 917-612-3990 (cell)
	Steve Grens	Site Managers	203-810-6513 (cell)
	Greg Baird		646-823-5477 (cell)
2350 Fifth Avenue Corporation	Joseph Karten	Client Representative	212-289-4551
NYSDEC	Bryan Wong	Project Manager	718-482-4905
NYSDOH	Dawn Hettrick	Project Manager	518-402-7880
Driller	To Be Determined		
Excavator	To Be Determined		
Ambulance, Fire Department & Police Department	-	-	911
NYSDEC Spill Hotline	-	-	800-457-7362

13.0 TRAINING

13.1 General Health and Safety Training

In accordance with 29 CFR 1910.120, hazardous waste Site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste Site operations unless otherwise noted in the above reference. At a minimum, the training will have consisted of instruction in the topics outlined in the standard. Personnel who have not met the requirements for initial training shall not be allowed to work in any Site activities during which they may be exposed to hazards (chemical or physical). Proof of training shall be submitted to the SM prior to the start of field activities. Other personnel involved in ancillary, or support activities, including transportation of material for disposal, shall have the proper training as required by Federal, State and local regulations.

13.2 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of all hazardous waste Site field personnel in order to maintain their qualifications for fieldwork. The training will cover a review of 29 CFR 1910.120 requirements and related company programs and procedures.

13.3 Supervisor Training

Personnel acting in a supervisory capacity shall have received 8 hours of instruction in addition to the initial 40 hours training.

13.4 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the Site operations. The training will cover Site and facility layout, hazards and emergency services, and all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. The training should include the following topics:

- General requirements of this HASP;
- Review of the scope of work;
- Names of personnel responsible for Site safety and health;
- Potential hazards and acute effects of compounds present at the Site;
- Air monitoring procedures;
- Proper use of personal protective equipment;
- Safe use of engineering controls and equipment on the Site;
- Decontamination procedures; and
- Work practices by which the employee can minimize risk from hazards. This may include a specific review of heavy equipment safety, safety during inclement weather, changes in common escape rendezvous point, Site security measures, or other Site-specific issues that need to be addressed before work begins.

Personnel that have not received Site-specific training will not be allowed in the work zone.

13.5 On-Site Safety Briefings

Project personnel and visitors will be given health and safety briefings periodically by the SM to assist Site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the Site's environmental conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity to periodically update the crews on monitoring results.

13.6 First Aid and CPR

The SM will identify those individuals requiring first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association.

14.0 LOGS, REPORTS, AND RECORD KEEPING

The following is a summary of required health and safety logs, reports, and record keeping.

14.1 Medical and Training Records

Copies or verification of training (40 hour, 8 hour, supervisor, and Site-specific training) and medical clearance for hazardous waste Site work and respirator use will be maintained by the SM.

14.2 On-Site Log

A log of personnel on-Site each day will be kept by the SM in a field logbook.

14.3 Exposure Records

The SM will periodically notify the PESM of exposure monitoring results that require workers to upgrade to Level C. All personal monitoring results, laboratory reports, calculations and air sampling data sheets will be maintained by the SM during Site work.

14.4 Accident/Incident Reports

The incident reporting and investigation during Site work will be completed using an Incident Report Form, provided in Appendix F.

14.5 OSHA Form 300

An OSHA Form 300 will be kept at the home office. All recordable injuries or illnesses will be recorded on this form. The Incident Report Form in Appendix F meets the requirements of the OSHA Form 101(supplemental record) and must be must be copied to the home office for inclusion on the OSHA Form 300 for all recordable injuries or illnesses.

14.6 Hazard Communication Program/MSDS

Material Safety Data Sheets (MSDSs) will be obtained for applicable substances and included in the Site hazard communication file. The hazard communication program will be maintained on-Site in accordance with 29 CFR 1910.1200.

14.7 Work Permits

All work permits, including lockout/tagout, sidewalk permits, and debris container permits (if necessary) will be maintained in the project files. Copies of the work permits shall also be provided to the SM, and the Owner’s Representative.

15.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of this HASP for the Site at 2350 Fifth Avenue, New York, NY. It is maintained on-Site by the SM as a project record. Each field team member shall sign this section after training in the contents of this HASP has been completed. Site workers must sign this form after Site-specific training is completed and before being permitted to work on-Site.

I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I have also completed Site-specific training for the work detailed in the project Specifications. I will comply with the provisions contained therein.

NAME (PRINT AND SIGN)	DATE

I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I have also completed Site-specific training for the work detailed in the project Specifications. I will comply with the provisions contained therein.

NAME (PRINT AND SIGN)	DATE

I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I have also completed Site-specific training for the work detailed in the project Specifications. I will comply with the provisions contained therein.

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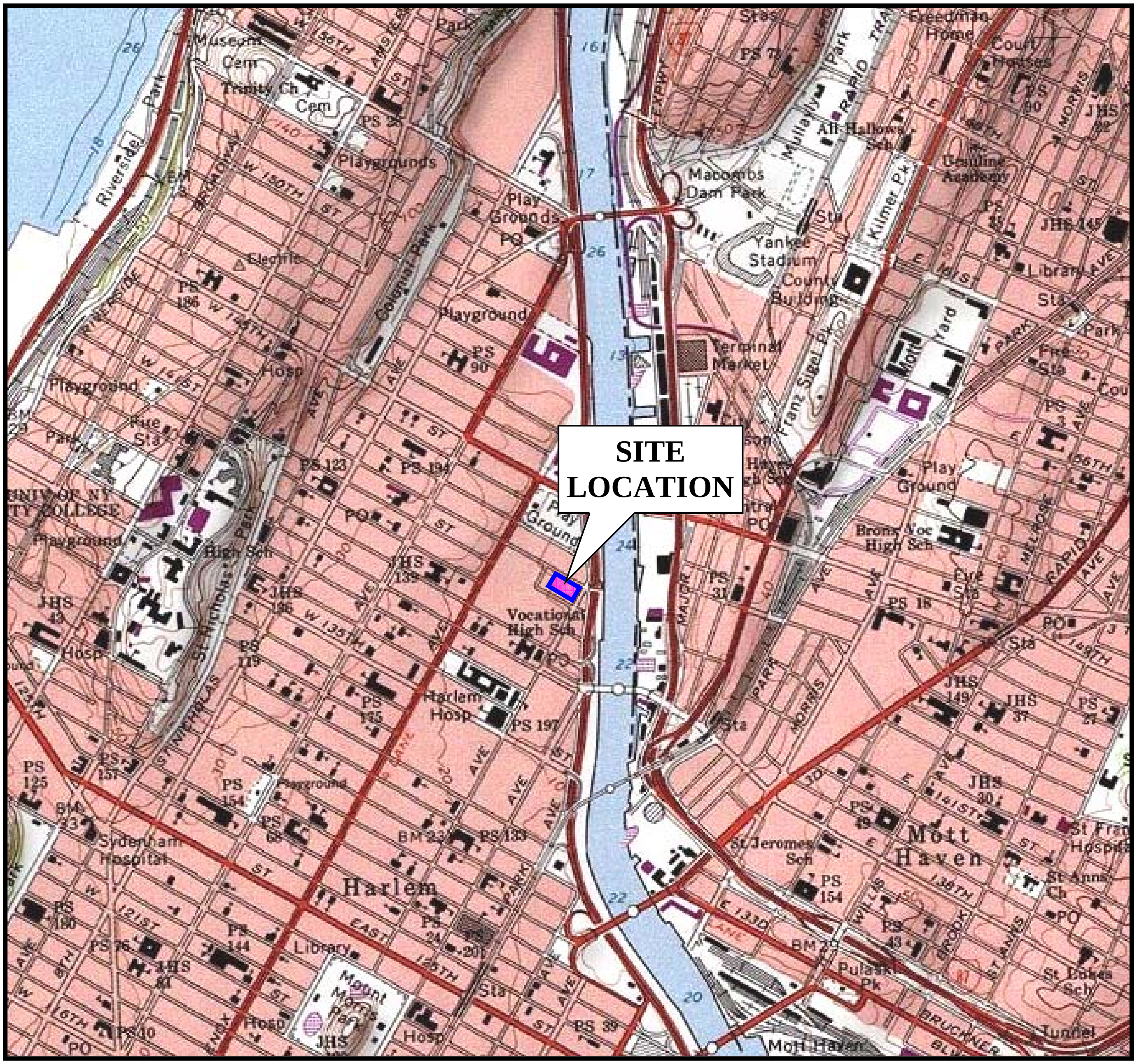
I have read, or have been informed of, the Health and Safety Plan and understand the information presented. I have also completed Site-specific training for the work detailed in the project Specifications. I will comply with the provisions contained therein.

NAME (PRINT AND SIGN)	DATE

FIGURES



SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’

N

SOURCE:

7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: CENTRAL PARK, NY 1995

2350 FIFTH AVENUE
NEW YORK, NEW YORK

PROJECT SITE LOCATION

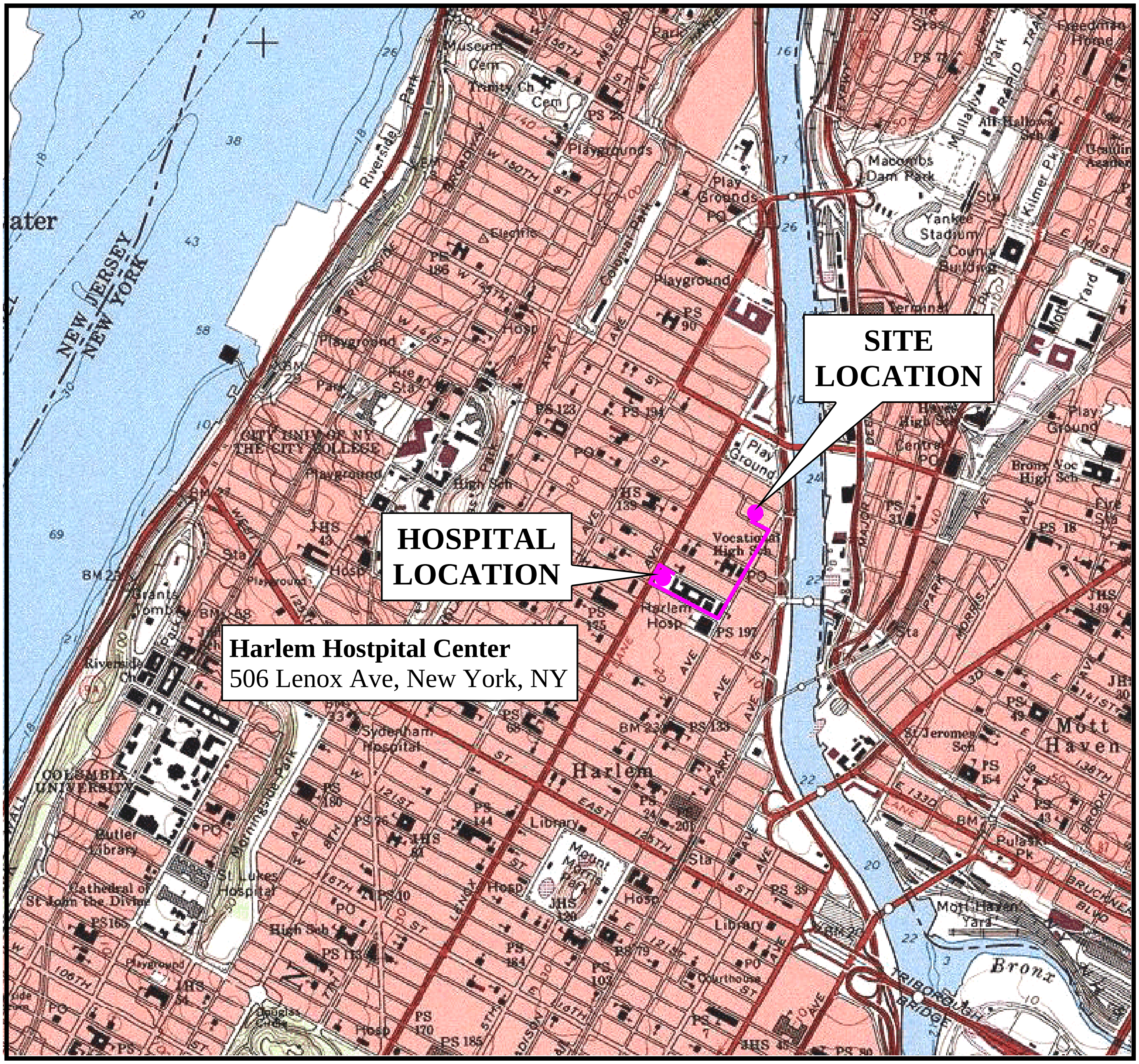
AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

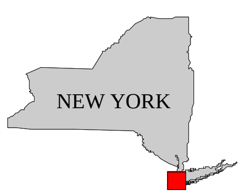
DATE **1.20.11**

PROJECT No. **08010**

SCALE **as shown**

FIGURE **1**





SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’

N

SOURCE:
7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: CENTRAL PARK, NY 1995

2350 FIFTH AVENUE
NEW YORK, NEW YORK

HOSPITAL LOCATION MAP

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	**10.30.07**
PROJECT No.	**08010**
SCALE	**AS SHOWN**
FIGURE	**2**

TABLES

TABLE 1
CHEMICAL DATA

Chemical	**REL/PEL/STEL (ppm)**	**Health Hazards**
Tetrachloroethene	PEL = 100 ppm Ceiling = 200 ppm Five minute max peak in any 3 hours = 300 ppm	High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.
Trichloroethene	PEL = 100 ppm Ceiling = 200 ppm Five minute max peak in any 3 hours = 300 ppm	Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating. Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage. Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death. Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear. Skin contact with trichloroethylene for short periods may cause skin rashes.
Dichloroethene	PEL = 100 ppm Ceiling = 200 ppm Five minute max peak in any 3 hours = 300 ppm	Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you. When animals breathed high levels of *trans*-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high levels of *trans*-1,2-dichloroethene had damaged hearts. Animals that ingested extremely high doses of *cis*- or *trans*-1,2-dichloroethene died. Lower doses of *cis*-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver. The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known.
Vinyl Chloride	PEL = 1 ppm Ceiling = 5 ppm	Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer.
Particulate	PEL = 15 mg/m^3 (total) PEL = 5 mg/m^3(respirable)	Irritation eyes, skin, throat, upper respiratory system.
Carbon Monoxide	REL = 35 ppm PEL = 50 ppm Ceiling = 200 ppm	Headache, dizziness, nausea, weakness, loss of muscle control, shortness of breath, chest tightness, visual changes, sleepiness, fluttering of the heart, redness of the skin, confusion, slowed reaction time, altered driving skills, suffocation, brain damage, death.
Comments: REL = NIOSH Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit STEL = OSHA Short Term Exposure Limit		

APPENDIX A

ASTDR CHEMICAL FACT SHEETS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE

CAS # 127-18-4

Agency for Toxic Substances and Disease Registry ToxFAQs September 1997

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethylene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

Division of Toxicology ToxFAQs™ July 2003

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

1,1-DICHLOROETHENE
CAS # 75-35-4

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1995**

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1-dichloroethene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to 1,1-dichloroethene occurs mainly in the workplace. Breathing high levels of 1,1-dichloroethene can affect the liver, kidney, and central nervous system. This chemical has been found in at least 515 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is 1,1-dichloroethene?
(Pronounced 1,1-dī′klôr′ō ĕth′ēn)

1,1-Dichloroethene is an industrial chemical that is not found naturally in the environment. It is a colorless liquid with a mild, sweet smell. It is also called vinylidene chloride.

1,1-Dichloroethene is used to make certain plastics, such as flexible films like food wrap, and in packaging materials. It is also used to make flame retardant coatings for fiber and carpet backings, and in piping, coating for steel pipes, and in adhesive applications.

What happens to 1,1-dichloroethene when it enters the environment?

- 1,1-Dichloroethene enters the environment from industries that make or use it.
- 1,1-Dichloroethene evaporates very quickly from water and soil to the air.
- In the air, it takes about 4 days for it to break down.
- 1,1-Dichloroethene breaks down very slowly in water.
- It does not accumulate very much in fish or birds.
- In soil, 1,1-dichloroethene is slowly transformed to other less harmful chemicals.

How might I be exposed to 1,1-dichloroethene?

- Workers may be exposed in industries that make or use 1,1-dichloroethene (these industries are mainly in Texas and Louisiana).
- Food that is wrapped in plastic wrap may contain very low levels of 1,1-dichloroethene. The government controls these levels to prevent harm to your health.
- A small percentage (3%) of the drinking water supplies may contain very low levels of 1,1-dichloroethene.
- Air near factories that make or use 1,1-dichloroethene and air near hazardous waste sites may contain low levels of it.

How can 1,1-dichloroethene affect my health?

The main effect from breathing high levels of 1,1-dichloroethene is on the central nervous system. Some people lost their breath and fainted after breathing high levels of the chemical.

Breathing lower levels of 1,1-dichloroethene in air for a long time may damage your nervous system, liver, and lungs. Workers exposed to 1,1-dichloroethene have reported a loss in liver function, but other chemicals were present.

Animals that breathed high levels of 1,1-dichloroethene had damaged livers, kidneys, and lungs. The offspring of some of the animals had a higher number of birth defects. We do not know if birth defects occur when people are exposed to 1,1-dichloroethene.

Animals that ingested high levels of 1,1-dichloroethene had damaged livers, kidneys, and lungs. There were no birth defects in animals that ingested the chemical.

Spilling 1,1-dichloroethene on your skin or in your eyes can cause irritation.

How likely is 1,1-dichloroethene to cause cancer?

The Environmental Protection Agency (EPA) has determined that 1,1-dichloroethene is a possible human carcinogen.

Studies on workers who breathed 1,1-dichloroethene have not shown an increase in cancer. These studies, however, are not conclusive because of the small numbers of workers and the short time studied.

Animal studies have shown mixed results. Several studies reported an increase in tumors in rats and mice, and other studies reported no such effects.

Is there a medical test to show whether I've been exposed to 1,1-dichloroethene?

Tests are available to measure levels of 1,1-dichloroethene in breath, urine, and body tissues. These tests are not usually available in your doctor's office. However, a sample taken in your doctor's office can be sent to a special laboratory if necessary.

Because 1,1-dichloroethene leaves the body fairly quickly, these methods are useful only for finding exposures that have occurred within the last few days. These tests can't tell you if adverse health effects will occur from exposure to 1,1-dichloroethene.

Has the federal government made recommendations to protect human health?

The EPA has set a limit in drinking water of 0.007 parts of 1,1-dichloroethene per million parts of drinking water (0.007 ppm). EPA requires that discharges or spills into the environment of 5,000 pounds or more of 1,1-dichloroethene be reported.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 1 ppm of 1,1-dichloroethene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) currently recommends that workers breathe as little 1,1-dichloroethene as possible.

Glossary

Carcinogen: A substance that can cause cancer.
CAS: Chemical Abstracts Service.
Ingesting: Taking food or drink into your body.
ppm: Parts per million.
Tumor: An abnormal mass of tissue.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for 1,1-dichloroethene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

VINYL CHLORIDE

CAS # 75-01-4

Division of Toxicology and Environmental Medicine ToxFAQs™ **July 2006**

This fact sheet answers the most frequently asked health questions (FAQs) about vinyl chloride. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to vinyl chloride occurs mainly in the workplace. Breathing high levels of vinyl chloride for short periods of time can cause dizziness, sleepiness, unconsciousness, and at extremely high levels can cause death. Breathing vinyl chloride for long periods of time can result in permanent liver damage, immune reactions, nerve damage, and liver cancer. This substance has been found in at least 616 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is vinyl chloride?

Vinyl chloride is a colorless gas. It burns easily and it is not stable at high temperatures. It has a mild, sweet odor. It is a manufactured substance that does not occur naturally. It can be formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC). PVC is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride.

What happens to vinyl chloride when it enters the environment?

❏ Liquid vinyl chloride evaporates easily. Vinyl chloride in water or soil evaporates rapidly if it is near the surface.
❏ Vinyl chloride in the air breaks down in a few days to other substances, some of which can be harmful.
❏ Small amounts of vinyl chloride can dissolve in water.
❏ Vinyl chloride is unlikely to build up in plants or animals that you might eat.

How might I be exposed to vinyl chloride?

❏ Breathing vinyl chloride that has been released from plastics industries, hazardous waste sites, and landfills.
❏ Breathing vinyl chloride in air or during contact with your skin or eyes in the workplace.
❏ Drinking water from contaminated wells.

How can vinyl chloride affect my health?

Breathing high levels of vinyl chloride can cause you to feel dizzy or sleepy. Breathing very high levels can cause you to pass out, and breathing extremely high levels can cause death.

Some people who have breathed vinyl chloride for several years have changes in the structure of their livers. People are more likely to develop these changes if they breathe high levels of vinyl chloride. Some people who work with vinyl chloride have nerve damage and develop immune reactions. The lowest levels that produce liver changes, nerve damage, and immune reaction in people are not known. Some workers exposed to very high levels of vinyl chloride have problems with the blood flow in their hands. Their fingers turn white and hurt when they go into the cold.

The effects of drinking high levels of vinyl chloride are unknown. If you spill vinyl chloride on your skin, it will cause numbness, redness, and blisters.

Animal studies have shown that long-term exposure to vinyl chloride can damage the sperm and testes.

How likely is vinyl chloride to cause cancer?

The U.S. Department of Health and Human Services has determined that vinyl chloride is a known carcinogen. Studies in workers who have breathed vinyl chloride over many years showed an increased risk of liver, brain, lung cancer, and some cancers of the blood have also been observed in workers.

How can vinyl chloride affect children?

It has not been proven that vinyl chloride causes birth defects in humans, but studies in animals suggest that vinyl chloride might affect growth and development. Animal studies also suggest that infants and young children might be more susceptible than adults to vinyl chloride-induced cancer.

How can families reduce the risk of exposure to vinyl chloride?

Tobacco smoke contains low levels of vinyl chloride, so limiting your family's exposure to cigarette or cigar smoke may help reduce their exposure to vinyl chloride.

Is there a medical test to show whether I've been exposed to vinyl chloride?

The results of several tests can sometimes show if you have been exposed to vinyl chloride. Vinyl chloride can be measured in your breath, but the test must be done shortly after exposure. This is not helpful for measuring very low levels of vinyl chloride.

The amount of the major breakdown product of vinyl chloride, thiodiglycolic acid, in the urine may give some information about exposure. However, this test must be done shortly after exposure and does not reliably indicate the level of exposure.

Has the federal government made recommendations to protect human health?

Vinyl chloride is regulated in drinking water, food, and air. The EPA requires that the amount of vinyl chloride in drinking water not exceed 0.002 milligrams per liter (mg/L) of water.

The Occupational Safety and Health Administration (OSHA) has set a limit of 1 part vinyl chloride per 1 million parts of air (1 ppm) in the workplace.

The Food and Drug Administration (FDA) regulates the vinyl chloride content of various plastics. These include plastics that carry liquids and plastics that contact food. The limits for vinyl chloride content vary depending on the nature of the plastic and its use.

Reference

Agency for Toxic Substances and Disease Registry (ATSDR). 2006. Toxicological Profile for Vinyl Chloride (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CARBON MONOXIDE

CAS # 630-08-0

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2009

This fact sheet answers the most frequently asked health questions (FAQs) about carbon monoxide. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: All people are exposed to carbon monoxide at varying levels by breathing in air. Breathing in high amounts of carbon monoxide may be life-threatening. People with ongoing cardiovascular and/or respiratory disease may be particularly vulnerable to carbon monoxide. This chemical has been found in at least 12 of the 1,699 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is carbon monoxide?

Carbon monoxide is a colorless, nonirritating, odorless, tasteless gas that is found in both indoor and outdoor air. It is made when carbon fuel is not burned completely and is produced from both human-made and natural sources. The most important human-made source is from exhaust of automobiles.

Carbon monoxide levels in indoor air vary depending on the presence of appliances such as kerosene and gas space heaters, furnaces, wood stoves, generators and other gasoline-powered equipment. Tobacco smoke also contributes to indoor air levels.

Industry uses carbon monoxide to manufacture compounds such as acetic anhydride, polycarbonates, acetic acid and polyketone.

What happens to carbon monoxide when it enters the environment?

❑ Carbon monoxide mainly enters the environment from natural sources and from the burning of fuel oils.
❑ It stays in the air for about 2 months.
❑ It is broken down in air by reacting with other chemicals and is changed into carbon dioxide.
❑ It is broken down in soil by microorganisms into carbon dioxide.
❑ It does not build up in plants or in the tissues of animals.

How might I be exposed to carbon monoxide?

❑ Breathing in gas from improperly installed/filtered stoves, furnaces, heaters and generators.
❑ Breathing air containing automobile exhaust.
❑ Breathing air containing cigarette smoke.
❑ Working in industries that burn gas and coal, working in smoke-filled places, or working in places where there are high amounts of vehicular exhaust.

How can carbon monoxide affect my health?

Exposure to high levels of carbon monoxide can be life-threatening. Carbon monoxide poisoning is the leading cause of death due to poisoning in the United States.

Headache, nausea, vomiting, dizziness, blurred vision, confusion, chest pain, weakness, heart failure, difficulty breathing, seizures and coma have been reported in people inhaling carbon monoxide. People who have heart or lung disease are more vulnerable to the toxic effects of carbon monoxide.

How likely is carbon monoxide to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified carbon monoxide for human carcinogenicity.

How can carbon monoxide affect children?

Breathing high levels of carbon monoxide during pregnancy can cause miscarriage. Breathing lower levels of carbon monoxide during pregnancy can lead to slower than normal mental development of your child.

In animal studies, exposure to carbon monoxide during pregnancy had effects on birth weight, the heart, the central nervous system, and development.

There is evidence that children who have asthma may be more vulnerable to respiratory effects associated with exposure to carbon monoxide.

How can families reduce the risk of exposure to carbon monoxide?

❑ Make sure appliances that burn natural gasoline, kerosene, or other fuels are properly installed and vented.
❑ Have appliances routinely maintenanced.
❑ Always follow the manufacturer's recommendations on installing and using these devices.
❑ Do not use portable propane heaters in enclosed indoor settings such as campers and tents.
❑ Do not let your car run idle for a long period of time in your garage.
❑ Carbon monoxide is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
❑ Have carbon monoxide and smoke detectors installed in your home.

Is there a medical test to determine whether I've been exposed to carbon monoxide?

Medical devices called carbon monoxide-oximeters that are found in clinical laboratories or hospitals can estimate the level of carbon monoxide in blood by a simple test.

Has the federal government made recommendations to protect human health?

The EPA has established an environmental limit of 10 mg/m^3 (9 ppmv) of carbon monoxide in air averaged over 8 hours and not to be exceeded more than once per year.

The Occupational Safety and Health Administration (OSHA) has set a legal limit of 55 mg/m^3 (50 ppmv) for carbon monoxide in air for an 8-hour work day, 40 hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2009. Toxicological Profile for Carbon Monoxide (Draft for Public Comment). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-62, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX B

COLD STRESS PROGRAM

1.0 PURPOSE & INTRODUCTION

The purpose of this document is to educate the employee about exposure to cold environments and the effects of hypothermia and other cold-related injuries. Through proper use of Personal Protective Equipment (PPE); engineering and administrative controls; and education, cold injury, both to the extremities and the body's core temperature, can be prevented.

2.0 SCOPE

This program is intended for use by employees engaged in work with the potential for exposure to cold environments. Training will be provided annually to all those potentially affected prior to the start of field work potentially involving cold exposure.

3.0 WORKING IN COLD ENVIRONMENTS

3.1 Metabolic Responses

The human body is designed to function best at a rectal temperature of 99-100F. The body maintains this temperature in two ways: by gaining heat from food and muscular work; or, by losing it through radiation and sweating. By constricting blood vessels of the skin and/or shivering, the body uses its first line of cold defense.

Temperature control of the body is better understood by dividing the body into two main parts: the shell; and, the core. The shell is comprised of the skin, capillaries, nerves, muscles and fat. Other internal organs such as the heart, lungs, brain and kidneys make up the core.

During exposure to cold, the skin is first affected. Blood in the peripheral capillaries is cooled, sending a signal to a portion of the brain called the hypothalamus. Regulating body temperature is one of the many basic body functions of the hypothalamus. Acting like a thermostat, adjustments are performed in order to maintain normal body temperatures. When a chill signal is received, two processes are begun by the hypothalamus: conserve heat already in the body; and, generate new heat.

Heat conservation is performed through constriction of the blood vessels in the skin (shell), thus reducing heat loss from the shell and acting as an insulator for the core. Sweat glands are also inhibited, thus preventing heat loss by evaporation.

Additional fuel for the body is provided in the form of glucose. Glucose causes the heart to beat faster, sending oxygen and glucose-rich blood to the tissue where needed. In an attempt to produce heat, the muscles rapidly contract. This process is better known as "shivering", and generates heat similarly to that created by strenuous activity, raising the body's metabolic rate.

During physical activity and fatigue, the body is more prone to heat loss. As exhaustion approaches, blood vessels can suddenly enlarge, resulting in rapid loss of heat. Exposure to extreme cold causes nerve pulses to be slowed, resulting in fumbling, sluggish and clumsy reactions.

4.0 COLD INJURIES

Cold injuries are classified into two categories: local; or, general. Local injuries include frostbite, frostnip, chilblain and trenchfoot. General injuries include hypothermia and blood vessel abnormalities (genetically or chemically induced). Factors contributing to cold injury include: exposure to humidity and high winds; contact with wetness or metal; inadequate clothing; age; and, general health. Allergies, vascular disease, excessive smoking and/or drinking, and certain drugs and medicines are physical conditions that can compound the effects of exposure to a cold environment.

4.1 Hypothermia

Hypothermia is a condition of reduced body temperature. Most cases develop in air temperatures between 30-50°F, not taking wind-chill factor in consideration.

Symptoms of hypothermia are uncontrolled shivering and the sensation of cold. The heartbeat slows and sometimes becomes irregular, weakening the pulse and changing blood pressure. Changes in the body chemistry cause severe shaking or rigid muscles; vague or slow slurred speech; memory lapses; incoherence; and drowsiness. Cool skin, slow irregular breathing, low blood pressure, apparent exhaustion, and fatigue after rest can be seen before complete collapse.

As the core temperature drops, the victim can become listless, confused, and make little or no effort to keep warm. Pain in the extremities can be the first warning of dangerous exposure to cold. Severe shivering must be taken as a sign of danger. At a core body temperature of about 85°F, serious problems develop due to significant drops in blood pressure, pulse rate and respiration. In some cases, the victim may die.

Sedative drugs and alcohol increase the risk of hypothermia. Sedative drugs interfere with the transmission of impulses to the brain. Alcohol dilates blood vessels near the skin's surface, increasing heat loss and lowering body temperature.

Table I provides information on the onset of hypothermia and metabolic responses at different body temperatures.

4.2 Raynaud's Phenomenon

Raynaud's Phenomenon is the abnormal constriction of the blood vessels of the fingers on exposure to cold temperatures, resulting in blanching of the ends of the fingers. Numbness, itching, tingling or a burning sensation may occur during related attacks. The disease is also associated with the use of vibrating hand tools in a condition sometimes called White Finger Disease. Persistent cold sensitivity, ulceration and amputations can occur in severe cases.

4.3 Acrocyanosis

Acrocyanosis is caused by exposure to the cold and reduces the level of hemoglobin in the blood, resulting in a slightly blue, purple or gray coloring of the hands and/or feet.

4.4 Thromboangitis Obliterans

Thromboangitis obliterans is clotting of the arteries due to inflammation and fibrosis of connective tissue surrounding medium-sized arteries and veins. This is one of the many disabling diseases that can also result from tobacco use. Gangrene of the affected limb often requires amputation.

4.5 Frostbite

Frostbite is the freezing of the body tissues due to exposure to extremely low temperatures, resulting in damage to and loss of tissue. Frostbite occurs because of inadequate circulation and/or insulation, resulting in freezing of fluids around the cells of the body tissues. Most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Frostbite can affect outer layers of skin or can include the tissues beneath. Damage can be serious, with permanent loss of movement in the affected parts, scarring, necrotic tissue, and amputation are all possibilities. Skin and nails that slough off can grow back.

The freezing point of the skin is about 30F. As wind velocity increases, heat loss is greater and frostbite will set in more rapidly.

There are three degrees of frostbite: first degree, freezing without blistering and peeling; second degree, freezing with blistering and peeling; and, third degree, freezing with death of skin tissues and possibly the deeper tissues.

The following are symptoms of frostbite:

1. Skin changes color to white or grayish-yellow, progresses to reddish-violet, and finally turns black as the tissue dies;
2. Pain may be felt at first, but subsides;
3. Blisters may appear;
4. Affected part is cold and numb.

The first symptom of frostbite is usually an uncomfortable sensation of coldness followed by numbness. Tingling, stinging, cramping and aching feelings will be experienced by the victim. Frostbite of the outer layer of the skin has a waxy or whitish look and is firm to the touch. Cases of deep frostbite cause severe injury. The tissues are cold, pale and solid. The victim is often unaware of the frostbite until someone else observes these symptoms. It is therefore important to use the "buddy system" when working in cold environments, so that any symptoms of overexposure can be noted.

Table II describes the cooling power of wind on exposed flesh. This information can be used as a guide for determining equivalent chill temperatures when the wind is present in cold environments.

4.6 Trench Foot and Chilblains

Trench foot is swelling of the foot caused by long, continuous exposure to cold without freezing, combined with persistent dampness or immersion in water. Edema (swelling), tingling, itching and severe pain occurs, followed by blistering, necrotic tissue and ulcerations. Chilblains have similar symptoms as trench foot, except that other areas of the body are affected.

4.7 Frostnip

Frostnip occurs when the face or extremities are exposed to a cold wind, causing the skin to turn white.

5.0 PREVENTION OF COLD STRESS

Cold stress can be prevented through a combination of various factors: acclimation; water and salt displacement; medical screening; proper clothing selection; and training and education. Through the use of engineering controls, work practices, work/rest schedules, environmental monitoring and consideration of the wind-chill temperature, the employee can be protected.

5.1 Acclimation

Acclimation can be achieved to some degree. Sufficient exposure to cold causes the body to undergo changes to increase comfort and reduce the risk of injury. However, these changes are minor and require repeated exposure to cold and uncomfortable temperatures to induce them.

5.2 Dehydration

The dryness of cold air causes the body to lose a significant amount of water through the skin and lungs. It is essential that caffeine-free, non-alcoholic beverages be available at the workSite for fluid replacement. Dehydration also increases the risk of injury due to cold and affects blood flow to the extremities.

5.3 Diet

A well-balanced diet is important for employees working in cold environments. Diets restricted only to certain foods may not provide the necessary elements for the body to withstand cold stress, leaving the worker vulnerable.

5.4 Control Measures

When the windchill factor results in an equivalent temperature of -26F, continuous exposure of the skin will not be permitted. Any worker exposed to temperatures of 36F or less who becomes immersed in water will be given dry clothing immediately and treated for hypothermia at the local hospital if any symptoms of hyperthermia are present. Notification of this incident will be provided to the Health and Safety Division immediately after sending the worker to the hospital.

5.5 Engineering Controls

The following are some ways that environmental controls can be used to reduce the effects of a cold environment:

1. General or spot heating should be used to increase temperature in certain areas in the workplace;
2. Warm air jets, radiant heaters or contact warm plates can be used to warm the worker's hands if fine work is to be performed with bare hands for 10 to 20 minutes or more;
3. Shield the work area if air velocity at the work Site is increased by wind, draft or ventilating equipment;
4. Metal handles of tools and control bars should be covered with thermal insulating material at temperatures below 30F;
5. Unprotected metal chair seats will not be used in cold environments;
6. When appropriate and feasible, equipment and processes will be substituted, isolated, relocated, or redesigned;
7. Power tools, hoists, cranes or lifting aids will be used to reduce the metabolic workload;

8. Heated warming shelters will be made available for continuous work being performed in an equivalent temperature of 20F or below, workers will be encouraged to use the shelters regularly; and
9. Administrative work practice controls.

Work practices and guidelines can be designed and developed to reduce exposure to cold stress. Some of these may include:

1. Work-rest schedules to reduce the peak of cold stress;
2. Enforce scheduled breaks;
3. Enforce intake of caffeine-free, non-alcoholic beverages;
4. Schedule work that has potential exposure to cold stress for the warmest part of the day;
5. Move work to warmer areas, whenever possible;
6. Assign extra workers for high-demand tasks;
7. Provide relief workers for other workers needing breaks;
8. Teach basic principles of recognizing and preventing cold stress;
9. Use the buddy system for work at 10F or below, and keep within eyeshot;
10. Allow new employees to adjust to the conditions before they work full-time in cold environments;
11. Minimize sitting and standing in one place for long periods of time;
12. Include weight and bulkiness of clothing when estimating work performance requirements and weights to be lifted;

Table III provides a work/warm-up schedule for cold environments, with wind chill taken into account.

5.6 Special Considerations

Older workers and workers with circulatory problems should be extra careful in cold environments. Sufficient sleep and good nutrition are important preventive measures for maintenance tolerance to the cold. Double shifts and overtime work should be avoided when working in cold environments.

If any of the following symptoms are observed on Site, the affected worker will immediately go to warm shelter:

- Onset of heavy shivering;
- Frostnip;
- Feeling of excessive fatigue;
- Drowsiness;
- Euphoria.

After entering the warm shelter, the outer layer of clothing should be removed. If the clothing is wet from sweat and perspiration, dry clothing should be provided. If this is not feasible, then the clothing should be loosened to allow sweat to evaporate.

Anyone working in cold environments and on prescribed medication should consult their physician concerning any possible side effects due to cold stress. Those individuals suffering from diseases and/or taking medication that interferes with normal body temperature regulation or reduces the tolerance to cold will not be allowed to work in temperatures of 30F or below.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

In choosing PPE for cold environments, it is important to maintain airspace between the body and outer layer of clothing to retain body heat. The more air pockets, the better the insulation. The clothing should also allow for the evaporation of sweat if the skin is wet.

The most important parts of the body to protect are the feet, hands, head and face. Hands and feet become cooled most easily, because of their distance from the heart. Keeping the head covered is equally important. As much as 40% of body heat loss is through the head when it is exposed.

Ideal clothing for exposure to cold environments is made of wool, polypropylene, or other wicking fabrics. Loosely fitted clothing also aids in sweat evaporation. Recommended clothing may include the following:

1. Polypropylene under shirt and shorts under thermal underwear (preferably two-piece);
2. Wool socks;
3. Wool or thermal pants, lapped over boot tops to keep out snow and water;
4. Suspenders (belts can constrict and reduce circulation);
5. Insulated work boots, preferably waterproof. Safety toe, if necessary;
6. Wool or cotton shirt;
7. Parka;
8. Knit cap/hard hat liner;
9. Wool mittens or gloves (depending on the dexterity required);
10. Face mask or scarf.

Dirty or greasy clothing loses much of its insulation value. Dirty clothing crushes air pockets, allowing air to escape more easily. Also, denim is not a good protective fabric. It is loosely woven and allows water to penetrate and wind to blow away body heat.

TABLE I

PROGRESSIVE CLINICAL PRESENTATION OF HYPOTHERMIA*

Core Temperature		Clinical Signs
Deg. C	**Deg. F**	
37.6	99.6	"Normal" Rectal Temperature
37	98.6	"Normal" Oral Temperature
36	96.8	Metabolic rate increases in an attempt to compensate for heat loss.
35	95.0	Maximum shivering.
34	93.2	Victim conscious and responsive, with normal blood pressure.
33	91.4	Severe hypothermia below this temperature.
32	89.6	Consciousness clouded, blood pressure becomes difficult to obtain, Pupils dilated but react to light, shivering ceases.
31	87.8	
30	86.0	Progressive loss of consciousness, muscular rigidity increases, Pulse and blood pressure difficult to obtain, respiratory rate decreases
29	84.2	
28	82.4	Ventricular fibrillation possible with myocardial irritability.
27	80.6	Voluntary motion ceases, pupils non-reactive to light, deep tendon And superficial reflexes absent.
26	78.8	
25	77.0	Ventricular fibrillation may occur spontaneously.
24	75.2	Pulmonary edema.
22	71.6	Maximum risk of ventricular fibrillation.
20	68.0	Cardiac standstill.
18	64.4	Lowest accidental hypothermia victim to recover.
17	62.6	Isoelectric electroencephalogram.
9	48.2	Lowest artificially cooled hypothermia patient to recover.

* Presentations approximately related to core temperature. Reprinted from the January 1982 issue of American Family Physician, published by the American Academy of Family Physicians.

TABLE II

Cooling Power of Wind on Exposed Flesh as Equivalent Temperature

(Under calm conditions)*

Estimated Wind Speed (mph)	**Actual Temperature Reading (Degrees Fahrenheit)**											
	50	**40**	**30**	**20**	**10**	**0**	**-10**	**-20**	**-30**	**-40**	**-50**	**-60**
	Equivalent Chill Temperature (□F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect).	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute.			GREAT DANGER Flesh may freeze within 30 seconds.				

* Developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA

Note #1: Wind speeds greater than 40 mph have little additional effect.

Note #2: Trenchfoot and immersion foot may occur at any point on this chart

TABLE III

Threshold Limit Values Work/Warm-up Schedule for 4-Hour Shift (*)

Air Temp.-Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
˚C (approx)	˚F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm. Breaks)	1	(Norm.Breaks)	1	75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm. Breaks)	1	75 min	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease							
-43° & below	-45° & below	Non-emergency work should cease									

Notes for TABLE III:

1. Schedule applies to moderate to heavy work activity with warm-up breaks of 10 minutes in a warm location. For light to moderate work (limited physical motion), apply the schedule one step lower. For example, at -30F with no noticeable wind (step 4, a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4 hour period.
2. The following is suggested as a guide for estimating wind velocity if accurate information is not available: 5 mph, light flag moves; 10 mph, light flag fully extended; 15 mph, raises newspaper sheet; 20 mph, blowing drifting snow.
3. If only the wind-chill cooling rate is available, a rough rule of thumb for applying it rather than the temperature and wind velocity factors given above would be: 1) special warm-up breaks should be initiated at a wind-chill cooling rate of about 17 W/m2; 2) all non-emergency work should have ceased at or before a wind-chill of 2250 W/m2. In general the warm-up schedule provided above slightly under-compensates for the wind at the warmer temperatures, assuming acclimatization and clothing appropriate for winter work. On the other hand, the chart over-compensates for the actual temperatures in the colder ranges, since windy conditions prevail at extremely low temperatures.
4. TLVs apply only for workers in dry clothing.

* Adapted from Occupational Health and Safety Division, Saskatchewan Department of Labour.

APPENDIX C

HEAT STRESS PROGRAM

1.0 INTRODUCTION

Heat stress is one of the most common (and potentially serious) illnesses at job Sites. Although it is caused by a number of interacting factors, the wearing of PPE puts the worker at a much higher risk during warmer environmental conditions. The results of heat stress range from fatigue to serious illness or death. Through regular fluid replacement and other preventive measures, heat stress can be controlled, leading to increased efficiency and a higher level of safety on the job.

2.0 PURPOSE

To create an awareness among employees concerning the body's physiologic responses to heat; different types of heat stress that can affect the body; recognition of signs and symptoms; first aid treatment; and, preventive measures.

3.0 SOURCES OF HEAT

There are two sources of heat that are important to anyone working in a hot environment:

- Internally generated metabolic heat;
- Externally imposed environmental heat.

4.0 PHYSIOLOGIC RESPONSES TO HEAT

The human body maintains a fairly constant internal temperature, even though it is exposed to varying environmental temperatures. To keep internal body temperatures within safe limits, the body must get rid of its excess heat, primarily through varying the rate and amount of blood circulation through the skin and the release of fluid onto the skin by the sweat glands. These automatic responses usually occur when the temperature of the blood exceeds 98.6°F and are kept in balance and controlled by the brain. In this process of lowering internal body temperature, the heart begins to pump more blood, blood vessels expand to accommodate the increased flow, and the microscopic blood vessels (capillaries) which thread through the upper layers of the skin begin to fill with blood. The blood circulates closer to the surface of the skin, and the excess heat is lost to the cooler environment.

If the heat loss from increased blood circulation through the skin is not adequate, the brain continues to sense overheating and signals the sweat glands in the skin to release large quantities of sweat onto the skin surface. Evaporation of sweat cools the skin, eliminating large quantities of heat from the body.

As environmental temperatures approach normal skin temperature, cooling of the body becomes more difficult. If air temperature is as warm as or warmer than the skin, blood brought to the body surface cannot lose its heat. Under these conditions, the heart continues to pump blood to the body surface, the sweat gland pour liquids containing electrolytes onto the surface of the skin, and the evaporation of the sweat becomes the principal effective means of maintaining a constant body temperature. Sweating does not cool the body unless the moisture is removed from the skin by evaporation. In high humidity, the evaporation of sweat from the skin is decreased and the body's efforts to maintain an acceptable body temperature may be significantly impaired. These conditions adversely affect an individual's ability to work in the hot environment. With so much blood going to the external surface of the body, relatively less goes to the active muscles, the brain, and other internal organs; strength declines; and fatigue occurs sooner than it would otherwise. Alertness and mental capacity also may be affected. Workers who must perform delicate or detailed work may find their accuracy suffering, and others may find their comprehension and retention of information lowered.

When temperature differences exist between two or more bodies, heat can be transferred. Net heat transfer is always from the body (or object) of higher temperature to that of lower temperature and occurs by one or more of the following mechanisms:

- Conduction. The transfer of heat from one point to another within the body, or from one body to another when both bodies are in physical contact. Conduction can be a localized source of discomfort from direct physical contact with a hot or cold surface, it is normally not a significant factor to total heat stress.
- Convection. The transfer of heat from one place to another by moving gas or liquid. Natural convection results from differences in density caused by temperature differences. Thus warm air is less dense than cool air.
- Radiation. The process by which energy, electromagnetic (visible and infrared), is transmitted through space without the presence or movement of matter in or through this space.

5.0 PREDISPOSING FACTORS TO HEAT STRESS

Factors that may predispose an individual to heat stress vary according to the individual. These factors include:

- Lack of physical fitness;
- Lack of acclimatization;
- Age;
- Dehydration;
- Obesity;
- Drug/alcohol abuse;
- Infection;
- Sunburn;
- Diarrhea;
- Chronic disease.

Predisposing factors and an increased risk of excessive heat stress are both directly influenced by the type and amount of PPE worn. PPE adds weight and bulk, reduces the body's access to normal heat exchange mechanisms (evaporation, convection and radiation) and increases energy expenditure.

6.0 FORMS OF HEAT STRESS AND FIRST AID

(The following excerpts were taken from NIOSH Publication No. 86-112, Working in Hot Environments):

"Excessive exposure to a hot work environment can bring about a variety of heat-induced disorders. Among the most common are heat stroke, heat exhaustion, heat cramps, fainting and heat rash.

6.1 Heat Stroke

Heat Stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

A heat stroke victim's skin is hot, usually dry, red or spotted. Body temperature is usually 105°F or higher, and the victim is mentally confused, delirious perhaps in convulsions, or unconscious. Unless the victim receives quick and appropriate treatment, death can occur.

Individuals with signs or symptoms of heat stroke require immediate hospitalization. First aid should be immediately administered. This includes removing the victim to a cool area, thoroughly soaking the clothing with water, and vigorously fanning the body to increase cooling. Further treatment, at a medical facility, should be directed to the continuation of the cooling process and the monitoring of complications that often accompany heat stroke. Early recognition and treatment are the only means of preventing permanent brain damage or death.

6.2 Heat Exhaustion

Heat Exhaustion includes several clinical disorders having symptoms that may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences weakness or fatigue, giddiness, nausea or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

In most cases, treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects.

6.3 Heat Cramps

Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. The drinking of large amounts of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly after, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs, or abdomen; but tired muscles (those used in performing the work) are usually the ones most susceptible to cramps. Cramps may occur during or after work hours and may be relieved by taking salted liquids by mouth.

6.4 Fainting

Fainting occurs in workers not accustomed to hot environments and who stand erect and immobile in the heat.

With enlarged blood vessels in the skin and in the lower part of the body due to the body's attempts to control internal temperature, blood may pool there rather than return to the heart to be pumped to the brain. Upon lying down, the worker should soon recover. By moving around, and thereby preventing blood from pooling, the patient can prevent further fainting.

6.5 Heat Rash (Prickly Heat)

Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where sweat is not as easily removed from the surface of the skin by evaporation and the skin remains wet most of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable and may reduce a worker's performance. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin."

7.0 SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

During work periods where the increased risk of heat stress exists, each item's benefit will be carefully evaluated. Once the PPE is chosen, safe work durations/rest periods will be determined based on the following conditions:

- Anticipated work rate;
- Ambient temperature and humidity;
- Level of protection.

8.0 PREVENTION OF HEAT STRESS

Prevention of heat stress will be addressed in the following manner:

- Adjustment of work schedules.
- Modify work/rest schedules.
    1. Enforce work slowdowns, as needed.
    2. Rotate personnel to minimize overstress or overexertion.
    3. When possible, work will be scheduled and performed during cooler hours.
- Provide shelter or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels.
    1. Drink approximately 12 to 16 ounces of non-caffeinated liquid (preferably water, Gatorade or equivalent) prior to the start of work. Caffeinated fluids act to dehydrate the worker.
    2. Workers will be urged to drink a cup or two every 15 to 20 minutes, or at each break. A total of 1 to 1.5 gallons of water per individual per day are recommended for fluid replacement under heat stress conditions, but more may be required.
- Encourage physical fitness among the workers.
- Gradually acclimatize workers on Site to help build up an "immunity" to the conditions.
    1. Heat acclimatization can usually be induced in 5 to 7 days of exposure at a hot job. For workers with previous experience with the job, acclimatization will include exposures of 50% for day 1, 60% for day 2, 80% for day 3, and 100% for the remaining additional days.

- Provide cooling devices during prolonged work or severe heat exposure.
    1. Supply field showers or hose down areas.
    2. Supply personnel with cooling jackets, vests, and suits.

- Train workers in recognition and treatment of heat stress.
- Use of the buddy system that depends on the recognition of signs and symptoms of heat stress.

Identification of heat-intolerant individuals through medical screening.

APPENDIX D

MONITORING INSTRUMENTS: USE, CARE, AND CALIBRATION

1.0 INTRODUCTION

Prior to beginning any work at contaminated Sites, a preliminary Site evaluation must be conducted to identify the hazards or suspected hazards of the Site. Hazardous conditions can be evaluated via air monitoring with direct-reading instruments, to allow section of the proper level of protection for the specific type of work activity. Monitoring equipment used by AKRF personnel includes the following: Carbon Monoxide/Oxygen/Combustible Gas Meters (CGI); Photoionization Detectors (PID); and Dust Monitors. This program contains a description of each type of monitoring equipment; hazards for which it can be used to monitor; Applications; Care and Maintenance; Limitations; and, Calibration.

2.0 SCOPE

This program covers the use, application, care and maintenance, limitations and calibration of CGIs, Multigas meters, PIDs and Dust Monitors used by AKRF employees involved in hazardous materials operations.

3.0 INSTRUMENTATION

3.1 Photoionization Detectors (PIDs)

3.1.1 Introduction

PIDs measure a variety of gases in many industrial, as well as hazardous material, operations. These analyzers employ the principle of photoionization, which is the absorption of ultraviolet light by molecules, for detection.

The sensor consists of a sealed ultraviolet light. The energy ionizes many trace species (particularly organics) but does not ionize the major components of air, such as O_2, N_2, CO, CO_2, or H_2O. A chamber adjacent to the ultraviolet source contains a pair of electrodes. When a positive potential is applied to one electrode, the field created drives any ions, which are formed by absorption of the UV light, to the collector electrode, where the current (proportional to the concentration) is measured.

To minimize absorption of various sample gases, the ion chamber is made up of an inert fluorocarbon material, located at the sampling point, and a rapid flow of sampling gas is maintained through the small ion chamber volume.

The analyzer will operate either from a rechargeable battery for up to 10 hours, or continuously from the AC battery charger.

The useful linear range of the instrument is from a fraction of a part per million (PPM) to about 2000 PPM.

3.1.2 Theory

AKRF utilizes the Thermo 580B Organic Vapor Meter (OVM) as its PID. The 580B OVM is a portable, non-specific vapor/gas detector, which employs the principle of photoionization to detect a variety of organic chemical compounds.

The 580B contains an ultraviolet light source within its sensor chamber. Ambient air is drawn into the chamber with the aid of a small fan or positive displacement pump. If the ionization potential (IP) of any contaminant present in the ambient air is equal to or lower than the energy of the UV light source, ionization will take place, causing a deflection in the meter.

The 580B OVM readings are expressed in parts per million (PPM) relative to the calibration gas. All readings must be stated as equivalent readings that depend on the calibration gas being used to calibrate the meter. The calibration gas used is Isobutylene, which is used as an equivalent in place of benzene, and allows the instrument to provide results in benzene equivalents.

3.1.3 Basic Operation of the 580B OVM

A sample of air is drawn through a chamber and an ultraviolet light causes certain contaminants present to be broken apart into positive and negative charged particles. These charged particles are passed between electrodes and converted into an electrical impulse displayed on the readout.

3.1.4 Checkout and Use Procedures

Attach the probe to the readout assembly. Turn the instrument on by inserting the power plug into the "RUN/CHG" connector and pressing the ON/OFF button on the key pad. Listen for the humming of the pump. Hold a permanent marker to the probe tip to make sure it is working properly.

3.1.5 Field Applications/Limitations

- The 580B OVM will only detect organic materials with an ionization potential less than 10.2eV, unless a lamp with a higher eV is installed.
- It is a non-specific detection device, but provides continuous information on airborne concentrations.
- It will not respond equally to all contaminants, and does not detect methane.
- High humidity will cause the instrument to give lower readings than the actual airborne concentration.
- Transfer of the instrument from a cold to a warm environment may cause condensation to form on the UV light source window, causing erroneous results.
- The readout may also be affected by electrical power lines or power transformers.
- Total concentrations are relative to the calibration gas used (isobutylene). Therefore, true concentrations cannot be identified.

3.1.6 Calibration Procedure

Calibration Checklist: 580B OVM (probe and meter); span gas (100 PPM isobutylene); regulator; tygon tubing; Tedlar bag.

Inventory Items: Battery; Lamp; ION chamber; O-Rings; Screws.

- Obtain calibration gas: Zero Gas and 100 PPM isobutylene Span Gas.
- Connect the Zero Gas to a dedicated 1-liter Tedlar bag using tygon tubing. Open the gas regulator and the sample bag valve. Allow the bag to fill with gas, then

close the gas regulator and the sample bag valve. Follow the same procedures to fill a dedicated Tedlar bag with Span Gas.

- Put the 580B into calibration mode in accordance with the instruction manual toggle press the +/INC button until it displays “Zero Gas/Reset When Ready”. Connect the Tedlar bag containing Zero Gas to the probe tip (using the Tygon tubing), open the gas regulator and sample bag valve, and press the “Reset” button on the OVM. The instrument will read “Model 580B Zeroing”. Once the instrument is finished zeroing, it will read “Span PPM = 100”. (If it does not read 100 PPM, consult the instruction manual to change the span gas value).
- Press the +/INC button, and the instrument should read “Span Gas/Reset When Read”. Connect the Tedlar bag containing Span Gas to the probe tip (using the Tygon tubing), open the gas regulator and sample bag valve, and press the “Reset” button on the OVM. The instrument will read “Model 580B Calibrating”. Once the instrument is finished calibrating, it will return to the beginning of the calibration mode and will read “Reset to Calibrate”.

3.1.7 Maintenance and Calibration Records

- Protect the instrument from excessive abuse, such as moisture, shock, vibration, etc.
- Maintenance and calibration records will be recorded in a logbook specific to the OVM.

3.1.8 Troubleshooting

Below are some points that should be considered if the instrument is not running appropriately:

- Check the battery condition. Recharge it if necessary.
- If unstable readings are obtained, a faulty probe cable or electrical connection could be the problem. To check this, hold the probe normally and flex the cable firmly. Watch the meter needle for fluctuations as the cable is flexed. Individual wires in the readout can be checked in a similar way.
- Check the coaxial connector on the amplifier board in the probe for any separation.
- No response on any setting may mean that the meter movement is broken. Tip the instrument from side-to-side. The needle should move freely and return to zero.
- No response may mean that the electrical connection to the meter is broken. Check all wires leading to the meter and clean the contacts of the quick-disconnects.
- No response may mean that the battery is completely dead. Disconnect the battery and check the voltage with a volt-ohm meter. Also check the 2-amp fuse.
- If the instrument responds correctly in all settings, but the signal is lower than expected:
    1. Check the span setting.

2. Clean the window of the light source.
3. Check the fan for proper insertion.

- If the instrument response is slow and/or not reproducible, either the pump is operating improperly or the instrument needs to be recalibrated.

A low battery indication comes on if the battery charge is low. It will also come on if the ionization voltage is too high.

3.2 MultiGas Meter

Combination meters measure the concentration of combustible gas or vapor present in an area, as well as the oxygen, carbon monoxide, and hydrogen sulfide content. The LEL concentrations are reported as a percent, and the O_2, CO, and H_2S concentrations are reported in ppm. Although it is an easy instrument to operate, its effective use requires that the operator understand the operating principles and procedures behind the instrument. Certain atmospheres may cause erroneous readings or damage to the instrument. Typically, the instrument can be used as long as the battery lasts, or for the recommended interval between calibrations.

3.2.1 Detection Method

AKRF uses the Rae Systems Q-Rae or similar as a multi-gas meter. The Q-Rae uses four different sensors to measure a variety of gases. A catalytic bead sensor is used to measure combustible gases, and an electrochemical sensor is used to measure oxygen concentration. Electrochemical, toxic-gas sensors are used to measure CO and H_2S. A diaphragm pump draws the air sample into the sensor manifold and then distributes it to all sensors.

3.2.2 Maintenance

Maintenance of combination meters is fairly simple. Batteries must be recharged at the end of a continuous day's use. Occasionally, the rechargeable battery must be replaced. Most batteries last for approximately 2 years of continued use. Also, oxygen and combustible gas sensors will need to be replaced periodically. These sensors last approximately 1-2 yrs with continued use. Sensors that can no longer be calibrated within the manufacturers' acceptable range indicate the need for replacement.

If, after an attempted calibration, the instrument cannot be calibrated due to problems other than the need for battery or sensor replacement, the problem must be reported to the Facility Manager immediately, so that the instrument can be sent out for repair.

3.2.3 Calibration

The Q-Rae is calibrated using a two-point calibration process using “fresh air” and the standard reference gas. First, “fresh air” containing 20.9% oxygen and no detectable toxic or combustible gasses is used to set the zero point for the LEL, CO and H_2S sensors and the span for the O_2 sensor. Then a standard reference gas, containing a known concentration of each given gas, is used to set the second point of reference for the first 3 sensors. The two-point calibration procedure is detailed in the instrument manual. Calibration should be performed each day that the Q-Rae is used using manufacturer-recommended zero and calibration gasses.

3.2.4 Limitations

The combination meter contains some inherent limitations. Knowledge of these limitations will help the user make an educated decision regarding the accuracy of the instrument.

Accuracy of the instrument depends, in part, on the difference between the calibration and sampling temperatures. Differences in temperature may cause a lack of sensitivity in the instrument when brought from a warm to a cold environment.

The filament can be damaged by certain compounds such as silicones, halides, tetraethyl lead, and oxygen enriched atmospheres. Each manufacturer's instrument handbook should contain a listing of compounds that should not be sampled with this instrument, or serious damage could result.

Under oxygen deficient atmospheres, the oxygen analyzer must be read first. Otherwise, the CGM analyzer may not provide a valid reading and give the user a false sense of security.

3.3 Dust Meter

AKRF uses a TSI DustTrak as a dust meter. The DustTrak is a single channel basic photometric instrument used to determine the mass concentration of aerosols in real time.

3.3.1 Theory of Operation

The DustTrak measures particulates by drawing aerosols into the sensing chamber in a continuous stream using a diaphragm pump. Part of the aerosol stream is split ahead of the sensing chamber and passed through a HEPA filter and injected back in to the chamber around the inlet nozzle as sheath flow. The remaining flow, called the sample flow passes through the inlet entering the sensing chamber. Here, it is illuminated by a sheet of laser light. This sheet of laser light is formed from a laser diode. First, the light emitted from the laser diode passes through a collimating lens and then through a cylindrical lens to create a thin sheet of light. A gold coated spherical mirror captures a significant fraction of the light scattered by the particles and focuses it on to a photo detector. The voltage across the photo detector is proportional to the mass concentration of the aerosol over a wide range of concentrations. The voltage is then multiplied by a calibration constant which is determined from the ratio of a known mass concentration of the test aerosol to the voltage response of the DustTrak.

3.3.2 Maintenance

The DustTrak requires maintenance on a regular basis, in accordance with the factory recommended maintenance schedule listed in the instrument manual. Some maintenance items are required each time the DustTrak monitor is used or on an annual basis. Other items are scheduled according to how much aerosol is drawn through the instrument. For example, cleaning the inlet sample tube is recommended after 350 hours of sampling a 1 mg/m^3 concentration of aerosol. This recommendation should be pro-rated according to how the instrument is used as specified in the manual. The following table summarizes the recommended maintenance schedule assuming that particulates are drawn through the meter at an average concentration of 1 mg/m^3:

Item	**Frequency**
Clean 1.0 µm nozzle	Every 5 hours
Clean 2.5 µm nozzle	Every 30 hours
Clean 10 µm nozzle, inlet, and sample tube	Every 350 hours
Replace internal filters	Every 700 hours
Clean cyclone	Before each use
Return to factory for cleaning and calibration	Annually

The DustTrak monitor keeps track of the accumulated amount of aerosol drawn through it since its last cleaning. When sample tube cleaning or internal filter replacement is due, the display shows the message “Service 4” or “Service 5” respectively, during power-up. Press any key to bypass the message, but be sure to perform the maintenance procedures at your earliest convenience.

3.3.3 Zero Checking/Re-Zeroing

The manufacturer recommends that the DustTrak be zero-checked each day it is used, before running any extended tests, and after the instrument experiences a significant environmental change. Examples of significant environmental changes would be ambient temperature changes that exceed 15 °F (8 °C) or moving from locations with high aerosol concentrations to low concentrations. The Zero-Check procedures are as follows:

- Put the DustTrak monitor in Survey mode.
- Put zero filter on aerosol sample inlet.
- Set the time-constant to 10 seconds. Press and hold the TIME CONSTANT key until “10” is displayed, then release.
- Wait 10 to 60 seconds for displayed values to settle to zero.
- If the displayed value is between -0.001 and +0.001 mg/m_3, the DustTrak monitor does not need adjustment. If the displayed value exceeds this limit, follow steps 7 to 9 below to re-zero the instrument. Press and hold the CALIBRATE key and wait for the displayed countdown to reach 0, then immediately release the key. The message “CALIBRATE ZERO” is displayed. If not, try again.
- Press the SAMPLE key and wait for the 60-second countdown. When the countdown is completed, the current calibration constant will be displayed.
- Press the CALIBRATE key again to return to survey mode. The re-zeroing process is now completed.

APPENDIX E

LOCKOUT/TAGOUT

1.0 INTRODUCTION

The Lockout/Tagout Standard, 29 CFR 1910.147, is believed to prevent about 120 deaths and 60,000 injuries per year, according to OSHA officials. Although this standard is aimed at the industrial community, in environmental engineering applications, it is very important that employees understand and implement these procedures when working with and around energized equipment. Under this standard, the Contractor is required to establish a program that utilizes procedures for locking out and/or tagging to isolate and disable the equipment to prevent accidental start-up or release of stored energy. The Contractor’s employees will identify, locate and control these energy sources, as necessary.

2.0 PURPOSE

The purpose of this Lockout/Tagout plan is to establish procedures for locking out and/or tagging to isolate and disable equipment to prevent accidental startup or release of stored energy, and possible injury to employees.

3.0 SCOPE

This procedure applies to all field/facility operations that require all operative energy sources, including line breaking, in the work area to be shut down, locked out and tagged, so that the Contractor’s employees may safely perform their job. Contractors and subcontractors performing work on this project will be required to comply with these requirements if their employer does not have a comparable lockout/tagout program already in place.

4.0 PROCEDURE

1. The authorized employee will evaluate the scope of work and all equipment, machines or industrial processes in the area that require the use of stored energy. Energized equipment that may cause a safety hazard will be shut down as required to eliminate the potential for injury.
2. Prior to beginning the work, the authorized employee will be sure that appropriate lockout/tagout equipment is available to isolate the energy source.
3. The authorized employee will ensure that all affected employees have been advised of the following topics:
    - Scope of Work;
    - Energy sources;
    - Energy isolation devices;
    - Lockout devices;
    - Tags;
    - Test procedures; and
    - Authorized personnel. (Those individuals charged with the responsibility for de-energizing and re-energizing energy sources).

4. Documentation of the safety meeting will be placed in the job folder for future reference. All employees will sign the Lockout Worksheet prior to starting the work. See Attachement A for a copy of the Lockout Worksheet.
5. The specified energized equipment will be shut down before the Contractor's personnel or its subcontractors begin work on Site. Shut down will take place in the following manner:
   - The authorized employee will inform the client's representative of the need to shut down the equipment.
   - The authorized employee, with assistance from the client's representative, will locate all power sources on the process or equipment.
   - All power sources will be shut down and verified as such by the authorized employee.
   - When possible, a lockout device will be applied by both parties to isolate each source.
   - Any necessary testing of equipment will be conducted to ensure that the process or equipment is free of residual energy (per item 6).
   - The authorized employee will attempt to operate the machine to be sure that it remains inoperative. All activation controls will be returned to the "off" position after testing.
   - The authorized employee will apply a tag that bears the following warning, "DANGER - EQUIPMENT LOCKOUT" along with the authorized employee's name, the date, and the time of the lockout.
   - The authorized employee will complete the Lockout Worksheet.
   - Equipment may now be released for work by the authorized employee. No release will be given until all required inspections and testing are performed.
6. Residual energy: Pneumatic/hydraulic power, spring compression, and residual electrical energy in transformers are examples of residual energy that, when not accounted for, may present a greater hazard to the employee. These sources of energy will be identified, located and controlled in the following manner:
   - Residual electrical energy can be controlled through grounding.
   - Pneumatic/hydraulic line pressure can be released, allowing the weight to come to a rest.
   - Spring tensions can be relieved.
   - Product lines will be double blocked (panned) and bled to prevent product from being released.
   - A lockout device and tag will be applied and secured by the authorized employee for the duration of the job to prevent residual energy from reaccumulating and creating a hazard to employees.
   - The lockout/tagout will be documented by the authorized employee on the Lockout Worksheet.
7. After all work is completed, the authorized employee will perform the following:
   - The authorized employee will inform everyone that the job is complete.
   - The Lockout Worksheet will be reviewed by the authorized employee with all employees to make sure that all employees are accounted for before re-energizing the equipment.

- The authorized employee will be sure that all tools, debris or other material that could be placed into motion are removed before the equipment or process is re-energized. All employees will be instructed to stay clear of movable parts of the equipment or process.
- All residual energy controls will be removed by the authorized employee, as well as all energy isolation lockouts and tags.
- In the presence of the client's representative, energy will be restored to the equipment or process.
- All lockout equipment removal will be documented on the Lockout Worksheet by the authorized employee. The Lockout Sheet will be placed in the job file at the end of the shift.

8. All employees must be accounted for before re-energizing equipment. When employees that have worked on the job are absent from the final inspection before re-energizing the equipment, the authorized employee will initiate the following:
    - The lockout sheet will be checked to account for all employees.
    - The authorized employee will obtain a Lockout/Tagout Absent Employee form (See Attachment B).
    - The authorized employee will appoint employees to look for the individual, paying special attention to high hazard areas where physical harm could result from the start-up of the equipment or process.
    - After a complete search of the equipment or process, and it has been determined by the authorized employee that the employee is not present, all outlying areas surrounding the Site will be searched.
    - The area surrounding the Site will be guarded to prevent the absent employee from inadvertently entering a hazardous situation.
    - The equipment or process will be cleared for re-energization only by the authorized employee once all of the above conditions are met.
    - A copy of the completed Absent Employee form will be posted conspicuously in the work area, and not removed until the employee has been located. The client's representative will be notified of the situation so that the absent employee does not endanger himself/herself by entering an energized process or equipment.
9. When appropriate, contractors and subcontractors working under the Contractor's direction will be informed of their responsibilities, under the Lockout/Tagout Standard, to provide protection against hazardous energy.
    - When necessary within the scope of work, contractors and subcontractors without such a program, at the discretion of the Contractor, will be disqualified from working on these projects.
    - The contractor or subcontractor program must be comparable or more strict than the Contractor's program.
        1. Programs found to be insufficient in some areas will be returned, with the requested changes to be made before the program is acceptable for implementation.
        2. The copy of the program will be returned to the contractor or subcontractor, and will not be duplicated by the Contractor or any of its employees.

- All affected employees will be given training in these procedures prior to performing any lockout/tagout work. This training will be documented and maintained in the employees' training file with the Health and Safety Division.
- This procedure will be reviewed annually to ensure that it remains relevant to the Contractor's operations.

5.0 DEFINITIONS

Affected Employee: An employee whose job requires operation/use of equipment or machines on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed. All personnel or subcontractors working in these circumstances are "affected employees".

Authorized Employee: A person who locks out or implements a tagout system procedure on machines or equipment in connection with the servicing or maintenance on that machine or equipment. An authorized person and an affected employee may be the same person when the affected employee's duties also include performing a lockout or tagout on a machine or equipment.

Capable of being Locked Out: An energy isolating device will be considered to be capable of being locked out either if it designed with a hasp or other attachment or integral part to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized: Connected to an energy source or containing residual or stored energy.

Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a slide gate; a slip blind; a line valve; a block; and, any similar device used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout: The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment.

Tagout: The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

ATTACHMENT A

LOCKOUT WORKSHEET

LOCKOUT WORKSHEET

Job Location: ______________________________ Project Manager: ___________________________

Date: ______________________________ Time: _______________ a.m./p.m.

Description of Lockout to be Performed: ____

Energy source(s): ____

Pre-Work Safety Meeting Minutes: ____

Lockout Hardware Used: ____

Energy Restoration (Check each as you Progress): **Time Completed**

______ All personnel accounted for and in the clear ______________________

______ Point(s) of operation free of tools and debris. ______________________

______ Lockout hardware removed. ______________________

______ Personnel clear of points of operation. ______________________

______ Energy restored. ______________________

______ Equipment operation verified. Client's rep on Site. ______________________

______ Lockout terminated ______________________

Employees' Signatures: ____

____

____

ATTACHMENT B

LOCKOUT/TAGOUT ABSENT EMPLOYEE FORM

LOCKOUT/TAGOUT ABSENT EMPLOYEE FORM

NOTICE

Upon completion of work performed under lockout/tagout conditions, the following employee(s) listed below could not be located or accounted for:

____

____

____

All attempts have been made to locate this employee at the jobSite. It has been verified that this employee is not in the vicinity of the hazardous energy source and will not be affected by the startup of equipment which was under lockout conditions.

____ __________

Signature of Authorized Employee Date

APPENDIX F

INCIDENT REPORT FORM

SUPERVISOR'S REPORT OF ACCIDENT

Supervisor's Name: ____

Basic Rules for Accident Investigation

- Find the cause to prevent future accidents - Use an unbiased approach during investigation.
- Interview witnesses & injured employees at the scene - conduct a walkthrough of the accident.
- Conduct interviews in private - Interview one witness at a time.
- Get signed statements from all involved.
- Take photos or make a sketch of the accident scene.
- What hazards are present - what unsafe acts contributed to accident?
- Ensure hazardous conditions are corrected immediately.

Date & Time		**Location**	
Task Performed		**Witnesses**	
Resulted in	___ **Injury** ___ **Fatality** ___ **Property Damage**	**Property Damage**	
Injured		**Injured**	
Describe Accident Facts & Events			

Supervisors Root Cause Analysis (Check ALL that apply to this accident)			
Unsafe Act		**Unsafe Conditions**	
Improper work technique		Poor workstation design	
Safety rule violation		Unsafe operation method	
Improper PPE or PPE not used		Improper maintenance	
Operating without authority		Lack of direct supervision	
Failure to warn or secure		Insufficient training	
Operating at improper speeds		Lack of experience	
By-passing Safety device		Insufficient knowledge of job	
Protective equipment not in use		Slippery conditions	
Improper loading or placement		Excessive noise	

Improper lifting		Inadequate guarding of hazards	
Servicing Machinery in motion		Defective tools/equipment	
Horseplay		Poor housekeeping	
Drug or alcohol use		Insufficient lighting	
Unsafe Acts require a written warning and re-training before the Employee resumes work.			
Date		**Date**	
Retraining Assigned		**Unsafe Condition Guarded**	
Retraining Completed		**Unsafe Condition Corrected**	
Supervisor Signature		**Supervisor Signature**	

Accident Report Review

Supervisor ______________________________ Date ____________

Department Superintendant ______________________________ Date ____________

Safety Manager ______________________________ Date ____________

Plant Manager ______________________________ Date ____________

APPENDIX D

RESUMES OF KEY PERSONNEL

MARC S. GODICK, LEP

SENIOR VICE PRESIDENT

Marc S. Godick, a Senior Vice President of the firm, has 20 years of experience in the environmental consulting industry. Mr. Godick's broad-based environmental experience includes expertise in remedial investigation, design and implementation of remedial measures, environmental/compliance assessment, litigation support, and storage tank management.

BACKGROUND

Education

M.E., Engineering Science/Environmental Engineering, Pennsylvania State University, 1998

B.S., Chemical Engineering, Carnegie Mellon University, 1989

Licenses/Certifications

Licensed Environmental Professional (License # 396) – State of Connecticut – 2003

40 Hour HAZWOPER and Annual Refresher Training, 1990-2008

Supervisors of Hazardous Waste Operations (8 Hour), 1990

Professional Memberships

Chair, Village of Larchmont/Town of Mamaroneck Coastal Zone Management Commission, 1997 - Present

Chair, Westchester County Soil and Water Conservation District, 2005 - Present

Member, NYSDEC Risk-Based Corrective Action (RBCA) Advisory Group for Petroleum-Impacted Sites, 1997

Community Leadership Alliance, Pace University School of Law, 2001

Seminars, Lectures & Publications

"Let Nature Do the Work – Onsite Stormwater Management," Westchester County Department of Parks, Recreation and Conservation, Fall 2003

"Water Pollution Control and Site Assessments and Audits," Environmental Health and Safety Issues Course, Building Owners and Managers Institute (BOMI), 1997-1999

"Hydrogeologic and Geological Aspects of Tank Closures and Remedial Action," Underground Storage Tanks Course, Government Institutes, Summer 1996, Fall 1997

Years of Experience

Year started in company: 2002

Year started in industry: 1990

RELEVANT EXPERIENCE

Queens West Development Project, AvalonBay Communities, Queens, NY

Mr. Godick managed one of the largest remediation projects completed to date under the New York State Department of Environmental Conservation (NYSDEC) Brownfields Cleanup Program (BCP). The remedy for the site, which was contaminated by coal tar and petroleum, included the installation of a hydraulic barrier (sheet pile cut off wall), excavation of contaminated soil under a temporary structure to control odors during remediation, a vapor mitigation system below the buildings, and implementation of institution controls. The investigation, remediation design, remedy implementation, and final sign-off (issuance of Certificate of Completion) were completed in two years. Total remediation costs were in excess of $13 million.

Williamsburg Waterfront Redevelopment, RD Management/L&M Equities/Toll Brothers, Brooklyn, NY

The project is one of the largest development projects in the Greenpoint/Williamsburg Rezoning Area, which includes the construction of nearly 1 million square feet of residential and retail space along the Williamsburg waterfront. The site had a variety of industrial uses, including a railyard, junk yard, and waste transfer station. As part of the City's rezoning, the site was assigned an E-designation for hazardous materials. Mr. Godick managed the preparation of the Phase I and II environmental site assessments, remedial action plan (RAP), and construction health and safety plan (CHASP). Mr. Godick obtained NYSDEC closure of an open spill associated with former underground storage tanks at the site. The NYCDEP-approved RAP and CHASP included provisions for reuse of the existing fill material, with the excess being disposed off-site, installation of a vapor barrier below the new buildings, installation of a site cap, and environmental monitoring during the construction activities. Mr. Godick is currently managing the environmental monitoring work that began in 2006. A Notice of Satisfaction has been issued by NYCDEP for the first phase of the development.

Landfill Closure & Compost Facility Application, White Plains, NY

Mr. Godick is currently managing the closure of a formal ash landfill, which is currently being utilized as a leaf and yard waste compost facility by the City of White Plains. The remedial investigation included on-site and off-site assessment of soil, groundwater, and soil gas to delineate the extent of methane and solvent contamination associated with the landfill. The landfill closure plan includes provisions for enhancing the existing cap, methane venting, and groundwater treatment for solvent contamination. Mr. Godick also managed the preparation of the compost facility permit application, which required modification to the facility's operations necessary to close the landfill and address other regulatory requirements.

Landfill Redevelopment – RD Management, Orangeburg, NY

Mr. Godick is currently managing the remediation of the former Orangeburg Pipe site under the NYSDEC Voluntary Cleanup Program. The site contains widespread fill material, which has fragments of Orangeburg pipe that is impregnated with asbestos and coal tar. The site is being redeveloped for retail use. The site's closure plan provides for reuse of all fill material on-site and methane mitigation (vapor barrier and passive sub-slab ventilation system) for all new buildings. The fill management activities will include dust and sediment control measures and air monitoring to prevent airborne dust in accordance with a closure plan, stormwater pollution prevention plan (SWPPP), and CHASP. In pervious areas, the site cap will consist of 2 feet of clean fill and a liner in larger areas.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Mr. Godick managed the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated in a sensitive location along the waterfront, surrounded by commercial and residential properties, and half the property where the remediation was conducted is a steep slope. The remedy consisted of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Mr. Godick was responsible for the development of the remedial work plans, design/construction documents, landscape architecture, confirmatory sampling, air monitoring, supervision, and preparation of close-out documentation in accordance with NYSDEC requirements.

Site Investigation–7 World Trade Center Substation, Con Edison, New York, NY

Mr. Godick managed the site investigation at the former 7 World Trade Center Substation in an effort to delineate and recover approximately 140,000 gallons of transformer and feeder oil following the collapse of the building. The project involved coordination with several crews, Con Edison, and other site personnel.

Site Investigation–Former Manufactured Gas Plant (MGP) Facilities, Con Edison, New York, NY

Mr. Godick managed site investigations at four former MGP facilities. The investigations at three of the four sites were completed at a Con Edison substation, flush pit facility, and service center, respectively. The details associated with the fourth site are confidential. Site characterizations at the substation and flush pit facility were conducted in preparation of expansion at these locations. The findings from these characterizations were used by Con Edison to make appropriate changes to the design specifications and to plan for appropriate handling of impacted materials and health and safety protocols during future construction activities.

Verizon, Investigation & Remediation, Various Locations, NY, PA and DE

Mr. Godick managed over 50 geologic/hydrogeologic assessments and site remediation projects related to petroleum releases at various facilities. Responsibilities included annual budgeting, day-to-day project management, development and implementation of soil and ground water investigation workplans, ground water modeling, risk evaluation, remedial action work plans, remedial design, system installation, waste disposal, well abandonment, and operation and maintenance. Many of the assessment and remedial projects followed a risk-based approach. Remedial technologies implemented included air sparging, soil vapor extraction, bioremediation, pump and treat, soil excavation, and natural attenuation.

Storage Tank Management, Verizon, Various Locations, NY, PA, DE, and MA

Mr. Godick managed the removal and replacement of underground and aboveground storage tank systems for Verizon in New York, Pennsylvania, Delaware, and Massachusetts. Responsibilities included the management of design, preparation of specifications, contractor bidding, construction oversight, project budget, and documentation. For selected AST sites, managed the development of Spill Control, Contingency and Countermeasures (SPCC) plans.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Mr. Godick was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. He also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Alexander Street Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, Yonkers, NY

AKRF was retained by the City of Yonkers to prepare an Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, and **a** Generic Environmental Impact Statement (GEIS) for a 153 acre industrial area along Alexander Street on the Yonkers Waterfront. Mr. Godick was responsible for the Hazardous Materials sections of the GEIS and Urban Renewal Plan. Mr. Godick managed the environmental data collection effort for the entire study area which involved review and summary of existing environmental reports, a review of regulatory records, and field inspections. The collected information was used to prioritize individual parcels for funding and remediation. The Master Plan for the area called for the development of a mixed-use neighborhood consisting of residential, neighborhood retail, and office space uses with substantial public open space, access to the Hudson River, and marina facilities.

KATHLEEN BRUNNER

TECHNICAL DIRECTOR

Kathleen Brunner is a Technical Director with more than 12 years of professional environmental consulting experience. She specializes in environmental site assessments and investigations, site remediation, and hazardous materials planning studies. Ms. Brunner has extensive experience performing Phase I and II environmental site assessments, directing and overseeing site remediation projects, and addressing the hazardous materials aspects of Environmental Impact Statements (EISs).

Ms. Brunner's experience includes supervising the installation of soil borings and groundwater monitoring wells; sampling soil, groundwater, air and soil gas; maintaining and sampling groundwater remediation systems, and overseeing and directing construction-related soil management plans and environmental remediation projects. Her range of project experience includes preparation of proposals, sampling protocols, work plans, health and safety plans, site investigation reports, and closure requests, as well as project scheduling and budgeting. Ms. Brunner has coordinated work and acted as a liaison between clients, property owners, subcontractors, and regulatory agencies on City, State and Federal levels.

Prior to joining AKRF, Ms. Brunner worked for a multidisciplinary consulting firm at their offices in Pewaukee, Wisconsin and New York, New York as an environmental scientist.

BACKGROUND

Education

B.A., Physical Geography, University of Wisconsin – Milwaukee, 1995

Licenses/Certifications

40-Hr Hazardous Waste Operations Site Worker, 1997 to present

Years of Experience

Year started in company: 2004

Year started in industry: 1996

RELEVANT EXPERIENCE

C.E. Flushing Site, Flushing, NY

Ms. Brunner is managing and coordinating the investigation, remediation and post-remediation monitoring of a former industrial site in Flushing, Queens, NY as part of redevelopment of the property. The investigation included groundwater sampling, delineation of known areas of soil contamination, and delineating PCB-containing non-aqueous phase liquid (NAPL). Remedial activities included removal of aboveground and underground storage tanks, NAPL product removal, removal of on-site drainage structures, and excavation of delineated hot spots, including hazardous and non-hazardous waste streams. Ms. Brunner assisted in the preparation of the application for this site to transfer from the New York State Department of Environmental Conservation's (NYSDEC) Voluntary Cleanup Program to the Brownfield Cleanup Program (BCP). Ms. Brunner was responsible for developing work plans for approval by the NYSDEC and New York State Department of Health (NYSDOH), and preparation of summary reports for public comment. Remediation was completed in 2007 and Certificates of Completion under the BCP were issued in December 2007. Post-remediation monitoring includes oversight of construction-related soil disturbance, quarterly groundwater and vapor sampling, and continued annual reporting to NYSDEC and NYSDOH. Ms. Brunner also assisted coordination with the New York City Department of Environmental Protection (NYCDEP) due to an E-designation on the property. As part of the project, Ms. Brunner coordinated with the client, lawyers, architects and engineers of the planned development, tenants of a neighboring property, remediation and construction contractors, US Environmental Protection Agency (USEPA), NYSDEC, NYSDOH, and NYCDEP.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Ms. Brunner was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. She also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Bayside Fuel Oil Depot, Brooklyn, NY

Ms. Brunner is managing the site assessment for a major oil storage facility (MOSF) located on the Gowanus Canal waterfront. Work included follow-up investigation related to a petroleum release and preparation of a remedial action plan. Additional investigation and initial remedial activities are expected to be completed in 2010, and the site is being considered for redevelopment for retail and residential use.

Fresh Kills Park, Staten Island, NY

AKRF is preparing the Generic Environmental Impact Statement (GEIS) for this large-scale, multi-phase project to turn the former Fresh Kills Landfill into a public park. The project involves New York City Department of Sanitation and Department of Parks with regulatory oversight and approval by both NYCDEP and NYSDEC. As part of the hazardous materials chapter for the GEIS, Ms. Brunner researched site history, performed a regulatory records review and prepared a data summary and recommendations for mitigation of potential future impacts.

Atlantic Yards Arena and Redevelopment Project, Brooklyn, NY

AKRF prepared the Environmental Impact Statement (EIS) and Blight Study for this ambitious and controversial land use initiative. The project, overseen by the Empire State Development Corporation (ESDC), calls for the redevelopment of an underutilized and underdeveloped 22-acre site in the Atlantic Terminal area of Brooklyn, adjacent to Downtown Brooklyn. The project includes a new arena for the Nets basketball team, along with mixed-income residential, commercial office, retail, hotel, and community facility uses. The total project cost is estimated at $4.5 billion. Key issues addressed in the EIS include: potential impacts on water quality in the Gowanus Canal and East River; concerns over land use compatibility and urban design; potential adverse traffic and air quality impacts; and potential adverse effects on socioeconomic conditions in the study area. In addition, the EIS presented a detailed description of construction activities and phasing, and an analysis of potential averse impacts during project construction. The FEIS was issued in December, 2006. Ms. Brunner served on a team of Hazmat staff conducting Phase I Environmental Site Assessments in accordance with ASTM E-1527-00 related to the potential development of up to 8 city blocks. As part of the study, Ms. Brunner coordinated with the client, property owners or their representatives, and tenants. Her work scope included site reconnaissance, site history and records review, interviews, report preparation, recommendations and data summary to be used in preparation of the EIS chapter.

Edgemere By the Sea, Rockaway, NY

Ms. Brunner performed a Phase I Environmental Site Assessment of 73 city lots located on nine blocks in accordance with ASTM E-1527-00 related to the potential development of the area. Her work scope included site reconnaissance, site history and records review, interviews, report preparation and recommendations. Based on the findings in the Phase I, Phase II was performed. Ms. Brunner coordinated and oversaw soil boring installation and collected soil and groundwater samples.

Fulton Street Transit Center, New York, NY

While working with another firm, Ms. Brunner worked with a multi-company project team assisting with work pertaining to subsurface environmental issues. Ms. Brunner provided general environmental oversight of soil borings, collected groundwater samples from wells, conducted rising head slug tests, and calculated hydraulic conductivity estimates. She prepared the Health and Safety Plan, environmental portions of the work plan, and the Environmental Subsurface Investigation Plan.

DaimlerChrysler, Kenosha, WI

While with another firm, Ms. Brunner assisted in multiple phases of work at an approximately 100-acre DaimlerChrysler manufacturing facility. During construction of a new building, Ms. Brunner observed excavation activities, directed contaminated soil excavation, and managed dewatering treatment and discharge. Post-construction, Ms. Brunner assisted in the reconstruction of two groundwater remediation systems and an SVE system, including plumbing an oil water separator and stripper, and installing appropriate venting and sampling ports. Ms. Brunner also assisted in equipment start-up and subsequent troubleshooting and sampling of influent and effluent. On a quarterly basis, routine and troubleshooting maintenance work was performed on the pumps, flow meters, strippers, oil/water separators and other system components for six remediation systems. Ms. Brunner also directed and documented monitoring well installation, collected groundwater samples from up to 50 monitoring wells and sumps, and air samples from soil vapor extraction systems, reviewed and summarized field and laboratory data, and assisted in writing semi-annual and annual reports for this facility. Report preparation included quality assurance calculations, determination of quantity of free product and dissolved phase contaminant removal, and project narrative of activities completed during the reporting period.

ERIC PARK

ENVIRONMENTAL ENGINEER

BACKGROUND

Working in the Hazardous Materials department, Mr. Park has been involved in various remediation oversight projects, in the planning, executing and reporting phases of work.

Education

B.S. Engineering, Cooper Union Albert Nerken School of Engineering, 2006

Licenses/Certifications

40-hour OSHA Certified

Order of the Engineer

Professional Memberships

Years of Experience

Year started in company: 2006

Year started in industry: 2006

RELEVANT EXPERIENCE

Brooklyn Bridge Park, Brooklyn, NY

Mr. Park has been involved in the application for the Department of Sanitation of New York (DSNY) Fill Materials Operation (FMO) permit. He has been working with project consultants and architects to complete the requirements necessary to obtain the FMO. The DSNY permit will allow for the import of gross amounts of approved fill to be used on-site for the construction of noise mitigating hills at the proposed park.

East Side Access, Long Island City, NY

Mr. Park has been working with the New York Metropolitan Transit Authority (MTA) in continued dust concentration analysis related to the East Side Access underground tunnel drilling operation. Mr. Park has been working with MTA and its subcontractors to ascertain the source of particulate in the local ambient air and mitigate all sources.

Queens West Remediation, Long Island City, NY

Mr. Park has been involved in the on-going post-remediation activities at various sites in the Queens West development community. Queens West has a long history of contaminated sites, mostly caused by coal tar-related industrial facilities that were located in the vicinity in the past. Working with other consultants, Mr. Park has taken part in groundwater, soil and soil gas sampling and has been involved in the post investigation documentation.

Halesite MGP RFP, Halesite, NY

Mr. Park was involved in the response to a Request for Proposal regarding the in-situ remediation of a former manufactured gas plant. Mr. Park researched the relevant current in-situ groundwater remediation technologies including Chemox and air sparging. Groundwater and soil beneath the property have been affected by MGP related contaminants such as coal tar. Mr. Park was involved in coordination meeting with in-house marketing and sub-contractors working in conjunction with AKRF for the submission of the proposal.

Flushing Industrial Park, Flushing, NY

Mr. Park was involved in the remedial activities at the Brownfield site in Flushing, New York. Mr. Park assisted in the installation and sampling of post-remediation groundwater monitoring wells. Mr. Park has also been involved in the preparation of the Site Management Plan and Final Engineering Report, detailing the on-site remedial activities to date.

Columbia University Manhattanville Academic Mixed-Use Development, New York, NY

Mr. Park was involved in the preparation of the Remedial Action Plan / Construction Health and Safety Plan for the redevelopment of Columbia University. Due to the scope and scale of the intended development, many issues concerning hazardous materials (auto-industry related facilities, historic MGP sites) were addressed in conjunction with issues from the associated Environmental Impact Statement.

AvalonBay Gold Street, Brooklyn, NY

Mr. Park was involved in subsurface investigations at the proposed AvalonBay development site. The work entailed collecting soil samples for waste characterization and groundwater data. The site work was used as part of the ongoing pre-construction phase activities.

AvalonBay Willoughby West, Brooklyn, NY

Mr. Park has conducted Phase I and Phase II subsurface investigations at the proposed AvalonBay development in Downtown Brooklyn. Working closely with the landowner and AvalonBay, Mr. Park has been evaluating subsurface conditions at the site concerning a known fuel oil spill and potential solvent and gasoline contamination plumes within the site.

Paragon Paint, Long Island City, NY

Mr. Park oversaw the installation of ten soil borings at the abandoned Paragon Paint facility. Soil, soil vapor, and groundwater samples were collected to determine the severity of the contamination associated with ten on site underground storage tanks as well as the paint operations formerly conducted on site.

Gedney Way Landfill, White Plains, NY

Mr. Park has been involved in the ongoing landfill closure procedures at the Gedney Way composting facility. The investigation consisted of the installation of monitoring wells, soil gas points, soil borings and test pits to delineate the extents of both subsurface fill material associated with the landfill as well as the extent of VOC contamination associated with a known incident in the 1980's. Groundwater samples were collected using low-flow sampling methods.

Mott Haven School Campus, Bronx, NY

Mr. Park was involved in the continuing environmental monitoring efforts at the School Construction Authority site at Mott Haven. In addition to monitoring for particulate and contamination, the work also involved coordinating with the SCA, engineers and other contactors.

Lincoln Center Tank Closure, New York, NY

Mr. Park was involved in the closure of 12 underground fuel oil storage tanks at the parking facility at Lincoln Center. The work involved the closure in place and removal of piping associated with the underground storage tanks. Tanks were closed to specification by exposing and vacuuming the contents and using a two-part foam to fill the tanks in place.

GREGORY D. BAIRD

ENVIRONMENTAL SCIENTIST

Mr. Baird is an Environmental Scientist with 4 years of professional environmental consulting experience. His range of expertise includes remediation oversight, subsurface soil investigations, waste characterization sampling, groundwater monitoring, well sampling, soil boring sampling, test pit oversight, and air monitoring.

Prior to joining AKRF, Mr. Baird was employed by Brookside Environmental for two years where he was responsible for various remediation activities such as, waste characterization sampling, under ground storage tank removal and closures, and hazardous/non-hazardous waste documentation and removal.

BACKGROUND

Education

B.S., Geology, State University of New York at New Paltz, New York, 2004

Licenses/Certifications

40 Hour Hazardous Waste Operations Site Worker, 2005

Asbestos Project Monitor, Air Technician and Inspector, 2008

Lead Based Paint Risk Assessor and Inspector, 2009

Lead Risk Assessor, 2009

Erosion and Sediment Control Site Inspector, 2009

Confined Space Entry, 2006

Asbestos Inspector, 2008

Professional Memberships

Years of Experience

Year Started in Company: 2006

Year Started in Industry: 2004

RELEVANT EXPERIENCE

Roosevelt New Middle School, Roosevelt, NY

AKRF has been retained by the Roosevelt Union Free School District to oversee remediation of a former Nassau Count Department of Public Works Pesticide Mixing Facility. Mr. Baird oversaw remediation activities which included excavation and disposal of contaminated soils. He also performed soil sample collection, groundwater and air monitoring, and prepared remedial action work documents. In addition to remedial over site, the work also involved coordinating with the construction managers and subcontractors.

MGP Remediation, Halesite, NY

Mr. Baird oversaw remediation activities at a former MGP site, which included excavation and disposal of coal tar contaminated soils, screening of soils for potential on-site reuse as subsurface backfill and prepared weekly SWPP reports. He conducted endpoint and waste characterization sampling, perimeter community air monitoring, and collected verification VOC samples. He coordinated efforts with on-site contractors, project managers, and the NYSDEC

Muss Flushing Remediation, Flushing, NY

Mr.Baird oversaw remediation activities, which included excavation and disposal of non-hazardous soils and dewatering of excavations. He conducted waste characterization sampling, imported backfill sampling, and low-flow groundwater sampling.

Mott Haven Remediation, Bronx, NY

Mr. Baird was involved in the continuing environmental monitoring efforts at the School Construction Authority site at Mott Haven. He performed air monitoring at the site which involved monitoring volatile organic compound levels and dust particulate levels in both the work zone and community area.

Gedney Way Landfill, White Plains, NY

Mr. Baird has been involved in the ongoing landfill closure procedures at the Gedney Way composting facility. He was involved in groundwater sampling using low-flow sampling methods and soil gas sampling.

AvalonBay Gold Street, Brooklyn, NY

Mr. Baird was involved in subsurface investigations at the proposed AvalonBay development site. The work entailed collecting and logging soil samples for waste characterization and groundwater data. The site work was used as part of the ongoing pre-construction phase activities.

Centennial Elementary School, Roosevelt, NY

Mr. Baird was the project monitor for the removal of all asbestos containing material throughout the elementary school before its demolition.

STEPHEN R. GRENS, JR.

ENVIRONMENTAL SPECIALIST

Stephen Grens, Jr. is an Environmental Specialist with expertise in Phase I and II site assessments and comprehensive asbestos surveys. He has completed assessments in New York, New Jersey, Connecticut, Pennsylvania, North Carolina, South Carolina, and Georgia. Mr. Grens is also actively involved in data interpretation and report preparation.

BACKGROUND

Education

B.S., Environmental Sciences, State University of New York (SUNY), Purchase, Expected Graduation Date: May 2012

Licenses/Certifications

New York State Certified Asbestos Inspector, Asbestos Project Monitor, and Air Sampling Technician, 1998

LIRR Roadway Worker, 2007

OSHA HAZWOPER Site Safety Supervisor, 2006

NYC Department of Buildings (DOB) Expediter, 2000

Years of Experience

Year started in company: 1996

Year started in industry: 1996

RELEVANT EXPERIENCE

Domino Sugar, Brooklyn, NY

The Refinery LLC is proposing to redevelop the former Domino Sugar site located along the Williamsburg waterfront in Brooklyn with residential and mixed-use buildings. Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYCDEP approved workplan.

Triangle Parcel, Orangeburg, NY

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYSDEC approved workplan.

Gedney Way Landfill, White Plains, NY

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil gas vapor extraction points, test pits, soil removal and soil and groundwater sampling. Remedial activities at the landfill are being performed for landfill closure in accordance with the NYSDEC approved workplan.

Flushing Industrial Park, Flushing, NY

Mr. Grens performed environmental and remediation oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the Flushing Industrial Park site. Approximately 22,762 tons of PCB contaminated soil and 55,629 tons of non-hazardous soil were remediated and disposed of at the appropriate receiving facilities. The environmental clean-up activities at the Flushing Industrial site were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program.

Queens West Development Project, Long Island City, NY

Mr. Grens performed environmental oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the site. The environmental clean-up activities were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program.

Bridgeport Municipal Stadium (Former Jenkins Valve Property), Bridgeport, CT

As part of the City of Bridgeport's revitalization program for the construction of a minor league baseball facility, Mr. Grens supervised and documented the removal of approximately 14,000 tons of solvent, petroleum, and metal-contaminated soil. He was responsible for the delineation of contaminated areas as well as subsequent confirmation soil sampling for the local sponsoring municipality. Additional on-site activities included the installation of groundwater monitoring wells, removal of underground storage tanks, and management of the current groundwater monitoring program.

Catskill/Delaware Water Treatment Facility, Mount Pleasant and Greenburgh, NY

Mr. Grens was responsible for the contaminated materials analysis as part of the Environmental Impact Statement (EIS) for the New York City Department of Environmental Protection (DEP). The analysis included the Phase I site assessment, a description of the chemicals to be used in the direct filtration process, and their alternatives. Mr. Grens also worked on the Electromagnetic Fields (EMF) analysis for this EIS.

East 75th/76th Street Development Site, New York, NY

As the designated health and safety officer (HSO), Mr. Grens' responsibilities included the personal well-being of all on-site personnel during Phase II activities. He managed and supervised the excavation, removal, and off-site disposal of numerous hazardous materials and petroleum-containing underground storage tanks, associated hazardous and contaminated soil, and stained bedrock.

Memorial Sloan Kettering Cancer Center, New York, NY

Mr. Grens has performed numerous noise impact studies on the east side of midtown Manhattan to assist in the determination of the various project scenarios within each site's respective EIS. Mr. Grens' tasks included collecting relevant noise data at numerous locations during morning, afternoon, and evening rush hours to determine real time noise levels utilizing a Larsen Davis decibel level indicator.

Columbia University Manhattanville Academic Mixed-Use Development, New York, NY

Mr. Grens performed numerous Phase I Environmental Site Assessments for the Columbia Manhattanville re-zoning project. Phase II activities included the installation of soil borings and groundwater monitoring wells and the collection of soil and groundwater samples.

St. Agnes Hospital Redevelopment, White Plains, NY

AKRF is currently working for North Street Community, LLC on the former St. Agnes Hospital campus in White Plains, New York. The project involves redeveloping the property into an assisted living and nursing home facility. Some of the existing buildings and uses will remain and several new buildings will be built for the new facility. AKRF's assignment includes preparing the site plan package to accompany the Draft Environmental Impact Statement (DEIS) for the project. Mr. Grens performed a Phase I Environmental Site Assessments of the numerous structures located on the property.

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN

2350 Fifth Avenue

Site #2-31-004

NEW YORK, NEW YORK

Quality Assurance Project Plan

AKRF Project Number: 08010

Prepared for:

2350 Fifth Avenue Corporation
309 East 94th Street, Ground Floor
New York, NY 10128

Prepared by:

AKRF

AKRF Engineering, P.C.
440 Park Avenue South, 7th Floor
New York, NY 10016
212-696-0670

SEPTEMBER 2013

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TABLES (IN TEXT)

ATTACHMENTS

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed during implementation of the Remedial Action Work Plan (RAWP) for Phase 2 of remediation at the 2350 Fifth Avenue Site at West 141st Street and Fifth Avenue in the Borough of Manhattan, New York, New York. Phase 2 of the remedy approved by the New York State Department of Environmental Conservation (NYSDEC) consists of:

- Installation of a soil vapor extraction (SVE) system equipped with activated carbon treatment (or other air treatment as applicable) beneath the building in the northwestern portion of the Site;
- Injections of a chemical oxidation product beneath the building for in-situ soil treatment in the northwestern portion of the Site;
- Injections of a reductive dechlorination enhancement product beneath the building for in-situ groundwater treatment in the northwestern portion of the Site;
- Removal of light non-aqueous phase liquid (LNAPL) around existing groundwater well MW-12s to the extent practicable; and
- Installation of a sub-slab depressurization system (SSDS) throughout the existing site building;
- Closure in-place of an underground storage tank (UST) located beneath the loading dock in the northwestern portion of the Site;
- Maintenance of the existing composite cover consisting of asphalt or concrete; and
- Imposition of institutional controls in the form of an environmental easement and Site Management Plan (SMP).

The objective of the QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) of environmental investigative, sampling and remedial activities conducted under the RAWP. Adherence to the QAPP will ensure that defensible data will be obtained during the investigation and remediation.

2.0 PROJECT TEAM

The project team will be drawn from AKRF professional and technical personnel and AKRF's subcontractors. All field personnel and subcontractors will have completed a 40-hour training course and updated 8-hour refresher course that meet the Occupational Safety and Health Administration (OSHA) requirements of 29 CFR Part 1910. The following sections describe the key project personnel and their responsibilities.

2.1 Project Director

The project director will be responsible for the general oversight of all aspects of the project, including scheduling, budgeting, data management and decision-making regarding the field program. The project director will communicate regularly with all members of the AKRF project team, the NYSDEC, and 2350 Fifth Avenue Corporation to ensure a smooth flow of information between involved parties. Marc S. Godick, LEP, will serve as the project director. Mr. Godick's resume is included in Attachment A.

2.2 Project Manager

The project manager will be responsible for directing and coordinating all elements of work under the RAWP - Phase 2. The project manager will prepare reports and participate in meetings with

2350 Fifth Avenue Corporation and/or the NYSDEC. Kathleen Brunner will serve as the project manager. Ms. Brunner's resume is included in Attachment A.

2.3 Field Team Leader

The field team leader will be responsible for supervising the daily sampling and health and safety activities in the field and will ensure adherence to the work plan and HASP. He/She will report to the Project Manager on a regular basis regarding daily progress and any deviations from the work plan. The field team leader will be a qualified, responsible person, able to act professionally and promptly during soil disturbing activities. The field team leader responsibilities will be assigned to appropriate AKRF personnel and will be established when implementation of the work is near. Field team leaders may include Gregory Baird and Stephen Grens, Jr. Mr. Baird's and Mr. Grens' resumes are included in Attachment A.

2.4 Project Quality Assurance/Quality Control Officer

The Quality Assurance/Quality Control (QA/QC) Officer will be responsible for adherence to the QAPP. The QA/QC Officer will review the procedures with all personnel prior to commencing any fieldwork and will conduct periodic site visits to assess implementation of the procedures. Marcus Simons will serve as the QA/QC officer for the RAWP - Phase 2. Mr. Simons's resume is included in Attachment A.

2.5 Laboratory Quality Assurance/Quality Control Officer

The laboratory QA/QC officer will be responsible for quality control procedures and checks in the laboratory and ensuring adherence to laboratory protocols. He/she will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued. He/she will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be determined upon selection of a contract laboratory or laboratories for the RAWP - Phase 2.

3.0 STANDARD OPERATING PROCEDURES

The following sections describe the standard operating procedures (SOPs) for the activities included in the RAWP - Phase 2. During these operations, safety monitoring will be performed as described in the project Health and Safety Plan (HASP) and all field personnel will wear appropriate personal protective equipment.

3.1 Well Installation

Soil vapor extraction (SVE) and light non-aqueous phase liquid (LNAPL) recovery wells will be installed using a hollow stem auger (HSA) rig are described below.

1. Advance borings using a rotary rig with 6.25-inch inside diameter hollow-stem augers.
2. Use the HSA rig to core through any existing asphalt or concrete surface.
3. Drive stainless steel, 24-inch split-spoon sampler through subsurface ahead of auger.
4. Construct wells with 4-inch diameter Schedule 40 PVC with a 2-foot long sump at the base, a 0.020-inch slotted well screen, then a solid PVC riser to bring the pipe to just below grade. SVE wells will be constructed with the bottom of the well above the water table. LNAPL recovery wells will be constructed with the well screen spanning the water table surface.

5. Fill annular space with No. 1 sand filter pack extending from bottom of the well to 6 inches above the screen. The remaining annular space will be sealed with hydrated bentonite extending from the top of the sand filter to the surface.
6. Grout borehole with bentonite-cement slurry upon completion.
7. Complete well with a locking, flush-with-grade gate box, with a cement apron set around to prevent drainage of surface runoff into the well.
8. Decontaminate all non-dedicated sampling equipment between samples (split spoons), and prior to and following each soil boring location (augers) as described in Sections 3.2 and 3.3 of this QAPP.
9. Containerize and handle drill cuttings and decontamination water as described in Section 3.4 of this QAPP.

A direct-push probe (DPP) rig may also be used with prepack wells of equivalent construction.

Following well installation, the NAPL recovery wells will be developed according to the following procedure:

1. Measure the depth to water using an oil/water interface probe and the total depth of the well using a weighted tape. Use these measurements to calculate the length of the water column. Calculate the volume of water in the well using 0.653 volumes per foot of water column (gallons) as the conversion factors for a 4-inch diameter well.
2. For the first five minutes of well development, develop the well using a submersible pump and re-circulate the water back into the well to create maximum agitation. This method is intended to remove fines from the sand pack, the adjacent formation and from the well.
3. After the first five minutes of well development, develop the well using a submersible pump and discharge the water to five-gallon buckets. Transfer water from the buckets to 55-gallon drums designated for well development water.
4. During development, collect periodic samples and analyze for turbidity and water quality indicators (pH, temperature, dissolved oxygen, reduction-oxidation potential, and specific conductivity) with measurements collected approximately every five minutes.
5. Continue developing the well until turbidity is less than 50 nephelometric turbidity units (NTUs) for three successive readings and until water quality indicators have stabilized to within 10% for pH, temperature and specific conductivity for three successive readings, or until three well volumes have been purged from the well.
6. Document the volume of water removed and any other observations made during well development in the field logbook or on field data sheets.
7. Decontaminate the equipment prior to and following development at each well location as described in Sections 3.2 and 3.3 of this QAPP. All well development water, decontamination, and purge water will be containerized in 55-gallon drums and handled as described in Section 3.4 of this QAPP.

3.2 Decontamination of Sampling Equipment

All sampling equipment will be either dedicated or decontaminated between sampling locations. The decontamination procedure will be as follows:

1. Scrub using tap water/Simple Green® mixture and bristle brush.
2. Rinse with tap water.
3. Scrub again with tap water/ Simple Green® and bristle brush.
4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment, if possible.

Decontamination will be conducted on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground. Wash water will be handled as described in Section 3.4.

3.3 Heavy Equipment Decontamination

Decontamination of chemically contaminated heavy equipment will be accomplished using high-pressure steam or dry decontamination with brushes and shovels. Decontamination will take place on a decontamination pad and all liquids used in the decontamination procedure will be collected. Vehicles or equipment brought into an exclusion zone will be treated as contaminated, and will be decontaminated prior to removal. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with Federal, State and local regulations. Personnel performing this task will wear the proper PPE as prescribed in Table 2 of the Site-Specific Health and Safety Plan (HASP).

A decontamination area will be established around the planned excavation area, adjacent to the environmental enclosure. The floor of the decontamination area will be covered with 6-mil plastic sheeting, as necessary, and bermed to prevent spreading of decontamination fluids or potential discharge to the ground surface.

All equipment in direct contact with known or potentially contaminated material will be either dedicated or decontaminated prior to handling less contaminated material or removal from the Site. Decontamination of chemically contaminated heavy equipment will be accomplished using high-pressure steam or by dry decontamination with brushes and shovels. All liquids used in the decontamination procedure will be collected, stored and disposed of in accordance with Federal, State and local regulations. Personnel performing this task will wear the proper PPE prescribed in Table 2 of the HASP.

3.4 Management of Investigation Derived Waste

All investigation-derived waste (IDW) will be containerized in Department of Transportation (DOT)-approved 55-gallon drums or other appropriate containers. The containers will be covered at the end of each work day and labeled with the date, the material location, the type of waste (e.g., drill cuttings, development water or purge water), and the name of an AKRF point-of-contact. Waste characterization samples will be collected, as required by the disposal facility. All containers will be labeled "pending analysis" until laboratory data is available. All IDW will be handled and disposed of or treated according to applicable local, State and Federal regulations.

4.0 SAMPLING AND LABORATORY PROCEDURES

4.1 Sample Collection Methodology

Where appropriate, trip blank and blind duplicate samples will be collected for quality control purposes, as described in Section 4.3. Chain of Custody forms will include project name, names of sampling personnel, sample number, date and time of collection, sample matrix, signatures of individuals involved in sample transfer, and the dates and times of transfers. All samples will be analyzed using the most recent NYSDEC Analytical Services Protocol (ASP) by a laboratory certified through the NYSDOH ELAP.

4.1.1 Backfill/Reuse Sampling

Prior to reuse as backfill, excavated material (such as material removed as part of piping installation for SSDS and SVE system) will be evaluated using the criteria below:

1. Concrete or demolition debris that does not exhibit signs of contamination will be sampled for asbestos prior to reuse on-Site.
2. Material proposed for reuse will be sampled at a minimum frequency of one sample per each 2,000 cubic yards.
3. One discrete sample for TCL VOC analysis will be collected for analysis by EPA Method 8260. Samples will be analyzed by a NYSDOH ELAP laboratory
4. Samples will be collected into laboratory-supplied containers.
5. Samples will be kept in an ice-filled cooler or refrigerator (not asbestos samples) until receipt by the laboratory.
6. Decontaminate all sampling equipment between sampling locations as described in Sections 3.2 of this QAPP.

4.1.2 In-Situ Treatment Testing

A bench-scale laboratory treatability study will be performed on site soil and groundwater samples to evaluate the effectiveness of the planned oxidation technology. Post-injection performance monitoring soil and groundwater sampling will also be performed to evaluate the effectiveness of treatment.

4.1.2.1 Soil Sampling

Soil sampling will be conducted according to the following procedures:

- Characterize the sample according to the modified Burmister soil classification system.
- Collect an aliquot of soil from each sampling location and place in labeled sealable plastic bags. The bag should be labeled with the soil boring number and the depth the sample was collected. Place the plastic bags in a chilled cooler to await selection of samples for laboratory analysis, if needed.
- After selecting which samples will be analyzed in the laboratory, fill the required laboratory-supplied sample jars with the soil from the selected sampling location or labeled sealable plastic bags. Seal and label the sample jars as described in Section 4.4 of this QAPP and place in an ice-filled cooler.

- Decontaminate any non-dedicated soil sampling equipment between sample locations as described in Section 3.2 of this QAPP.
- Record boring number, sample depth and sample observations (evidence of contamination, PID readings, soil classification) in field log book and boring log data sheet, if applicable.

4.1.2.2 Groundwater Sampling

Groundwater samples will be collected using low-flow purging and sampling methods based on the procedures described in the U.S. EPA's Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers (EPA 542-S-02-001). Sampling will be conducted according to the following procedure:

- Prepare the sampling area by placing plastic sheeting over the well. Cut a hole in the sheeting to provide access to the well.
- Remove the locking cap and measure the vapor concentrations in the well with a PID.
- Measure the total well depth, depth to water and check for the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) using an oil/water interface probe. Groundwater samples will not be collected from wells containing measurable NAPL.
- Use the water level and total well depth measurements to calculate the length of the mid-point of the water column within the screened interval. For example, for a shallow well where the total depth is 60 feet, screened interval is 45 to 60 feet, and depth to water is 50 feet, the mid-point of the water column within the screened interval would be 55 feet.
- Connect dedicated tubing to either a submersible or bladder pump and lower the pump such that the intake of the pump is set at the mid-point of water column within the screened interval of the well. Connect the discharge end of the tubing to the flow-through cell of a Horiba U22 multi-parameter meter or equivalent. Connect tubing to the output of the cell and place the discharge end of the tubing in a 5-gallon bucket or other container.
- Activate the pump at the lowest flow rate setting of the pump.
- Measure the depth to water within the well. The pump flow rate may be increased such that the water level measurements do not change by more than 0.3 feet as compared to the initial static reading. The well purging rate should be adjusted so as to produce a smooth, constant (laminar) flow and so as not to produce excessive turbulence in the well.
- Transfer discharged water from the 5-gallon buckets to 55-gallon drums designated for well-purge water.
- During purging, collect periodic samples and analyze for water quality indicators (e.g., turbidity, pH, temperature, dissolved oxygen, oxidation-reduction potential, and specific conductivity) with measurements collected approximately every five minutes.
- Continue purging the well until water quality indicators have stabilized to the extent practicable. The criteria for stabilization will be three successive readings for the following parameters and criteria:

Parameter	Stabilization Criteria
pH	+/- 0.1 pH units
Specific Conductance	+/- 3% mS/cm
Oxidation-reduction potential	+/- 10 mV
Turbidity	< 50 NTUs
Dissolved Oxygen	+/- 0.3 mg/l

- If the water quality parameters do not stabilize within two hours, purging may be discontinued, and samples will be collected as described below. Efforts to stabilize the water quality for the well must be recorded in the field book.
- After purging, disconnect the tubing to the inlet of the flow-through cell. Collect groundwater samples directly from the discharge end of the tubing into the required labeled sample containers and place in a chilled cooler.
- Collect one final field sample and analyze for turbidity and water quality parameters (e.g., pH, temperature, dissolved oxygen, oxidation-reduction potential, and specific conductivity).
- Once sampling is complete, remove the pump and tubing from the well. Dispose of the PPE and other disposable sampling materials appropriately.
- Decontaminate the pump, water level indicator, and flow-through cell as described in Section 3.2.
- Record all measurements (depth to water, depth to NAPL, water quality parameters, turbidity), calculations (well volume) and observations in the project logbook or field data sheet.

4.1.3 SVE System and SSDS Confirmatory Sampling

Confirmatory extracted vapor sampling will be conducted following startup as part of a reassessment of VOC emissions calculations according to the following procedure:

- Confirmatory sampling will comprise grab samples from each individual SSDS line (with the exception of existing intra-slab system lines which are manifolded below grade) and combined influent, intermediate and effluent samples, as appropriate.
- Connect the tubing leading from the designated sampling port to the inlet of a labeled 6-liter Summa canister fitted with a 6-hour laboratory-supplied regulator. Record the vacuum reading from the vacuum gauge on the canister at the beginning of the sampling period. Open the valve of the canister and record the time in the field book.
- At the end of the sampling period and prior to the vacuum gauge returning to ambient pressure, close valve, remove flow-rate controllers and vacuum gauges, install caps on canisters, and record time.
- Place canisters in shipping containers for transportation to laboratory.
- Samples will be collected in accordance with the QAPP and analyzed for VOCs by EPA Method TO-15 plus TICs

- Decontaminate all non-dedicated sampling equipment between sampling locations as described in Section 3.2 of this QAPP.

4.2 Laboratory Methods

Samples will be analyzed by an environmental laboratory approved in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003). Category B Deliverables will be required for confirmatory (post remediation) samples and final delineation samples. Sampling analyses are expected to be performed by TestAmerica Laboratories of Edison, NJ, or other equivalently qualified New York State certified laboratory. The laboratory will operate a QA/QC program that will consist of proper laboratory practices (including the required chain-of-custody), an internal quality control program, and external quality control audits by New York State.

Samples will be analyzed using the following methods and within the following holding times:

Table 1
Sample Analysis Methods and Holding Times

Matrix	Sample Analysis	EPA Method	Bottle Type	Preser-vative	Holding Time*
Soil - Reuse	TCL VOC	8260	EnCore or Terracore sampler	4˚C	2 days
	TCL SVOCs	8270	8 oz. clear glass	4˚C	14 days
	PCBs	8082	8 oz. clear glass	4˚C	14 days
	Pesticides	8081	8 oz. clear glass	4˚C	14 days
	TAL Metals	6010/7470	8 oz. clear glass	4˚C	14 days
Soil - Bench Scale Test and Performance Monitoring	VOCs	8260	EnCore or Terracore sampler	4˚C	2 days
	Iron and manganese	6010	Glass 4 oz. jar	4˚C	180 days
	Total organic carbon (TOC)	415/9060	40 mL	H_2SO_4	28 days
Groundwater - LNAPL Delineation and Bench Scale Test and Post-Injection Monitoring	VOCs	8260	40 mL glass vial, septa top	4˚C, HCl	14 days
	Base Neutral SVOCs	8270	2,000 mL amber jar	4˚C	7 days
	Iron and manganese	6010	500 ml plastic	HNO_3	180 days
	Sulfate	9038	200 ml plastic	4˚C	28 days
Air - SSDS and SVE System Sampling	VOCs	TO-15	6-liter Summa canister	None	14 days

*Holding times are from time of sample collection.

4.3 Quality Control Sampling

In addition to the laboratory analysis of the collected samples, additional analysis will be included for quality control measures, as required by the Category B sampling techniques. These samples may include ambient air sample and blind duplicate samples. QA samples will be analyzed for the same parameter set for which the other samples will be analyzed. Quality control samples will be collected at a frequency of one sample for every 20 field samples. Quality control sampling in accordance with the disposal facility requirements will be performed when collecting samples for disposal characterization. QA/QC Sampling requirements are presented in Table 2 below.

Table 2

QA/QC Sample Requirements

Sample Type	Parameters	Analytical Method	Field Samples	QC Samples	
				Trip Blank	**Duplicate**
Soil for Reuse	TCL VOC	8260	1 per 50 yards	1 per 20 samples	0
	SVOCs TAL Metals PCBs Pesticides	8270 6010/7470 8082 8081	1 per 300 yards	0	0
Air - SSDS and SVE System Sampling	VOCs	TO-15	**20**	1	0
Indoor Air Sampling	PCE, TCE, cis and trans 1,2-DCE, vinyl chloride	TO-15	**10**	1	1

No QA samples are anticipated as part of the bench scale testing for in-situ treatment.

4.4 Sample Handling

4.4.1 Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody documents and laboratory reports using an alpha-numeric code. Soil samples will be identified by the location number followed by the sample depth interval (in parenthesis). Waste characterization samples collected from 55-gallon drums will be identified by the drum number (e.g., D-1 or D-2). Indoor air samples will be named consistent with historical sample names.

Table 3 provides examples of the sampling identification scheme.

Table 3
Examples of Sample Names

Sample Description	Sample Designation
Groundwater sample from monitoring well M-3D	M-3D
Indoor air sample collected in Room 129	Room 129
Influent Sample from extraction well SVE-4	SVE-4 INF

4.4.2 Sample Labeling and Shipping

All sample containers will be provided with labels containing the following information:

- Project identification
- Sample identification
- Date and time of collection
- Analysis(es) to be performed
- Sampler's initials

Each sample container and the chain-of-custody form will be placed in a shipping container with bubble wrap or packing materials, as appropriate to prevent damage/breakage.

If appropriate based on analyses, freezer packs and/or fresh ice in sealable plastic bags will be added. Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. At the start and end of each workday, field personnel will add ice to the coolers as needed.

Samples will be shipped overnight (e.g., Federal Express) or transported by a laboratory courier. All containers shipped to the laboratory will be sealed with mailing tape and a chain-of-custody (COC) seal to ensure that the containers remain sealed during delivery.

4.4.3 Sample Custody

Field personnel will be responsible for maintaining the samples in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-site will be documented on chain-of-custody (COC) forms. The COC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; and signatures of individuals involved in sample transfer, and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

4.5 Field Instrumentation

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. For longer duration work, instruction manuals for the equipment will be available at the Site for referencing proper operation, maintenance and calibration procedures. The equipment will be calibrated according to manufacturer specifications at the start of each day of fieldwork, if applicable. If an instrument fails calibration, the project manager or QA/QC officer will be contacted immediately to obtain a replacement instrument. Calibration will be logged to record the date of each calibration, any failure to calibrate and corrective actions taken. The PID will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

ATTACHMENT A

RESUME OF PROJECT QA/QC OFFICER, PROJECT DIRECTOR, AND PROJECT MANAGER

MARC S. GODICK, LEP

SENIOR VICE PRESIDENT

Marc S. Godick, a Senior Vice President of the firm, has 20 years of experience in the environmental consulting industry. Mr. Godick's broad-based environmental experience includes expertise in remedial investigation, design and implementation of remedial measures, environmental/compliance assessment, litigation support, and storage tank management.

BACKGROUND

Education

M.E., Engineering Science/Environmental Engineering, Pennsylvania State University, 1998

B.S., Chemical Engineering, Carnegie Mellon University, 1989

Licenses/Certifications

Licensed Environmental Professional (License # 396) – State of Connecticut – 2003

40 Hour HAZWOPER and Annual Refresher Training, 1990-2008

Supervisors of Hazardous Waste Operations (8 Hour), 1990

Professional Memberships

Chair, Village of Larchmont/Town of Mamaroneck Coastal Zone Management Commission, 1997 - Present

Chair, Westchester County Soil and Water Conservation District, 2005 - Present

Member, NYSDEC Risk-Based Corrective Action (RBCA) Advisory Group for Petroleum-Impacted Sites, 1997

Community Leadership Alliance, Pace University School of Law, 2001

Seminars, Lectures & Publications

"Let Nature Do the Work – Onsite Stormwater Management," Westchester County Department of Parks, Recreation and Conservation, Fall 2003

"Water Pollution Control and Site Assessments and Audits," Environmental Health and Safety Issues Course, Building Owners and Managers Institute (BOMI), 1997-1999

"Hydrogeologic and Geological Aspects of Tank Closures and Remedial Action," Underground Storage Tanks Course, Government Institutes, Summer 1996, Fall 1997

Years of Experience

Year started in company: 2002

Year started in industry: 1990

RELEVANT EXPERIENCE

Queens West Development Project, AvalonBay Communities, Queens, NY

Mr. Godick managed one of the largest remediation projects completed to date under the New York State Department of Environmental Conservation (NYSDEC) Brownfields Cleanup Program (BCP). The remedy for the site, which was contaminated by coal tar and petroleum, included the installation of a hydraulic barrier (sheet pile cut off wall), excavation of contaminated soil under a temporary structure to control odors during remediation, a vapor mitigation system below the buildings, and implementation of institution controls. The investigation, remediation design, remedy implementation, and final sign-off (issuance of Certificate of Completion) were completed in two years. Total remediation costs were in excess of $13 million.

Williamsburg Waterfront Redevelopment, RD Management/L&M Equities/Toll Brothers, Brooklyn, NY

The project is one of the largest development projects in the Greenpoint/Williamsburg Rezoning Area, which includes the construction of nearly 1 million square feet of residential and retail space along the Williamsburg waterfront. The site had a variety of industrial uses, including a railyard, junk yard, and waste transfer station. As part of the City's rezoning, the site was assigned an E-designation for hazardous materials. Mr. Godick managed the preparation of the Phase I and II environmental site assessments, remedial action plan (RAP), and construction health and safety plan (CHASP). Mr. Godick obtained NYSDEC closure of an open spill associated with former underground storage tanks at the site. The NYCDEP-approved RAP and CHASP included provisions for reuse of the existing fill material, with the excess being disposed off-site, installation of a vapor barrier below the new buildings, installation of a site cap, and environmental monitoring during the construction activities. Mr. Godick is currently managing the environmental monitoring work that began in 2006. A Notice of Satisfaction has been issued by NYCDEP for the first phase of the development.

Landfill Closure & Compost Facility Application, White Plains, NY

Mr. Godick is currently managing the closure of a formal ash landfill, which is currently being utilized as a leaf and yard waste compost facility by the City of White Plains. The remedial investigation included on-site and off-site assessment of soil, groundwater, and soil gas to delineate the extent of methane and solvent contamination associated with the landfill. The landfill closure plan includes provisions for enhancing the existing cap, methane venting, and groundwater treatment for solvent contamination. Mr. Godick also managed the preparation of the compost facility permit application, which required modification to the facility's operations necessary to close the landfill and address other regulatory requirements.

Landfill Redevelopment – RD Management, Orangeburg, NY

Mr. Godick is currently managing the remediation of the former Orangeburg Pipe site under the NYSDEC Voluntary Cleanup Program. The site contains widespread fill material, which has fragments of Orangeburg pipe that is impregnated with asbestos and coal tar. The site is being redeveloped for retail use. The site's closure plan provides for reuse of all fill material on-site and methane mitigation (vapor barrier and passive sub-slab ventilation system) for all new buildings. The fill management activities will include dust and sediment control measures and air monitoring to prevent airborne dust in accordance with a closure plan, stormwater pollution prevention plan (SWPPP), and CHASP. In pervious areas, the site cap will consist of 2 feet of clean fill and a liner in larger areas.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Mr. Godick managed the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated in a sensitive location along the waterfront, surrounded by commercial and residential properties, and half the property where the remediation was conducted is a steep slope. The remedy consisted of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Mr. Godick was responsible for the development of the remedial work plans, design/construction documents, landscape architecture, confirmatory sampling, air monitoring, supervision, and preparation of close-out documentation in accordance with NYSDEC requirements.

Site Investigation–7 World Trade Center Substation, Con Edison, New York, NY

Mr. Godick managed the site investigation at the former 7 World Trade Center Substation in an effort to delineate and recover approximately 140,000 gallons of transformer and feeder oil following the collapse of the building. The project involved coordination with several crews, Con Edison, and other site personnel.

Site Investigation–Former Manufactured Gas Plant (MGP) Facilities, Con Edison, New York, NY

Mr. Godick managed site investigations at four former MGP facilities. The investigations at three of the four sites were completed at a Con Edison substation, flush pit facility, and service center, respectively. The details associated with the fourth site are confidential. Site characterizations at the substation and flush pit facility were conducted in preparation of expansion at these locations. The findings from these characterizations were used by Con Edison to make appropriate changes to the design specifications and to plan for appropriate handling of impacted materials and health and safety protocols during future construction activities.

Verizon, Investigation & Remediation, Various Locations, NY, PA and DE

Mr. Godick managed over 50 geologic/hydrogeologic assessments and site remediation projects related to petroleum releases at various facilities. Responsibilities included annual budgeting, day-to-day project management, development and implementation of soil and ground water investigation workplans, ground water modeling, risk evaluation, remedial action work plans, remedial design, system installation, waste disposal, well abandonment, and operation and maintenance. Many of the assessment and remedial projects followed a risk-based approach. Remedial technologies implemented included air sparging, soil vapor extraction, bioremediation, pump and treat, soil excavation, and natural attenuation.

Storage Tank Management, Verizon, Various Locations, NY, PA, DE, and MA

Mr. Godick managed the removal and replacement of underground and aboveground storage tank systems for Verizon in New York, Pennsylvania, Delaware, and Massachusetts. Responsibilities included the management of design, preparation of specifications, contractor bidding, construction oversight, project budget, and documentation. For selected AST sites, managed the development of Spill Control, Contingency and Countermeasures (SPCC) plans.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Mr. Godick was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. He also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Alexander Street Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, Yonkers, NY

AKRF was retained by the City of Yonkers to prepare an Urban Renewal Plan, Master Plan, Brownfield Opportunity Area Plan, and **a** Generic Environmental Impact Statement (GEIS) for a 153 acre industrial area along Alexander Street on the Yonkers Waterfront. Mr. Godick was responsible for the Hazardous Materials sections of the GEIS and Urban Renewal Plan. Mr. Godick managed the environmental data collection effort for the entire study area which involved review and summary of existing environmental reports, a review of regulatory records, and field inspections. The collected information was used to prioritize individual parcels for funding and remediation. The Master Plan for the area called for the development of a mixed-use neighborhood consisting of residential, neighborhood retail, and office space uses with substantial public open space, access to the Hudson River, and marina facilities.

Marcus Simons

Senior Vice President

General Introduction

Marcus Simons is a Senior Vice President of AKRF with more than 18 years of experience in environmental consulting. He specializes in the assessment and cleanup of contaminated sites, including federal and state superfund, Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA) sites, brownfield, voluntary cleanup and spill sites. His expertise includes health risk assessment, development of sampling plans, economic evaluations of remedial alternatives, and regulatory analysis. He also has extensive experience in statistics, selection of sites for controversial facilities, and federal and state wetland regulations and waterfront permitting. In addition to analytical work, Mr. Simons has considerable experience in presenting results to regulatory agencies and the general public.

Mr. Simons manages much of the environmental due diligence activity at AKRF (most recently managing environmental due diligence on Tishman/Blackrock's Peter Cooper/Stuyvesant Town acquisition, reportedly the largest real estate transaction in US history), including supervising preparation of numerous Phase I and Phase II Environmental Site Assessments, as well as more complex multi-site and litigation-related projects. Mr. Simons also manages preparation of the contaminated-materials portions of AKRF's Environmental Impact Statements and Environmental Assessments.

Mr. Simons has managed some of the most complex cleanup sites in New York State including: the recently completed cleanup of a 12-acre PCB-contaminated former utility property in Flushing, Queens where a 3 million square foot retail/residential building is being constructed; cleanup of the nation's largest former dental factory in Staten Island for reuse as single family housing; the investigation of several former manufactured gas plants; and the investigation and remediation associated with the reconstruction of the West Side Highway and Hudson River Park in Manhattan (from the Battery to 59th Street). These projects involved extensive multi-year negotiations with federal, state and city regulatory agencies. Mr. Simons has experience with federal and state superfund programs, state brownfield and voluntary cleanup programs, spill programs and investigation/cleanup under New York SEQRA/CEQR and NYCDEP E-designation programs.

Mr. Simons also has extensive experience in the evaluation of contaminated materials issues for environmental assessments (EAs) and environmental impact statements (EISs) under NEPA, SEQRA and CEQR, including transportation projects (Second Avenue Subway, MTA/LIRR East Side Access, Cross Harbor Freight Movement Study, Route 9A Reconstruction), large-scale rezoning projects (Long Island City, Downtown Brooklyn, Jamaica) and public and private redevelopment work (Times Square, School Construction Authority, Queens West)

Before joining AKRF, Mr. Simons worked for Woodward Clyde Consultants (now URS Corporation) in Wayne, New Jersey, where he was responsible for risk assessment, environmental impact analysis, and regulatory analysis for both public and private clients. His responsibilities included projects primarily located in New York and New Jersey. His risk assessment work included a study for the decommissioning and cleanup of a Canadian elemental phosphorus production facility (the first such plant in the world to be systematically decommissioned).

Background

Education

M.A. and B.A. (Honors), Engineering/Management Science, Cambridge University, England, 1986

M.S., Engineering and Public Policy, Carnegie-Mellon University, 1988

Years of Experience

Year started in company: 1995

Year started in industry: 1988

RELEVANT EXPERIENCE

Pelham Bay Landfill, Bronx, NY

For the NYCDEP, Mr. Simons prepared a Human Health Risk Assessment for the Pelham Bay Landfill Inactive Hazardous Waste Disposal Site in Bronx, NY. The Assessment was performed in accordance with both US EPA Superfund Guidelines and site-specific exposure factors and other procedures agreed to with NYSDEC and NYSDOH. The Assessment included analysis of soil, groundwater, surface water, sediment, fish/shellfish and air data and incorporated complex comparisons with background contaminant levels in the various media and innovative approaches, following the data validation, to handling extensive non-detect and estimated-value laboratory data .

CE Flushing Site, Flushing, NY

Mr. Simons directed the remediation of a former industrial site in Flushing, Queens, NY prior to its redevelopment as a 3 million square foot retail/residential complex. The property was cleaned up under the NYS Department of Environmental Conservation Brownfield Cleanup Program and the NYC Department of Environmental Protection's E-Designation requirements. The remedial measures included the removal of aboveground and underground storage tanks, excavation and off-site disposal of TSCA, RCRA and non-hazardous wastes, NAPL removal, and removal and investigation of on-site drainage structures. The remediation and subsequent construction involved obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal Wetlands, NYSDEC Long Island Wells, NYSDEC SPDES/Stormwater and NYCDEP Sewer Use.

Peter Cooper Village/Stuyvesant Town, New York, NY

Mr. Simons directed the purchaser's environmental due diligence efforts for the bidding and subsequent acquisition of this 80-acre property in Manhattan. Much of the 110-building complex is underlain by former manufactured gas plants and Con Edison entered the site into NYSDEC's Voluntary Cleanup Program. Going forward Mr. Simons will manage oversight of activities that involve disturbance of MGP-contaminated soils, as well as future testing and potentially remediation.

Ferry Point Park, Bronx, NY

Mr. Simons developed the material acceptance criteria (soil standards for capping materials) for the development of Ferry Point Park (including a golf course) in the Bronx. The New York City Department of Environmental Protection DEP and the New York State Departments of Health (DOH) and Environmental Conservation (DEC) agreed for the first time to relax their strict (TAGM 4046) criteria for clean soil, based on statistical analyses of background conditions and risk-based modeling.

Prince's Point, Staten Island, NY

Mr. Simons managed the complex cleanup (including the relocation of a contaminated tidal creek) of the nation's largest former dental factory site on Staten Island's waterfront. The site was on the State Superfund list. The future use of the site as single-family residential property entailed extensive negotiations with NYSDEC and NYSDOH. The project required obtaining (or obtaining waivers from) numerous permits including those for NYSDEC Tidal and Fresh Water Wetlands, USACOE (Nationwide) Permits, NYSDEC Coastal Erosion Hazard Area, NYSDEC SPDES and Stormwater, FEMA Modifications to Land in Floodplain, and USEPA Notification of PCB Waste Activity.

Route 9A Reconstruction, New York, NY

AKRF directed extensive studies for the reconstruction in Lower Manhattan proposed by the New York State Department of Transportation (NYSDOT) in cooperation with the Federal Highway Administration (FHWA). The project is arguably the most complex environmental analyses performed for a federally funded transportation project in New York City in the last 10 years. The firm was responsible for all environmental tasks as well as the preparation for the Draft, Supplementary, and Final Environmental Impact Statements (EISs) and Section 4(f)

Evaluation for this 5-mile $250 million reconstruction of Route 9A as part of the recovery effort following the events of September 11th, 2001. Mr. Simons managed the extensive hazardous materials investigations and prepared the contract specifications for contaminated soil and tank removal, including Health and Safety oversight.

Long Island City Rezoning, Queens, NY

As part of the preparation of an Environmental Impact Statement for NYC Department of City Planning, Mr. Simons managed the hazardous materials assessment of a multi-block industrial area. In addition to conducting the assessment Mr. Simons made recommendation as to the properties where "E-Designations" (city-recorded institutional controls on future development) should be placed.

Outlet City, Long Island City, Queens, NY

In Long Island City, Mr. Simons is managing the investigation and remediation of an old factory complex where large volumes of creosote were spilled. The investigations and interim remedial measures (IRMs) are taking place under the state's Voluntary Cleanup Program (VCP).

Pelham Plaza Shopping Center, Pelham Manor, Bronx, NY

Mr. Simons was responsible for the investigation of a former Con Edison manufactured gas facility on the Hutchinson River on the border between Westchester County and the Bronx. He oversaw the complex investigation of the existing shopping center at the site, and proposed a remediation approach to allow the expansion of the shopping center.

New York City Department of Transportation, Lead Paint Removal and Disposal on Bridges Project, New York, NY

Mr. Simons conducted a regulatory analysis of related to the removal of lead paint from nearly 800 bridges. This analysis included an evaluation of the regulatory compliance of various proposed procedures with federal and state hazardous and solid waste management requirements.

American Felt and Filter Company, New Windsor, NY

Mr. Simons prepared a Remedial Investigation (including exposure assessment) and Feasibility Study for the country's oldest active felt manufacturing facility, located in Orange County. This solvent-contaminated site is on the State Superfund List.

KATHLEEN BRUNNER

TECHNICAL DIRECTOR

Kathleen Brunner is a Technical Director with more than 12 years of professional environmental consulting experience. She specializes in environmental site assessments and investigations, site remediation, and hazardous materials planning studies. Ms. Brunner has extensive experience performing Phase I and II environmental site assessments, directing and overseeing site remediation projects, and addressing the hazardous materials aspects of Environmental Impact Statements (EISs).

Ms. Brunner's experience includes supervising the installation of soil borings and groundwater monitoring wells; sampling soil, groundwater, air and soil gas; maintaining and sampling groundwater remediation systems, and overseeing and directing construction-related soil management plans and environmental remediation projects. Her range of project experience includes preparation of proposals, sampling protocols, work plans, health and safety plans, site investigation reports, and closure requests, as well as project scheduling and budgeting. Ms. Brunner has coordinated work and acted as a liaison between clients, property owners, subcontractors, and regulatory agencies on City, State and Federal levels.

Prior to joining AKRF, Ms. Brunner worked for a multidisciplinary consulting firm at their offices in Pewaukee, Wisconsin and New York, New York as an environmental scientist.

BACKGROUND

Education

B.A., Physical Geography, University of Wisconsin – Milwaukee, 1995

Licenses/Certifications

40-Hr Hazardous Waste Operations Site Worker, 1997 to present

Years of Experience

Year started in company: 2004

Year started in industry: 1996

RELEVANT EXPERIENCE

C.E. Flushing Site, Flushing, NY

Ms. Brunner is managing and coordinating the investigation, remediation and post-remediation monitoring of a former industrial site in Flushing, Queens, NY as part of redevelopment of the property. The investigation included groundwater sampling, delineation of known areas of soil contamination, and delineating PCB-containing non-aqueous phase liquid (NAPL). Remedial activities included removal of aboveground and underground storage tanks, NAPL product removal, removal of on-site drainage structures, and excavation of delineated hot spots, including hazardous and non-hazardous waste streams. Ms. Brunner assisted in the preparation of the application for this site to transfer from the New York State Department of Environmental Conservation's (NYSDEC) Voluntary Cleanup Program to the Brownfield Cleanup Program (BCP). Ms. Brunner was responsible for developing work plans for approval by the NYSDEC and New York State Department of Health (NYSDOH), and preparation of summary reports for public comment. Remediation was completed in 2007 and Certificates of Completion under the BCP were issued in December 2007. Post-remediation monitoring includes oversight of construction-related soil disturbance, quarterly groundwater and vapor sampling, and continued annual reporting to NYSDEC and NYSDOH. Ms. Brunner also assisted coordination with the New York City Department of Environmental Protection (NYCDEP) due to an E-designation on the property. As part of the project, Ms. Brunner coordinated with the client, lawyers, architects and engineers of the planned development, tenants of a neighboring property, remediation and construction contractors, US Environmental Protection Agency (USEPA), NYSDEC, NYSDOH, and NYCDEP.

Brownfield Opportunity Area (BOA) Grant Program Services for the Town of Babylon, Wyandanch, NY

AKRF was retained by the Town of Babylon to prepare a blight study, market study, NYS BOA Step 2 Nomination, an Urban Renewal Plan, and a Generic Environmental Impact Statement (GEIS) as part of a revitalization and redevelopment effort for downtown Wyandanch. Ms. Brunner was responsible for overseeing the environmental data collection effort for the 226 brownfields identified in the 105-acre project area, and for identifying strategic sites for which site assessment funding should be sought. She also prepared the Hazardous Materials section of the Wyandanch Downtown Revitalization Plan (which incorporates the Nomination, Urban Renewal Plan, and GEIS), involving a summary of available environmental reports, a review of regulatory records, and limited street-level site inspections.

Bayside Fuel Oil Depot, Brooklyn, NY

Ms. Brunner is managing the site assessment for a major oil storage facility (MOSF) located on the Gowanus Canal waterfront. Work included follow-up investigation related to a petroleum release and preparation of a remedial action plan. Additional investigation and initial remedial activities are expected to be completed in 2010, and the site is being considered for redevelopment for retail and residential use.

Fresh Kills Park, Staten Island, NY

AKRF is preparing the Generic Environmental Impact Statement (GEIS) for this large-scale, multi-phase project to turn the former Fresh Kills Landfill into a public park. The project involves New York City Department of Sanitation and Department of Parks with regulatory oversight and approval by both NYCDEP and NYSDEC. As part of the hazardous materials chapter for the GEIS, Ms. Brunner researched site history, performed a regulatory records review and prepared a data summary and recommendations for mitigation of potential future impacts.

Atlantic Yards Arena and Redevelopment Project, Brooklyn, NY

AKRF prepared the Environmental Impact Statement (EIS) and Blight Study for this ambitious and controversial land use initiative. The project, overseen by the Empire State Development Corporation (ESDC), calls for the redevelopment of an underutilized and underdeveloped 22-acre site in the Atlantic Terminal area of Brooklyn, adjacent to Downtown Brooklyn. The project includes a new arena for the Nets basketball team, along with mixed-income residential, commercial office, retail, hotel, and community facility uses. The total project cost is estimated at $4.5 billion. Key issues addressed in the EIS include: potential impacts on water quality in the Gowanus Canal and East River; concerns over land use compatibility and urban design; potential adverse traffic and air quality impacts; and potential adverse effects on socioeconomic conditions in the study area. In addition, the EIS presented a detailed description of construction activities and phasing, and an analysis of potential averse impacts during project construction. The FEIS was issued in December, 2006. Ms. Brunner served on a team of Hazmat staff conducting Phase I Environmental Site Assessments in accordance with ASTM E-1527-00 related to the potential development of up to 8 city blocks. As part of the study, Ms. Brunner coordinated with the client, property owners or their representatives, and tenants. Her work scope included site reconnaissance, site history and records review, interviews, report preparation, recommendations and data summary to be used in preparation of the EIS chapter.

Edgemere By the Sea, Rockaway, NY

Ms. Brunner performed a Phase I Environmental Site Assessment of 73 city lots located on nine blocks in accordance with ASTM E-1527-00 related to the potential development of the area. Her work scope included site reconnaissance, site history and records review, interviews, report preparation and recommendations. Based on the findings in the Phase I, Phase II was performed. Ms. Brunner coordinated and oversaw soil boring installation and collected soil and groundwater samples.

Fulton Street Transit Center, New York, NY

While working with another firm, Ms. Brunner worked with a multi-company project team assisting with work pertaining to subsurface environmental issues. Ms. Brunner provided general environmental oversight of soil borings, collected groundwater samples from wells, conducted rising head slug tests, and calculated hydraulic conductivity estimates. She prepared the Health and Safety Plan, environmental portions of the work plan, and the Environmental Subsurface Investigation Plan.

DaimlerChrysler, Kenosha, WI

While with another firm, Ms. Brunner assisted in multiple phases of work at an approximately 100-acre DaimlerChrysler manufacturing facility. During construction of a new building, Ms. Brunner observed excavation activities, directed contaminated soil excavation, and managed dewatering treatment and discharge. Post-construction, Ms. Brunner assisted in the reconstruction of two groundwater remediation systems and an SVE system, including plumbing an oil water separator and stripper, and installing appropriate venting and sampling ports. Ms. Brunner also assisted in equipment start-up and subsequent troubleshooting and sampling of influent and effluent. On a quarterly basis, routine and troubleshooting maintenance work was performed on the pumps, flow meters, strippers, oil/water separators and other system components for six remediation systems. Ms. Brunner also directed and documented monitoring well installation, collected groundwater samples from up to 50 monitoring wells and sumps, and air samples from soil vapor extraction systems, reviewed and summarized field and laboratory data, and assisted in writing semi-annual and annual reports for this facility. Report preparation included quality assurance calculations, determination of quantity of free product and dissolved phase contaminant removal, and project narrative of activities completed during the reporting period.

GREGORY D. BAIRD

ENVIRONMENTAL SCIENTIST

Mr. Baird is an Environmental Scientist with 4 years of professional environmental consulting experience. His range of expertise includes remediation oversight, subsurface soil investigations, waste characterization sampling, groundwater monitoring, well sampling, soil boring sampling, test pit oversight, and air monitoring.

Prior to joining AKRF, Mr. Baird was employed by Brookside Environmental for two years where he was responsible for various remediation activities such as, waste characterization sampling, under ground storage tank removal and closures, and hazardous/non-hazardous waste documentation and removal.

BACKGROUND

Education

B.S., Geology, State University of New York at New Paltz, New York, 2004

Licenses/Certifications

40 Hour Hazardous Waste Operations Site Worker, 2005

Asbestos Project Monitor, Air Technician and Inspector, 2008

Lead Based Paint Risk Assessor and Inspector, 2009

Lead Risk Assessor, 2009

Erosion and Sediment Control Site Inspector, 2009

Confined Space Entry, 2006

Asbestos Inspector, 2008

Professional Memberships

Years of Experience

Year Started in Company: 2006

Year Started in Industry: 2004

RELEVANT EXPERIENCE

Roosevelt New Middle School, Roosevelt, NY

AKRF has been retained by the Roosevelt Union Free School District to oversee remediation of a former Nassau Count Department of Public Works Pesticide Mixing Facility. Mr. Baird oversaw remediation activities which included excavation and disposal of contaminated soils. He also performed soil sample collection, groundwater and air monitoring, and prepared remedial action work documents. In addition to remedial over site, the work also involved coordinating with the construction managers and subcontractors.

MGP Remediation, Halesite, NY

Mr. Baird oversaw remediation activities at a former MGP site, which included excavation and disposal of coal tar contaminated soils, screening of soils for potential on-site reuse as subsurface backfill and prepared weekly SWPP reports. He conducted endpoint and waste characterization sampling, perimeter community air monitoring, and collected verification VOC samples. He coordinated efforts with on-site contractors, project managers, and the NYSDEC

Muss Flushing Remediation, Flushing, NY

Mr.Baird oversaw remediation activities, which included excavation and disposal of non-hazardous soils and dewatering of excavations. He conducted waste characterization sampling, imported backfill sampling, and low-flow groundwater sampling.

Mott Haven Remediation, Bronx, NY

Mr. Baird was involved in the continuing environmental monitoring efforts at the School Construction Authority site at Mott Haven. He performed air monitoring at the site which involved monitoring volatile organic compound levels and dust particulate levels in both the work zone and community area.

Gedney Way Landfill, White Plains, NY

Mr. Baird has been involved in the ongoing landfill closure procedures at the Gedney Way composting facility. He was involved in groundwater sampling using low-flow sampling methods and soil gas sampling.

AvalonBay Gold Street, Brooklyn, NY

Mr. Baird was involved in subsurface investigations at the proposed AvalonBay development site. The work entailed collecting and logging soil samples for waste characterization and groundwater data. The site work was used as part of the ongoing pre-construction phase activities.

Centennial Elementary School, Roosevelt, NY

Mr. Baird was the project monitor for the removal of all asbestos containing material throughout the elementary school before its demolition.

STEPHEN R. GRENS, JR.

ENVIRONMENTAL SPECIALIST

Stephen Grens, Jr. is an Environmental Specialist with expertise in Phase I and II site assessments and comprehensive asbestos surveys. He has completed assessments in New York, New Jersey, Connecticut, Pennsylvania, North Carolina, South Carolina, and Georgia. Mr. Grens is also actively involved in data interpretation and report preparation.

BACKGROUND

Education

B.S., Environmental Sciences, State University of New York (SUNY), Purchase, Expected Graduation Date: May 2012

Licenses/Certifications

New York State Certified Asbestos Inspector, Asbestos Project Monitor, and Air Sampling Technician, 1998

LIRR Roadway Worker, 2007

OSHA HAZWOPER Site Safety Supervisor, 2006

NYC Department of Buildings (DOB) Expediter, 2000

Years of Experience

Year started in company: 1996

Year started in industry: 1996

RELEVANT EXPERIENCE

Domino Sugar, Brooklyn, NY

The Refinery LLC is proposing to redevelop the former Domino Sugar site located along the Williamsburg waterfront in Brooklyn with residential and mixed-use buildings. Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYCDEP approved workplan.

Triangle Parcel, Orangeburg, NY

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil borings and soil and groundwater sampling. Soil and groundwater sampling and monitoring are being performed in accordance with the NYSDEC approved workplan.

Gedney Way Landfill, White Plains, NY

Mr. Grens performed environmental oversight for the installation of numerous groundwater monitor wells, soil gas vapor extraction points, test pits, soil removal and soil and groundwater sampling. Remedial activities at the landfill are being performed for landfill closure in accordance with the NYSDEC approved workplan.

Flushing Industrial Park, Flushing, NY

Mr. Grens performed environmental and remediation oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the Flushing Industrial Park site. Approximately 22,762 tons of PCB contaminated soil and 55,629 tons of non-hazardous soil were remediated and disposed of at the appropriate receiving facilities. The environmental clean-up activities at the Flushing Industrial site were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program.

Queens West Development Project, Long Island City, NY

Mr. Grens performed environmental oversight including the implantation of the site specific health and safety plan (HASP) during excavation activities at the site. The environmental clean-up activities were done in accordance with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) under the Brownfields Clean-Up Program.

Bridgeport Municipal Stadium (Former Jenkins Valve Property), Bridgeport, CT

As part of the City of Bridgeport's revitalization program for the construction of a minor league baseball facility, Mr. Grens supervised and documented the removal of approximately 14,000 tons of solvent, petroleum, and metal-contaminated soil. He was responsible for the delineation of contaminated areas as well as subsequent confirmation soil sampling for the local sponsoring municipality. Additional on-site activities included the installation of groundwater monitoring wells, removal of underground storage tanks, and management of the current groundwater monitoring program.

Catskill/Delaware Water Treatment Facility, Mount Pleasant and Greenburgh, NY

Mr. Grens was responsible for the contaminated materials analysis as part of the Environmental Impact Statement (EIS) for the New York City Department of Environmental Protection (DEP). The analysis included the Phase I site assessment, a description of the chemicals to be used in the direct filtration process, and their alternatives. Mr. Grens also worked on the Electromagnetic Fields (EMF) analysis for this EIS.

East 75th/76th Street Development Site, New York, NY

As the designated health and safety officer (HSO), Mr. Grens' responsibilities included the personal well-being of all on-site personnel during Phase II activities. He managed and supervised the excavation, removal, and off-site disposal of numerous hazardous materials and petroleum-containing underground storage tanks, associated hazardous and contaminated soil, and stained bedrock.

Memorial Sloan Kettering Cancer Center, New York, NY

Mr. Grens has performed numerous noise impact studies on the east side of midtown Manhattan to assist in the determination of the various project scenarios within each site's respective EIS. Mr. Grens' tasks included collecting relevant noise data at numerous locations during morning, afternoon, and evening rush hours to determine real time noise levels utilizing a Larsen Davis decibel level indicator.

Columbia University Manhattanville Academic Mixed-Use Development, New York, NY

Mr. Grens performed numerous Phase I Environmental Site Assessments for the Columbia Manhattanville re-zoning project. Phase II activities included the installation of soil borings and groundwater monitoring wells and the collection of soil and groundwater samples.

St. Agnes Hospital Redevelopment, White Plains, NY

AKRF is currently working for North Street Community, LLC on the former St. Agnes Hospital campus in White Plains, New York. The project involves redeveloping the property into an assisted living and nursing home facility. Some of the existing buildings and uses will remain and several new buildings will be built for the new facility. AKRF's assignment includes preparing the site plan package to accompany the Draft Environmental Impact Statement (DEIS) for the project. Mr. Grens performed a Phase I Environmental Site Assessments of the numerous structures located on the property.

APPENDIX F

CONSTRUCTION QUALITY ASSURANCE PLAN

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

CQAP	Construction Quality Assurance Plan
FER	Final Engineering Report
IRM	Interim Remedial Measures
NAPL	Non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
QAPP	Quality Assurance Project Plan
QA	Quality Assurance
QC	Quality Control
RAWP	Remedial Action Work Plan
SAP	Sampling and Analysis Plan
SSDS	Sub-slab depressurization system

1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been prepared for remedial activities performed under the Remedial Action Work Plan – Phase 2 (RAWP) that will be performed at the property at 2350 Fifth Avenue in New York, New York under the Inactive Hazardous Waste Disposal Site Remedial Program. The Site is identified as Block 1739, Lot33 and a portion of Lot 22 on the Borough of Manhattan. This CQAP supplements the New York State Department of Environmental Conservation (NYSDEC)-approved Remedial Action Work Plan (RAWP) and provides monitoring, inspection, testing, and documentation protocols and procedures.

The following information is provided:

1. **Responsibility, Authority and Qualifications** – The responsibility, authority and qualifications of the key personnel involved in the project.
2. **Inspection and Testing Activities -** Inspections and tests that will be used to verify that construction activities meet or exceed all design criteria and federal, state, and local regulations and requirements.
3. **Meetings**– The requirements for project coordination meetings between the Owner and its representatives, the remedial or environmental Contractors, and other involved parties.
4. **Documentation and Reporting** – Field documentation and reporting requirements.

2.0 RESPONSIBILITY AND AUTHORITY

Measures will be implemented to ensure that a functional quality control (QC) organization is active during the project and to provide support for the construction QC system in conducting inspections, tests and retesting (in the event of failure of any item of work). This includes oversight of subcontractors and compliance with contract provisions. Construction QC includes, but is not limited to, the inspections and tests required in the RAWP and approved submittals and will cover all project operations. A site consultant is hired by the Owner will manage field activities and coordinate the contractor's activities.

2.1 Owner

2350 Fifth Avenue Corporation is the Site Owner, responsible for coordinating the project, including activities of the site consultant, contractor(s) and subcontractor(s), in order to comply with the requirements of the RAWP and regulatory agencies. The Owner is also responsible for completing and submitting documentation required by the RAWP, the CQAP, and the Quality Assurance Project Plan (QAPP) and has the authority to accept or reject the materials and workmanship of any subcontractors at the site.

2.2 Construction Quality Assurance (QA) Officer (Consultant)

The Construction QA Officer will be an employee of the consultant hired by the Owner and will perform activities that are necessary to assure the quality of construction. He/she will be on-site as required during construction activities and will have the authority to take any action necessary to maintain compliance with the RAWP and approved submittals and to monitor construction quality.

Specific responsibilities of the Construction QA Officer include:

- Supporting the Owner and the consultant's field staff;
- Evaluating construction activities and activities of the field staff;

- Verifying that remedial activities are performed in accordance with the RAWP, approved submittals, and with federal, state, and local regulations and requirements.
- Verifying that data are properly recorded, validated, reduced, summarized, and inspected;
- Evaluating sampling and monitoring activities;
- Educating the field staff on construction QC requirements and procedures; and
- Scheduling and coordinating inspections.

2.3 Field Team Leader (Consultant)

The Field Team Leader will be an employee of the consultant and will be on site during construction activities. He/she will have authority to take any action necessary to maintain compliance with the RAWP and approved submittals and to maintain construction quality. The Field Team Leader will also manage the field staff discussed in this CQAP.

Specific responsibilities of the Field Team Leader include:

- Reviewing the RAWP for clarity and completeness so that the construction activities can be effectively implemented;
- Verifying that the contractor's work is in accordance with the RAWP, approved submittals, and this CQAP;
- Performing on-site inspection of the work in progress to assess compliance with the RAWP, approved submittals, and this CQAP;
- Scheduling and coordinating inspections;
- Reporting the results of all observations and tests as the work progresses and modifying materials and work to comply with the RAWP and approved submittals as noted below;
    1. Providing daily reports on field construction, material shipments, and inspection results;
    2. Review and interpretation of all data, drawings, and reports;
    3. Identification of all work that should be accepted, rejected, or uncovered for observation, or that may require special testing, inspection, or approval;
    4. Rejection of defective work and verification that corrective measures are implemented;
    5. Making observations and records that will aid in the preparation of a report on remedial activities.
- Inspecting each delivery of materials and/or equipment;
- Reporting to the Construction QA Officer the results of all inspections, including work that is not of acceptable quality or that fails to meet the requirements of the RAWP, approved submittals, and this CQAP;
- Verifying that testing equipment meets established requirements that the tests are conducted according to the proper standardized procedures;
- Confirming that testing equipment, personnel, and procedures do not change over time, or making sure that any changes do not adversely impact the inspection process;
- Confirming that regular calibration of testing equipment occurs and is properly recorded; and

- Confirming that waste treatment or disposal is performed in accordance with applicable federal, state, and local laws and regulations.

2.4 Site Technician (Consultant)

A qualified scientist, geologist or engineer (supplemented by additional personnel, if necessary) will be on site during remedial construction documenting site personnel, equipment, samples collected, contamination observations and any other observations of field activities. Specific responsibilities include:

- Calibration, operation, and maintenance of air monitoring instrumentation in accordance with the RAWP and approved submittals.
- Collecting, packaging, and shipping of environmental samples in accordance with the RAWP and QAPP.
- Documenting sample collection in a field notebook and identifying all sample locations in a field notebook or site drawing.
- Preparing and logging manifests for transportation of any non-hazardous and hazardous materials.
- Informing the Site Project Coordinator when (if) the concentrations of air contaminants exceed action levels specified in the RAWP.
- Maintaining and organizing the field equipment and supply storage area.

3.0 FIELD QUALITY CONTROL INSPECTIONS, TESTING, AND SAMPLING

The definable features of work are described in Section 4 of the RAWP. This section describes the anticipated inspection, testing, and sampling requirements associated with these definable features of work.

3.1 Mobilization

Inspections will be performed to assure that site laydown areas, support facilities, surface water controls, and air monitoring systems are established in accordance with the RAWP and approved submittals. In addition, the stakeout of existing utilities in work areas and the maintenance of site security will be verified. There are no testing and sampling requirements associated with mobilization of the contractor(s).

Each delivery of materials and/or equipment will be inspected relative to approved submittals. Approved materials and/or equipment will be stored at a designated area of the site.

Equipment will be set-up and tested in accordance with the RAWP and approved submittals.

3.2 Installation of SVE System Piping, Blower and Treatment

Inspections will be performed during installation of the soil vapor extraction (SVE) system piping and other system components. Any breaches in the piping will be repaired or replaced, as needed. AKRF will confirm the installed system components are those specified in the RAWP for Phase 2, or are equivalent.

3.3 Injection for In-Situ Treatment of Soil and Groundwater

Continuous inspection will be performed during in-situ treatment to document injection activities. The Site Technician will document the products used, volumes and mixing ratios of each and other details of the injection.

3.4 Installation of NAPL Recovery Wells

Continuous inspection will be performed during drilling and installation of the non-aqueous phase liquid (NAPL) recovery wells. Recovered samples and each bore hole will be inspected to identify soil type, location of geologic boundaries, depth to the water table, and contamination (if present). Each well construction will be observed to document the date of installation, materials used, casing and screen sizes and installation depths, and ground surface and well casing elevations.

3.5 Installation of SSDS Piping, Blower and Treatment

Inspections will be performed during installation of the sub-slab depressurization system (SSDS) piping and system components. Any breaches in the piping will be repaired or replaced, as needed. The Site Technician will confirm the installed system components are those specified in the RAWP for Phase 2 or are equivalent.

3.6 Tank Closure In-Place

Continuous inspection will be performed during tank closure activities to document dates of work, tank condition and closure methodology.

3.7 Loading of Waste Material for Transportation

Inspections will be conducted to verify that material removed from the site is properly loaded for transfer to a permitted treatment/disposal facility. Manifest or bills of lading will be maintained.

3.8 Site Restoration

Site restoration will be observed and recorded to verify compliance with the RAWP and approved submittals. Any openings in the site cover will be repaired using minimum 6-inch thick concrete. The surface will be restored to match the surrounding ground surface.

4.0 MEETINGS

A pre-construction meeting will be held with representatives of NYSDEC, consultant and contractor(s) performing the work prior to the start of major construction activities. Additional meetings will be called as necessary if work conditions change or deviations are necessary.

Project personnel and visitors will be given health and safety briefings periodically by the Site Technician or Field Team Leader to assist Site personnel in safely conducting their work activities. The safety briefings will include information on new operations to be conducted, changes in work practices or changes in the Site's environmental conditions, as well as periodic reinforcement of previously discussed topics.

5.0 DOCUMENTATION AND REPORTING REQUIREMENTS FOR CQAP

The value of the CQAP will be assured by proper documentation. The inspectors will use data sheets, field reports, log forms, schedules and checklists to document site work and verify compliance with the

RAWP and approved submittals. Documentation will involve, at a minimum, the following reports and information:

• Daily field construction reports

• Photographs

• Sampling chains of custody

• Material disposition logs

• Variances to the RAWP and approved submittals

5.1 Daily Report

The Site Technician or Field Team Leader will prepare a Daily Report that identifies the following:

- Work force and visitors to the Site;
- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric grid map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions;
- Apparent deviations from the RAWP;
- Weather conditions;
- An explanation of notable site conditions.

5.2 Photo Log

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

5.3 Sampling Documentation

The project field book will be used to document all sampling activities and how they correspond to the RAWP. All observations, field and/or laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, or photographs.

5.4 Material Disposition Tracking

All materials that are taken off-site for disposal will be tracked and final disposition confirmed. Copies of all waste manifests and bills of lading will be maintained by the Project Manager.

5.5 Variances to Work Plan

Required changes to the RAWPs will be documented as construction proceeds. Any material deviations from the NYSDEC-approved RAWPs will be communicated to NYSDEC Project Manager. NYSDEC approval will be sought prior to proceeding with work deviating materially from the RAWP. In the event of an emergency change to the work plan, NYSDEC Project Manager will be consulted immediately.

5.6 Final Engineering Report

At the completion of the project the consultant/construction manager will prepare a Final Engineering Report (FER). This report will describe the implementation of the RAWPs for Phase 1 and Phase 2 of the remediation and will include a summary of the field work, as-built drawings for constructed elements, manifests, bills of lading, test results demonstrating that all mitigation and remedial systems are functioning properly and photographic documentation. The FER will also include a description of the changes in the Remedial Action from the elements provided in the RAWPs and associated design documents

5.7 Document Storage

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

APPENDIX G

COMMUNITY AIR MONITORING PLAN

2350 Fifth Avenue

NEW YORK, NEW YORK

Community Air Monitoring Plan

AKRF Project Number: 08010

NYSDEC Site #2-31-004

Prepared for:

2350 Fifth Avenue Corporation
309 East 94th Street, Ground Floor
New York, NY 10128

Prepared by:

AKRF

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

SEPTEMBER 2013

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FIGURES

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) provides details for the perimeter air monitoring during the implementation of the Phase 2 Remedial Action Work Plan (RAWP-Phase 2) at 2350 Fifth Avenue, New York, New York. The Site is bounded by Fifth Avenue on the east, West 141st Street on the south, a garage and paved parking area on the west, and West 142nd Street on the north. (See Figure 1 for the project Site location.) The western boundary of the Site is about 50 feet east of Chisum Place. The Site extends about 200 feet north-south and about 345 feet east-west. The Harlem River is 100 to 200 feet to the east of the Site. The Site is approximately 68,942 square feet and nearly entirely occupied by a building comprising three connected sections from east to west: a two-story section along Fifth Avenue; a three-story section in the center; and a one-story section to the west.

High-rise residential buildings are located on the blocks to the west, south, and southeast of the Site. Harlem River Drive is located to the east/northeast, and a National Guard Armory occupies the block immediately to the north.

The Site is categorized as a Class 2 site (#231004) by the New York State Department of Environmental Conservation (NYSDEC) under its Inactive Hazardous Waste Disposal Site Remedial Program and investigative and remedial activities are being performed under an Order on Consent entered into by the owner. Following remedial investigation (RI) sampling performed from 1996 to 2009 and reporting in the June 2010 Remedial Investigation Report (RIR), a Feasibility Study (FS) was prepared in March 2011 to evaluate potential remediation options for the Site. The findings of the FS went before public comment with a 30-day public comment period and a public meeting on May 3, 2011. The NYSDEC subsequently issued a Record of Decision (ROD) for the selected remedy in May 2011. This Community Air Monitoring Plan (CAMP) is prepared to cover multiple elements of the selected remedy presented in the ROD and listed in Section 1.3.

1.1 Environmental Summary

The existing building was originally constructed in segments as an ice cream factory by the Bordens Ice Cream Company. The three-story section was built in 1923; the two-story section was built in 1932; and the one-story section was built in 1950. The floor slab at the western end of the building (the one-story section built in 1950) was constructed with various layers of insulating materials related to the original use of the building as a refrigerated ice cream plant. At the westernmost section of the building, there was most typically a layer of tar paper directly under the slab (now buried), with a thin (two inches or less) layer of cork underneath. Under the cork was a layer of styrofoam eight to ten inches thick. Under the styrofoam was a layer of fill, more tar paper, and another concrete slab about four inches thick. There was fill beneath this slab, and at some locations brick and/or other concrete slabs were encountered within the fill. These were probably remains of earlier structures. An area just east of the section with the cork/styrofoam insulation (the location of the current insulation removal) had a thicker layer of cork four to ten inches thick under the slab, but no styrofoam. The insulation material was identified only beneath the western portion of the building used for refrigeration.

Following its use as an ice cream factory, the building was occupied by a commercial laundry from 1970 to 1994. The laundry operated under a variety of names including Budge-Wood Service, Bluebird Laundry, and Swiss-American Laundry. The facility included a dry cleaning operation utilizing tetrachloroethene (PCE) as a cleaning solvent. The dry cleaning operation was located near the northern side of the one-story portion of the building, in the former refrigerated portion of the building just west of the 142nd Street loading dock. PCE was stored in the same area. The operations initially used first-generation machines with separate washers and dryers. Around 1984, these were replaced by second-generation machines, which were single units that perform all of the washing, extraction, and drying operations. It was likely that most of the on-Site leaks and spills of PCE were associated with the use of the first generation machines, which involved more handling of PCE that the later machines. The facility had an U.S. Environmental Protection Agency (EPA) ID number as a generator of hazardous waste (NYD071026173).

A preliminary Site assessment and remedial investigation, consisting of several phases of groundwater, soil, soil vapor and indoor air sampling, were performed on the subject Site from 1996 to 2009. The major contaminant of concern identified on the Site was PCE and its breakdown products (trichloroethene, dichloroethene, and vinyl chloride), which appear to be largely limited to the northwestern portion of the Site in and around the area of the former dry cleaning activities. Some evidence of petroleum contamination was also detected, including light non-aqueous phase liquid (LNAPL) in one site monitoring well (MW-12s).

One out-of-service underground fuel oil tank on the Site is located under the West 142nd Street loading dock, immediately east of the former dry cleaning area. This tank will be closed-in-place as part of the work under the RAWP for Phase 2.

Soil, groundwater, soil vapor and indoor air sampling have also been performed. The findings of these investigations are detailed in the RIR and summarized in the FS and ROD.

1.2 Purpose and Objectives

The principal purpose of the CAMP is to monitor air quality in the vicinity of remedial activities. The CAMP consists of monitoring dust, vapors and nuisance odors on a periodic/roving basis. Monitoring of this project will include real-time air monitoring for particulate matter/dust and VOCs, observations for visible emissions and odors, inspection and monitoring of the contractor's work practices, and reporting to the NYSDEC and the NYSDOH. Monitoring will be performed during all slab-intrusive activities.

Principal objectives of the program are as follows:

- Monitor VOC vapors such that vapors associated with the remedial actions are maintained below action levels.
- Monitor dust as PM_{10} such that dust associated with the remedial actions is maintained below action levels.
- Monitor VOCs and visible emissions so that vapors and dust from the excavation operations do not leave the Site.
- Monitor for nuisance odors to prevent odors that could impact the surrounding community.
- In the event that VOCs, dust or odors exceed action levels, construction personnel will be immediately notified so that all necessary corrective actions can be taken.

1.3 Operations to be Monitored

The remedial actions to be performed under this CAMP consist of monitoring or extraction well drilling and installation, soil vapor extraction (SVE) and sub-slab depressurization system (SSDS) installation including trenching for pipe installation and SSDS pit construction, chemical oxidation injection activities, and underground storage tank (UST) closure in-place. The procedures for VOC monitoring during installation and/or modification of the SSDS pits are discussed in Section 3.0.

2.0 COMMUNITY AIR MONITORING PROCEDURES

Work zone air monitoring will be performed continuously during all invasive work in accordance with the Health and Safety Plan (HASP) provided as Appendix C of the RAWP - Phase 2. Community air monitoring will be performed periodically (at a minimum once per hour) on a roving basis around any active intrusive work areas. Community air monitoring will be upgraded to continuous monitoring using permanent stations if action levels are encountered within the work zone or during roving periodic community air monitoring.

The action levels specified herein require increased monitoring, corrective actions to abate emissions (see Sections 3.0 and 4.0), and/or work shutdown. Table 1 summarizes dust, VOC and odor action levels and appropriate actions. As a supplement to Table 1, a flow chart summarizing action levels/actions provided on Figure 3.

2.1 VOC Direct Reading Monitoring

VOC monitoring equipment will consist of a photoionization detector (PID) capable of detecting the VOCs found in the insulation material and the underlying soil and groundwater. The monitoring equipment will be calibrated on a daily basis and documented in a dedicated field log book. The instrument will be capable of calculating 15-minute running average concentrations, which will be compared to the prescribed action levels.

Readings will be subtracted from the background concentrations, to be measured each day prior to the start of work, to establish concentrations reflective of work activities during the periods between collection of background readings.

The 15-minute average concentrations will be compared to the following:

- If the ambient air concentration of total organic vapors exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with measures taken to reduce vapors and continue monitoring.
- If total organic vapor levels persist at levels in excess of 5 ppm over background, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. If the organic vapor level is repeatedly over 25 ppm above background, activities must be shutdown and the engineering controls and the Site work plan re-evaluated.

2.2 Particulate (Dust) Direct Reading Monitoring

The particulate monitoring will be performed using real-time aerosol or particulate 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 established below. The dust monitor will be equipped with an audible alarm to indicate exceedance of the action level, and will be zeroed on a daily basis in accordance with the manufacturer's operating instructions and documented in a dedicated logbook. In addition, fugitive dust migration will be visually assessed during all work activities.

The primary standards for PM_{10} are 150 micrograms per cubic meter ($\mu g/m^3$) over a 24-hour averaging time and 50 $\mu g/m^3$ over an annual averaging time. Both of these standards are averaged arithmetically. The action level will be established at 150 $\mu g/m^3$ above background, over 15-

minute time weighted average (TWA). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety.

The 15-minute average concentrations will be compared to the following:

- If the particulate measurement is between 100 $\mu g/m^3$ and 150 $\mu g/m^3$ above the background level, additional dust suppression techniques will be implemented to reduce the generation of fugitive dust and corrective action taken to protect Site personnel and reduce the potential for contaminant migration.
- If the dust suppression measures being utilized at the Site do not lower particulates to an acceptable level (e.g., below 150 $\mu g/m^3$ above the background level, and no visible dust from the work area), work will be suspended until appropriate corrective measures are implemented to remedy the situation.

2.3 Odor Monitoring

Subsurface excavation work exposing contaminated materials may cause odors to be detectable. This may cause concern among the on-site workers, visitors to the Site, and the nearby community regarding potential health risks. Health risks or the potential for health risks do not rely strictly on detectable odors. However, controlling odor emissions from a site can allay public fears about health risks and provide additional means of controlling nuisance emissions during remediation activities. Periodic walk-around monitoring will be performed to observe perceptible odor that may be a nuisance to nearby sensitive receptors. If perceptible odors are noted adjacent to a nearby receptor or a complaint is received, work will be suspended until appropriate corrective measures are implemented to remedy the situation.

2.4 Equipment Operational Requirements

The air monitoring equipment must be operated by trained and qualified personnel. Personnel who perform air monitoring functions described in this section shall be experienced in the use of field air monitoring equipment, as well as the air monitoring procedures described above. There must also be appropriate staff (chemist, industrial hygienist or environmental scientist) for assessing the results of air monitoring and advising field personnel of air quality considerations.

3.0 ENHANCED MONITORING/CONTROL PROCEDURES

The following enhanced procedures would be implemented in the event that the building is occupied during intrusive work to minimize exposure to potential sub- or intra-slab vapors:

1. Prior to the start of any intrusive work inside the site building, the total VOC concentration will be measured within the pipe headspace of nearby monitoring/extraction wells using a PID. The pipe headspace reading is a conservative measurement of potential worker breathing space or wider community exposure since the air within the pipe is from an enclosed, unventilated space.
2. If a PID reading of 5.0 ppm or less is registered, the intrusive work will proceed with no further engineering controls unless further monitoring during the intrusive work results in a PID reading greater than 5.0 ppm. Continuous work zone and periodic community air monitoring will be performed in accordance with the HASP and as described in Section 2.1 and the work area will be cordoned off with cones, caution tape or similar barriers to pedestrians.
3. If a PID reading of greater than 5.0 ppm is measured during the initial headspace reading in Step 1 or during the continuous air monitoring of the breathing space being conducted, all further intrusive

work will be halted until control measures can be implemented. If other penetrations to the subsurface have been created during the course of work and elevated readings are noted during community air monitoring, a plastic shroud will be placed around the excavated area and sealed to the ground surface using duct tape or similar tape/seal to seal off any penetrations in the slab. Engineering controls to control vapors would be implemented, as described below, for the areas with elevated vapors measured during the baseline monitoring or during monitoring of the invasive work.

a. For work in the northwestern room currently used as self storage lockers, which is isolated from the remainder of the building, the room will be considered the work zone and access will be limited to workers with HAZWOPER training and site-specific briefing in accordance with the HASP. Wall penetrations will be sealed using products such as caulk or expandable foam, and the door connecting this room to the remainder of the building on the south side will be covered with a plastic shroud. The work zone will also be cordoned off with barriers such as caution tape and safety cones.

b. For work areas in the portion of the site used as art studios, (which are limited in size such as SSDS pit alterations), prior to restarting work after an elevated PID reading, a tented enclosure (approximately 5-foot by 5-foot by 6-foot enclosure) will be placed over the work area, encompassing all related surface penetrations. The bottom surface of the tent will be cut to provide access to the work area, with the cut edges sealed to the ground surface using duct tape.

    i. A 100 cubic feet per minute (CFM) fan will be connected to the enclosure and operated to evacuate vapors from and maintain negative pressure within the enclosure. Vapors will be exhausted to a granular activated carbon (GAC) unit to treat the vapors prior to ventilation outside the building. Continuous community air monitoring will be conducted during work within this enclosure, including PID measurements outside the enclosure in the vicinity of the work area to confirm that the enclosure is effectively containing volatile vapors. The GAC unit effluent will also be screened to confirm that VOCs are being treated by the GAC unit.

    ii. Small-scale intrusive work will resume within the tented enclosure. Upon completion of the work day, any exposed piping or opening in the floor will be capped/covered. If other penetrations to the ground surface remain, the tented enclosure will be removed and replaced with a plastic shroud, covering all exposed penetrations and sealed to the ground surface with duct tape. Safety cones and caution tape will be used to clearly mark and segregate the work areas.

c. All personnel entering the work zone will upgrade personal protective equipment (PPE) to Level C when appropriate in accordance with the HASP.

d. Penetrations to the surface slab would be repaired with concrete, caulk, caps or other construction materials to seal the opening, as appropriate.

These procedures will be repeated at each intrusive work area and will be documented in accordance with Section 5.0.

4.0 VOC, DUST AND ODOR CONTROLS

The information and procedures presented in this section will be used for VOC, dust, and odor control during activities summarized in Section 1.3. The construction manager for the project will be responsible for implementing these procedures based on the air monitoring results and required Action Levels described in Table 1 and Figure 3. The information and procedures that are to be used for VOC, dust and odor control are presented in the following sub-sections.

4.1 VOC Controls

Control of VOCs during excavation work or other soil disturbance activities will consist of the construction manager implementing one or more of the following methods or measures:

- Covering stockpile or other material staging areas;
- Covering the exposed excavation/exposed subsurface areas;
- Backfilling or capping the exposed area;
- Wetting exposed contaminated material;
- Isolating heating, ventilation and air conditioning (HVAC) system in the active work area; and/or
- Where appropriate, conducting work within an actively ventilated enclosure. See Section 3.0 for a description of engineering controls.

4.2 Dust Controls

The primary measure of preventing exposure to dust during excavation or other soil disturbance activities will be wetting techniques. The Contractor will provide for engineering controls (wet techniques) or other techniques (e.g., covering exposed soil surfaces, limiting active work areas) to control dust during work tasks that have the potential for generating dust. Dust controls involving the use of water (wetting or water spraying) will be employed at potential dust generating activity areas as follows.

- Before each task is initiated
- During the tasks to keep the materials damp
- When air monitoring results dictate the need for dust control

4.3 Odor Controls

Control of odors during excavation work or other subsurface disturbance activities will consist of one or more of the following measures:

- Covering stockpile or other material staging areas
- Covering the exposed excavation/removal areas
- Wetting exposed material
- Backfilling the excavation

5.0 COMMUNITY AIR MONITORING RECORDKEEPING

The qualified safety officer or technician will ensure that all air monitoring data is logged in a log book or on daily field log sheets to document observations as part of the community air monitoring. Documentation shall be made clear, concise, and provide the date, time of entry, location, personnel, weather conditions, and measured concentrations. Documentation will also include all observational data that has potential for impacting results, such as potential off-site interferences, on-site public interferences, damage to instruments, Site equipment problems, or weather related interferences.

All pages must be numbered; no lines shall be left blank (or put a line through it), and must be initialed on each page in ink. The last entry page for the shift or day that has blank space left at the bottom shall have a line drawn diagonally across it and signed at the bottom of the page. All corrections must be made with a single line, initialed, and dated.

Copies of the log book or field log sheets documenting community air monitoring will be submitted to NYSDEC with the Final Engineering Report. The Owner and NYSDEC will be notified promptly via phone and electronic mail of any exceedance of an Action Level and of the corrective actions taken in connection with the exceedance. If an exceedance occurs, the Environmental Consultant will ensure corrective actions are taken the actions and results will be documented in the Final Engineering Report.

All monitoring equipment must be calibrated on a daily basis in accordance with the manufacturer's operating instructions. The date, time, calibration gas, or other standard, and name of person performing the calibration will be documented in a log book.

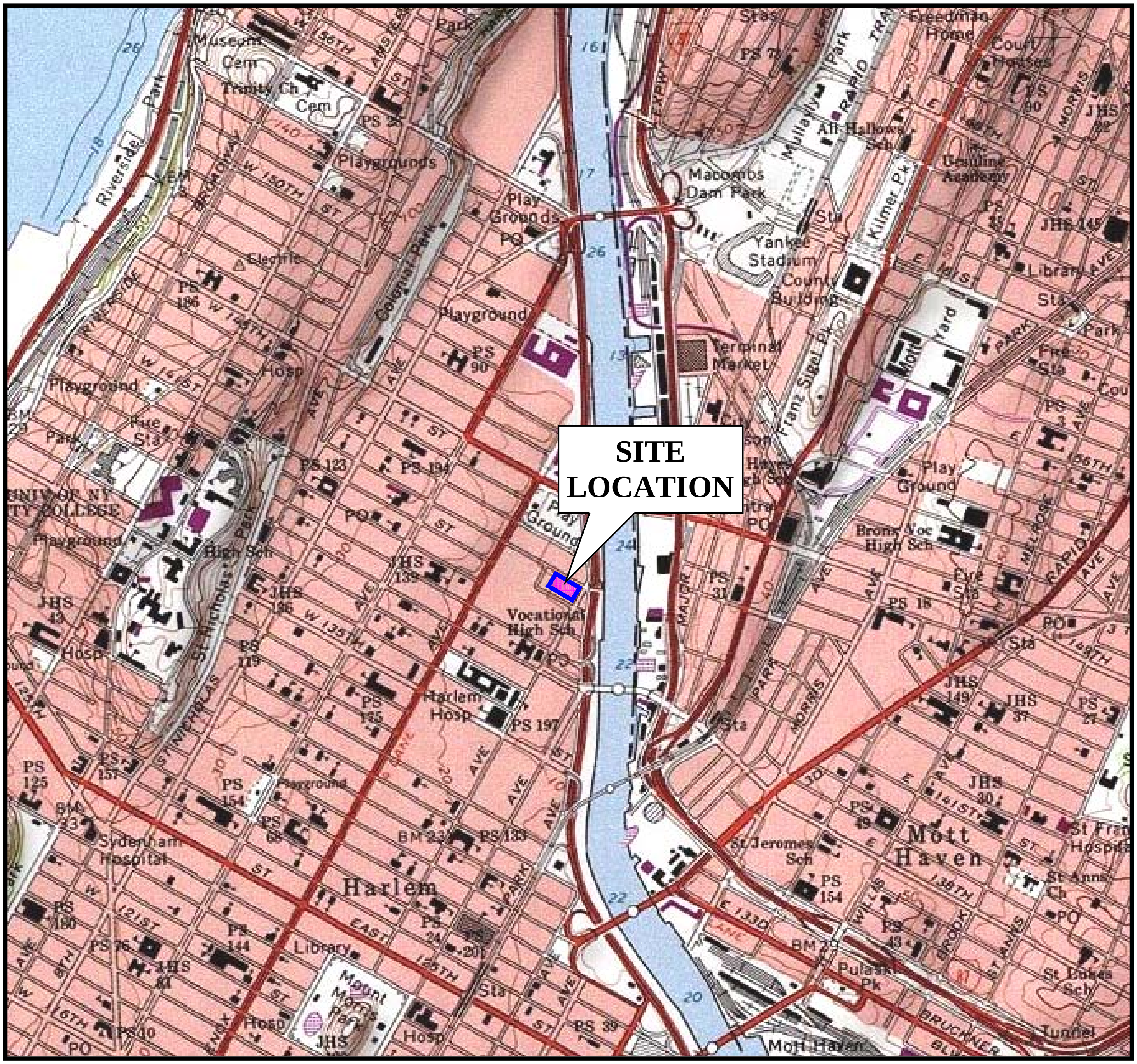
TABLES

Table 1
Air Monitoring Summary
2350 Fifth Avenue, New York, NY

Monitoring Device	Monitoring Location/Personnel	Monitoring Frequency	Action Level	Action
PID	Perimeter of Work Area	Continuous during intrusive work with work zone exceedances Periodic during all other disturbance activities [Background is the most recent upwind/ambient 15-minute average reading]	< 5 ppm above background at the downwind perimeter of the work zone (15-min TWA) > 5 ppm but < 25 ppm above background at the downwind perimeter of the work zone (15-min TWA) > 25 ppm above background at the downwind perimeter of the work zone (15-min TWA)	Continue normal operations Suspend operations until readings indicate < 5 ppm for 15-minute TWA. Take steps to abate emissions* Shut down operations and reevaluate work and controls
PM-10 Aerosol/ Particulate Air Monitoring Unit with Audible Alarm	Perimeter of Work Area	Periodic during all disturbance activities Continuous during intrusive work with work zone exceedances [Background is the most recent upwind/ambient 15-minute average reading]	< 100 $\mu g/m^3$ above background at the downwind perimeter of the work zone (15-min TWA) > 100 $\mu g/m^3$ above background at the downwind perimeter of the work zone (15-min TWA), or visible dust leaving the excavation area > 150 $\mu g/m^3$ above upwind background level downwind perimeter of the work zone (15-min TWA)	Continue normal operations Implement dust control measures* Halt all soil disturbance work until downwind perimeter of excavation area reading is <150 $\mu g/m^3$ above background (upwind perimeter).
Olfactory	Perimeter of Work Area	Periodic during all disturbance activities	Perceptible odors outside work zone, adjacent to receptor, or complaint	Suspend operations until odor condition abated. Take steps to abate odor*

<u>NOTES:</u>
*See VOC, dust and odor control measures in Sections 3.0 and 4.0 of the CAMP
TWA - Time weighted average
PID – Photoionization detector
$\mu g/m^3$ – Microgram per cubic meter
ppm – Parts per million

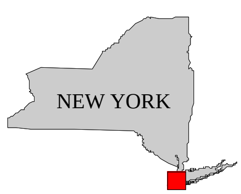
FIGURES



SCALE IN FEET

0'   1000'   2000'   4000'

SCALE: 1"=2000'



SOURCE:
7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: CENTRAL PARK, NY 1995

N

2350 FIFTH AVENUE
NEW YORK, NEW YORK

PROJECT SITE LOCATION

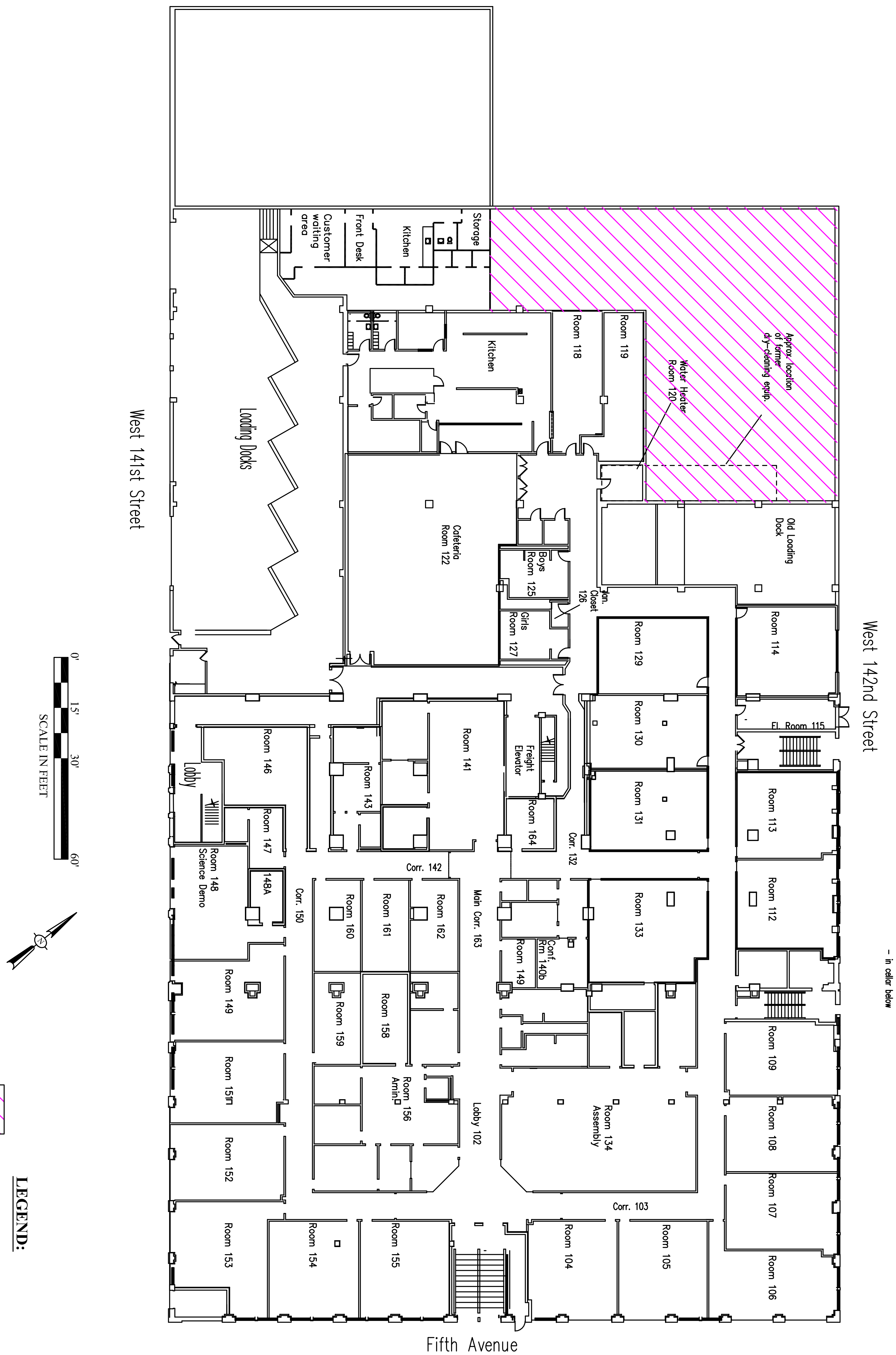
AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
1.20.11

PROJECT No.
08010

SCALE
as shown

FIGURE
1

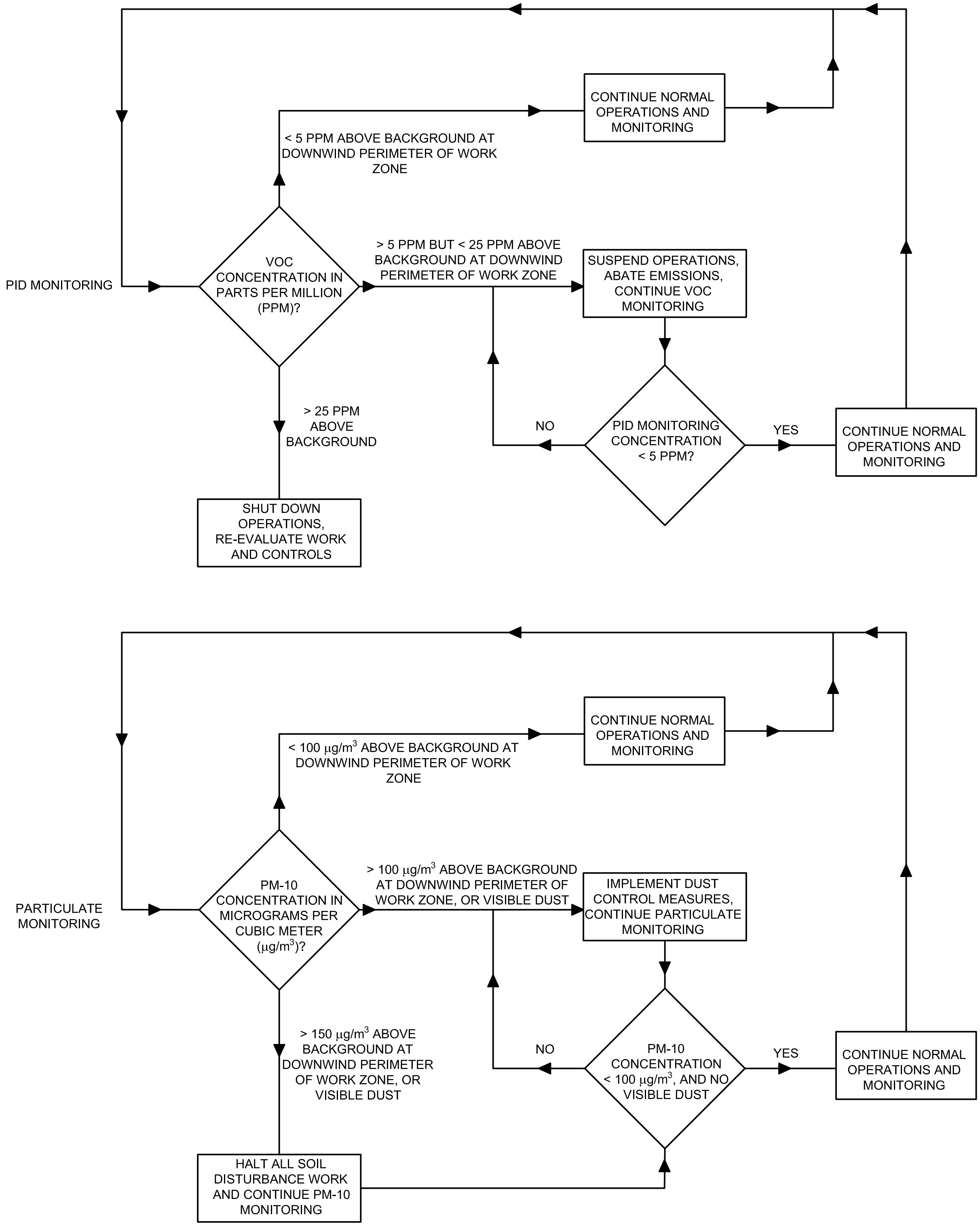


LEGEND:

STORAGE LOCKERS IN USE

2350 FIFTH AVENUE NEW YORK, NEW YORK	DATE 8.31.12	PROJECT NO. 08010	SCALE 1"30'	FIGURE 2
CURRENT SITE PLAN				

AKRF
Environmental Consultants
440 Park Avenue South, New York, NY 10016



2350 FIFTH AVENUE

NEW YORK, NEW YORK

FLOW CHART FOR VOC AND PARTICULATE MONITORING ACTION LEVELS

AKRF

Environmental Consultants

440 Park Avenue South, New York, N.Y. 10016

DATE **7.15.2011**

PROJECT No. **08010**

SCALE **as shown**

FIGURE **3**

APPENDIX H

FEBRUARY 2011 REVISED CITIZEN PARTICIPATION PLAN

2350 Fifth Avenue

NEW YORK, NEW YORK

Revised Citizen Participation Plan

NYSDEC Inactive Hazardous Waste Site Program Site #2-31-004

Prepared for:
2350 Fifth Avenue Corporation
309 East 94th Street, Ground Floor
New York, NY 10128

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

FEBRUARY 2011

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Section **Page Number**

APPENDICES

* * * * *

Note: The information presented in this Revised Citizen Participation Plan was current as of the date of its submittal. Portions of this Citizen Participation Plan may be revised during the remedial process.

Responsible Party: **2350 Fifth Avenue Corporation**
Site Name: **2350 Fifth Avenue ("Site")**
Site Address: **2350 Fifth Avenue**
Site County: **New York**
Site Number: **231004**

1. What is New York's Inactive Hazardous Waste Disposal Site Program?

The Inactive Hazardous Waste Disposal Site (IHWDS) Program is the State's program for identifying, investigating and cleaning up sites where consequential amounts of hazardous waste may exist. These sites go through a process of investigation, evaluation, cleanup and monitoring that has several distinct stages. For an explanation of the different stages of the investigation and cleanup process, please refer to New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation's (DER's) fact sheets on stages of the investigation and cleanup process.

DER is made aware of potential hazardous waste sites in a variety of ways, including notification by the responsible party and citizen complaints.

An environmental investigation called a Preliminary Site Assessment (PSA) is performed when DER is made aware that hazardous waste has or may have been disposed of at a site. The goal of the PSA is to determine whether a site meets the state's definition of an inactive hazardous waste disposal site by confirming the presence of hazardous waste and determining the threat posed by the Site to public health or the environment. DER or the potentially responsible party performs the PSA. For more information, you can read DER's fact sheet on PSAs.

Once the presence of a consequential amount of hazardous waste is confirmed at a site, the Site is added to the State's official list of sites and is given a classification code.

Sites determined to be Class 2 (representing a significant threat to public health and/or the environment and requiring action) usually undergo a detailed environmental investigation, called a remedial investigation. When the parties responsible for the contamination are known, the responsible parties often pay for and perform the investigation and evaluation of cleanup options. At sites where responsible parties cannot be found or are unable or unwilling to fund an investigation, the State pays for the investigation using money from the 1986 Environmental Quality Bond Act, also known as the "State Superfund." The State may try to recover costs from a responsible party after the investigation and cleanup are complete.

Each Class 2 site is assigned a project manager. Regional IHWDS Program staff serve as project managers for many inactive hazardous waste disposal sites in their respective regions. Staff in DEC's Albany office serve as project managers for the remaining sites. For sites where state money pays for an investigation, the project manager oversees the investigation and evaluation of cleanup options directly, or he may supervise a consultant hired to do the work. When a responsible party performs an investigation, the project manager reviews and approves investigation work plans and reports and ensures the responsible party performs a thorough and proper investigation. The project manager also works closely with New York State Department of Health staff who ensure that public health concerns are addressed

For more information about the IHWDS, go online at:
http://www.dec.ny.gov/chemical/8439.html

2. Citizen Participation Plan Overview

This Citizen Participation (CP) Plan provides members of the affected and interested public with information about how NYSDEC will inform and involve them during the investigation and remediation of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Responsible Party.

Appendix A contains a map identifying the location of the Site.

Project Contacts

Appendix B identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's remedial program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Document Repositories

The locations of the site's document repositories also are identified in Appendix B. The document repositories provide convenient access to important project documents for public review and comment.

Site Contact List

Appendix C contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and remediation process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming remedial activities at the Site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.

Where the site or adjacent real property contains multiple dwelling units, the Responsible Party will work with NYSDEC to develop an alternative method for providing such notice in lieu of mailing to each individual. For example, the owner of such a property that contains multiple dwellings is requested to prominently display fact sheets and notices required to be developed during the site's remedial process. This procedure would substitute for the mailing of such notices and fact sheets, especially at locations where renters, tenants and other residents may number in the hundreds or thousands, making the mailing of such notices impractical.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix B. Other additions to the site contact list may be made on a site-specific basis at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

Appendix D identifies the CP activities, at a minimum, that have been and will be conducted during the site's remedial program. The flowchart in Appendix E shows how these CP activities integrate with the site remedial process. The public is informed about these CP activities through fact sheets and notices developed at significant points in the site remedial process.

> **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and remediate a site.
>
> **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and remediation.

The public is encouraged to contact project staff at any time during the site's remedial process with questions, comments, or requests for information about the remedial program.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 6 or in the nature and scope of remedial activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

3. Site Information

Site Description

The Site is located in the Harlem section of Manhattan. It is bounded by Fifth Avenue on the east, West 141st Street on the south, a garage and paved parking area on the west, and West 142nd

Street on the north. (See Appendix A for the project site location.) The western boundary of the Site is about 50 feet east of Chisum Place. The Site extends about 200 feet north-south and about 345 feet east-west. The Harlem River is 100 to 200 feet to the east of the Site.

The Site is occupied by a building comprising three connected sections: a two-story section along Fifth Avenue, a three-story section in the center of the Site, and a one-story section to the west. There are high-rise residential buildings on the blocks to the west, south, and southeast of the Site. The Harlem River Drive is to the northeast, and a National Guard Armory occupies the block to the north, between West 142nd and West 143rd Streets.

No significant demolition and/or development are currently planned for the site. Reasonably foreseeable future uses are limited to those that would be permitted (without variances or waivers) under the site's current zoning and approvals, which may include (among other things) a self-storage facility, art studio space, church and/or school. The site is zoned for light manufacturing (M1-1) and is located in a mixed-use residential, recreational, commercial and industrial area.

Site History

The existing building was originally constructed as an ice cream factory by the Bordens Ice Cream Company. The three-story section was built in 1923; the two-story section was built in 1932; and the one-story section was built in 1950. The floor slab at the western end of the building (in the one-story section built in 1950) was constructed with various layers of insulating materials related to the original use of the building as a refrigerated ice cream plant.

Following its use as an ice cream factory, the building was occupied by a commercial laundry from 1970 to 1994. The laundry operated under a variety of names including Budge-Wood Service, Bluebird Laundry, and Swiss-American Laundry. The facility included a dry cleaning operation utilizing tetrachloroethene (PCE) as a cleaning solvent. The dry cleaning operation was located near the northern side of the one-story portion of the building, just west of the West 142nd Street loading dock. PCE was stored in the same area. The operations initially used first-generation machines with separate washers and dryers. Around 1984, these were replaced by second-generation machines, which were single units that performed all of the washing, extraction, and drying operations.

In 1995-1996, most of the ground floor of the building, with the exception of the far western portion, was renovated for use as a New York City public school. This portion of the building was occupied as a school for a brief period in the fall of 1997 and was later used by a church for services, offices, and classes. The church left the building in December 2004. The remainder of the building was renovated in 2001 for use as a self storage facility. An office was constructed next to the West 141st Street loading docks and storage units were constructed in the western portion of the ground floor and on the second and third floors. In February 2006, the self storage facility expanded into the former school portion of the building.

The surrounding area was mostly occupied by garages, auto repair shops, and light manufacturing in the 1930s through the 1950s, with the exception of the block directly north of the Site, where the Fifth Avenue Armory was constructed between 1921 and 1933. The Delano Village residential development (now known as Savoy Park), which occupies the area to the south and west of the Site, was constructed in 1957-1959. At that time, a portion of West 141st Street was closed and demapped, and a new street, Chisum Place, was constructed just west of the Site.

Environmental History

Investigations performed between 1996 and 2009 included the collection of core samples, and soil, groundwater, and soil gas samples at the site and at off-site locations. The major contaminant of concern identified on the site was PCE and its breakdown products (trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride), which appears to be largely limited to the northwestern portion of the site in and around the area of the former dry cleaning activities. Some evidence of petroleum contamination was also detected, particularly in one of the monitoring wells on the northern side of the site, in the 142nd Street sidewalk.

Following initial discovery of the contamination, an Interim Remedial Measure (IRM) was implemented in 1997 with the intention of preventing intrusion of vapors into the indoor air of the building. The IRM consisted of three measures: removal of a portion of the contaminated insulating material; installation of an intra-slab and shallow soil vapor extraction system which continues to operate; and sealing penetrations through the slab.

The results of the remedial investigation activities completed to date were provided in the June 2010 *Remedial Investigation Report* (RIR) and the general distribution of contaminants on the site are summarized in following sections.

Groundwater

PCE and decomposition products were detected in samples from 7 of the 24 groundwater monitoring wells in 2007 and 2009. The highest chlorinated volatile organic compound (VOC) levels were present in the West 142nd Street sidewalk, just north of the source area. The primary contaminants at this location are cis-1,2-DCE and vinyl chloride. No PCE or decomposition products were detected in the sample from the deep well at this location. PCE decomposition compounds cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride were detected at levels that exceed the Class GA Groundwater Standards in a sample collected across the street from the highest concentration, on the north sidewalk of West 142nd Street.

PCE and decomposition products were also detected near the original dry cleaning area, with PCE concentrations exceeding the NYSDEC Class GA Groundwater Standards in

2009 in three monitoring wells. In the most recent (2009) sampling event, no VOCs were detected in 16 of the 24 monitoring wells. Chlorinated VOC concentrations have decreased significantly from 2007 to 2009 in groundwater samples collected from monitoring wells within the source area.

The subsurface capacity for natural biodegradation of chlorinated solvents was evaluated near the source area and found to be generally reducing (conditions that encourage biodegradation of chlorinated solvents). Natural attenuation of chlorinated solvents can also be accelerated by the presence of dehalogenating bacteria in addition to a reducing environment. These bacteria were not sampled for directly, but indicator parameters (byproducts of bacterial dehalogenation of chlorinated solvents) were detected in the majority of samples including indicators for bacteria efficient at breakdown of chlorinated solvents.

About 1 inch of light non-aqueous phase liquid (LNAPL) was measured in one monitoring well on the northern side of the site. A petroleum fingerprint analysis indicated the substance was consistent with motor oil.

<u>Soil</u>

PCE and associated decomposition products (TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride) were only detected in soil samples from the western portion of the site. Over 85 percent of soil samples collected from October 2007 to December 2009 contained low levels (less than 1 milligram per kilogram [mg/kg]) of PCE. Only seven samples from locations near the area where dry cleaning operations had taken place had PCE levels exceeding Part 375 Soil Cleanup Objectives (SCOs) for Protection of Groundwater. Of the seven samples with PCE exceedances, PCE breakdown products were present in levels exceeding Protection of Groundwater SCOs in three samples.

Petroleum-related hydrocarbons were detected at concentrations below Part 375 SCOs for Protection of Groundwater in samples from several locations on the northern side of the building and around the old boiler room. The former boilers that serviced the laundry operation used #6 fuel oil that does not contain significant levels of the volatile compounds detected. A possible source of the hydrocarbon contamination is a former diesel tank that was reportedly located under the north side of the building.

<u>Soil Gas</u>

Contamination in the soil gas across the study area is primarily PCE. PCE was detected in all the soil gas samples collected from 2007 to 2009, with the highest level, 332,000 microgram per cubic meter ($\mu g/m^3$), at SG-7, located under the West 142nd Street sidewalk near the old loading dock entrance. This is also the area where the highest soil and groundwater contaminant levels were found. Levels of PCE in other soil gas samples were much lower, and were found to decrease with distance from the source area.

Indoor Air

Prior to implementation of the Interim Remedial Measures (IRMs) in 1997, several rounds of indoor air testing found levels of PCE in the building air exceeding 115 $\mu g/m^3$ and ranging as high as 1,424 $\mu g/m^3$. The highest levels were near the source area and in the portions of the building underlain by insulating materials. Both PCE and TCE have been detected at much lower levels in air testing performed since the IRMs were completed in 1997.

The majority of sampling events since 1997 have found both PCE and TCE concentrations below the New York State Department of Health (NYSDOH) Air Guideline Values (100 $\mu g/m^3$ for PCE and 5 $\mu g/m^3$ for TCE). In recent years (since 2007), PCE and TCE levels above the NYSDOH Air Guideline Values have been occasionally detected in indoor air samples. The highest concentrations were found in the old boiler room/basement and inside Locker 1454; both are closed locations with limited air flow and are not occupied spaces.

Since 2007, PCE concentrations in indoor air (including the two aforementioned unoccupied spaces) have ranged from no detection to 980 $\mu g/m^3$ and TCE concentrations in indoor air have ranged from no detection to 70 $\mu g/m^3$. Excluding the old boiler room and Locker 1454 sampling locations, PCE concentrations in indoor air have ranged from no detection to 170 $\mu g/m^3$ and TCE concentrations in indoor air have ranged from no detection to 9.5 $\mu g/m^3$.

Sub-Slab Insulation

Removal of a portion of the sub-slab insulation material was performed in 1997 in the northwestern corner of the site, in the area presently in use as storage lockers. Insulation material remains in the area adjacent to the south and southwest of this area as confirmed by core sampling conducted in December 2009. Insulation material was primarily brown cork 3 to 12 inches thick at depths ranging from 6 inches to 3.5 feet below grade. PCE concentrations in the insulation remaining after partial removal ranged from 23 micrograms per kilogram (µg/kg) to 560,000 µg/kg. Levels of PCE greater than 10,000 µg/kg were situated in the northern corridor for the most part, with significantly lesser concentrations (generally less than 1,000 µg/kg) present in the kitchen insulation, cafeteria and in the insulation material to the east.

4. Remedial Process

Investigation

The remedial investigation (RI) of the Site was performed with NYSDEC oversight in accordance with remedial investigation work plans (RIWPs). The goals of the investigation were as follows:

1) Define the nature and extent of contamination in soil, soil gas, groundwater and any other impacted media;

2) Identify the source(s) of the contamination;

3) Assess the impact of the contamination on public health and/or the environment; and

4) Provide information to support the development of a Remedial Action Work Plan (RAWP) to address the contamination, or to support a conclusion that the contamination does not need to be addressed.

The Responsible Party prepared an RIR in June 2010 summarizing the results of the RI. The RIR was subject to review and approval by NYSDEC. Before NYSDEC approval of the RIR, a fact sheet that described the RIR was sent to the site contact list.

Selection of the Preferred Remedy

After NYSDEC approved the RIR, the Responsible Party developed a Feasibility Study (FS) with a *Draft Feasibility Study* submitted in June 2010 and a *Feasibility Study Addendum* submitted in December 2010. The FS described how the Responsible Party proposed to address contamination related to the Site. The preferred remedial option (Revised Alternative 4 presented in the *Feasibility Study Addendum*) consisted of the following elements:

- Soil vapor extraction (SVE) system – mobilizing and volatilizing contamination and creating negative pressure below the slab in an approximate 8,000-square foot area located in the northwestern portion of the site;
- In-situ soil treatment – injecting a chemical oxidation product for soil treatment in an approximate 2,500-square foot area located in the northwestern portion of the site;
- In-situ groundwater treatment – injecting a product to enhance reductive dechlorination (and potentially a follow-up product to promote aerobic degradation) in an approximate 6,000-square foot area located in the northwestern portion of the site;
- LNAPL removal – evaluate extent of LNAPL and recovery as appropriate on the northern side of the site;

- Sub-slab depressurization system (SSDS) – sub-slab extraction points throughout the existing building to address potential vapor intrusion from beneath the slab into the building; and
- Partial insulation material removal – removing additional sub-slab insulation material in an established maximum removal area of 1,200-square feet in the northwestern portion of the site.

Revised Remedial Alternative 4 is protective of the public health and environment, effective and permanent, implementable, and the toxicity and volume of contamination would be reduced with some removal and would continue over time. Implementation of a Site Management Plan and environmental easement would prevent future exposure to residual contamination and ensure proper long-term protection of public health. The details of the remediation will be evaluated as part of remedial design, which will occur after NYSDEC approval of the FS.

Upon completion of the public comment process, NYSDEC will prepare the Proposed Remedial Action Plan (PRAP), which identifies the preferred remedy to address the site contamination, and present the PRAP at a public meeting. The public will have the opportunity to review and comment on the PRAP. NYSDEC will factor this input into its decision to approve, reject or modify the PRAP. When a final decision is reached on the PRAP, NYSDEC will issue a Record of Decision (ROD). The ROD is the culmination of extensive investigations and a remedy selection that identifies a solution that eliminates significant threats to public health and the environment. It serves as the definitive record of the remedy selection process for the Site and a convenient reference to other documents that were developed during the remedy selection process.

Construction

Issuance of a ROD by NYSDEC will allow the Responsible Party to design and construct the alternative selected to remediate the Site. The Remedial Design Work Plan will be submitted for NYSDEC approval. The site contact list will receive notification before the start of site remediation. When the Responsible Party completes remedial activities, it will prepare a Final Engineering Report (FER) that certifies that remediation requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the remediation is protective of public health and the environment for the intended use of the Site. Addressees on the site contact list will be sent a fact sheet that announces the FER is available for review and the completion of remedial activities.

Reclassification and Site Management

Following remediation, a site usually is reclassified from Class 2, which calls for remedial action to protect public health or the environment, to:

Class 4, requiring continued operation, maintenance and monitoring, or
Class 5, requiring no operation, maintenance and monitoring.

If all hazardous wastes have been removed, the Site may be removed (delisted) from the Registry of Inactive Hazardous Waste Sites.

Included in some remedies are monitoring requirements, which are included in a Site Management-Plan (SMP). Site management includes Operation and Maintenance (O&M) of any active or passive remedial system, and includes visual inspections and upkeep and can include sampling.

For more information and a description of the Inactive Hazardous Waste Disposal Site program see the NYSDEC Web Site (http://www.dec.ny.gov/chemical/8439.html).

5. Citizen Participation Activities

CP activities that have already occurred and are planned during the investigation and remediation of the Site under the Inactive Hazardous Waste Site Program are identified in Appendix D: Identification of Citizen Participation Activities. These activities also are identified in the NYSDEC flowchart of the Inactive Hazardous Waste Site Program process in Appendix E. NYSDEC will ensure that these CP activities are conducted, with appropriate assistance from the Responsible Party.

All CP activities are conducted to provide the public with significant information about site findings and planned remedial activities, and some activities announce comment periods and request public input about important draft documents such as the Remedial Action Work Plan.

All written materials developed for the public will be reviewed and approved by NYSDEC for clarity and accuracy before they are distributed. Notices and fact sheets can be combined at the discretion, and with the approval of, NYSDEC.

Potential environmental justice (EJ) issues will be considered in evaluation of the planned remedial activities. Each particular community may possess unique attributes to recognize and address so citizen participation efforts provide for an open and accessible process. For example:

- An EJ community may be disproportionately impacted by pollutants and other forms of contamination. Lack of participation or silence in the past should not be interpreted as lack of concern or interest in these issues.
- EJ communities may not trust or, in some cases, may fear the government because of perceived or unintended experiences of injustices or diverse cultural backgrounds.
- Additional collaborative efforts with EJ communities may be needed to help them participate more effectively in the remedial process, including additional technical assistance provided directly by NYSDEC Division of Environmental Remediation staff.
- In communities where English is not the primary language, materials may need to be developed in the applicable language.

The site is located in Manhattan Community Board 10 (CB10), but immediately adjacent to property in Community Board 11 (CB11); therefore both areas are considered for community participation. The total populations of CB10 and CB11 based on the Census Data are 107,109 and 117,743, respectively. The percent of the CB10 population on Income Support rose from 34.3% to 40.8% from 2000 to 2007 and the percent of the CB11 population on Income Support rose from 36.7% to 44.4% in the same time frame.

The CB10 population is 77.3% Black African American and 16.8% Hispanic. Approximately 88.6% of the total CB10 population 5 years old and over is proficient in English; however, 64.3% of the population speaks Spanish or Spanish Creole at home. The CB11 population is 35.7% Black African American and 52.1% Hispanic. Approximately 73.0% of the total CB11 population 5 years old and over is proficient in English; however, 88.5% of the population speaks Spanish or Spanish Creole at home.

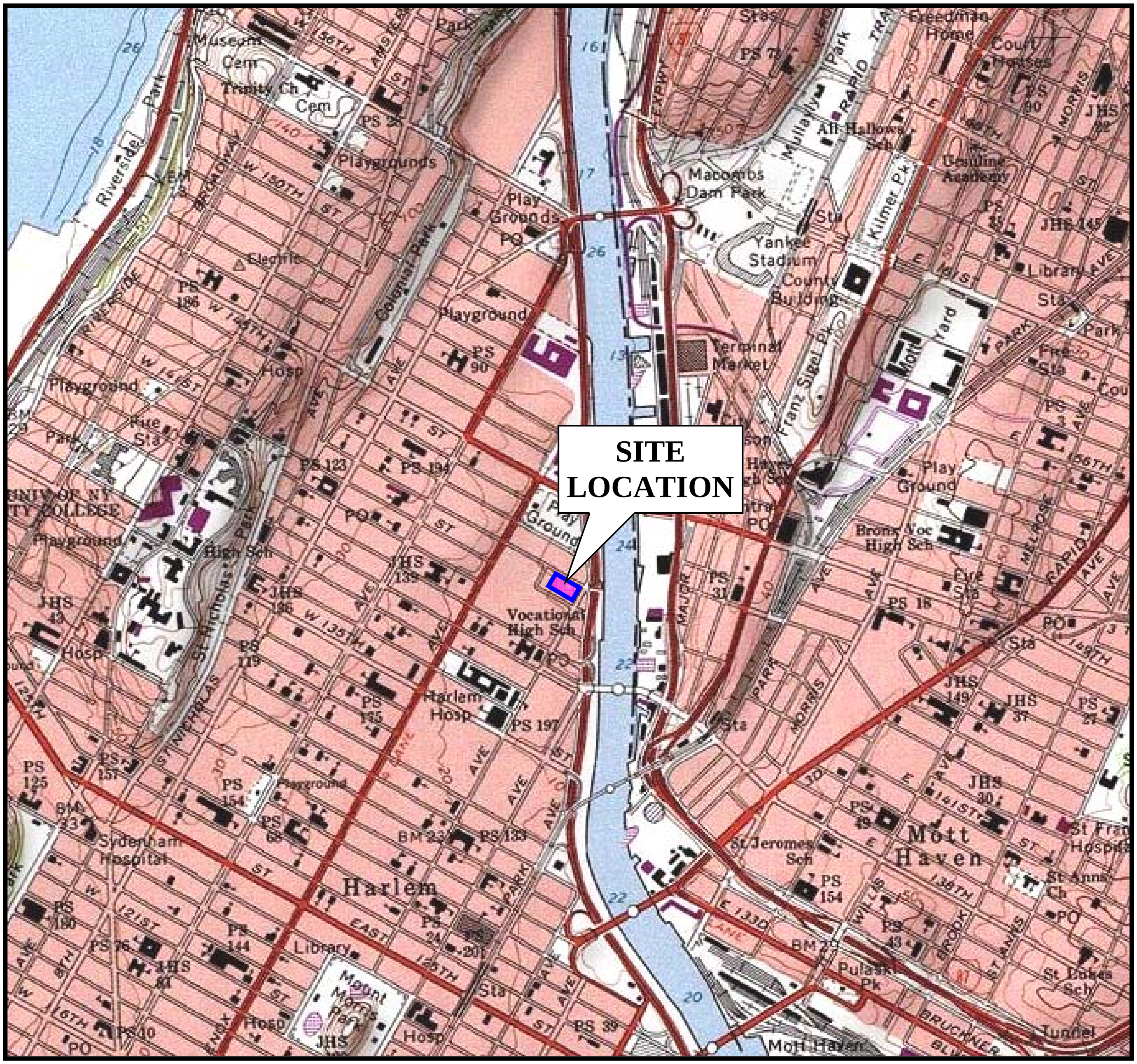
Based on this Census Data, any public fact sheets associated with the implementation of this CP Plan will be translated into Spanish. In addition, if a public hearing/meeting is required for this project, a Spanish-speaking agent may be made available.

6. Major Issues of Public Concern

The major issue of public concern for this site has been the potential for intrusion of vapors from the soil into the building on the Site or neighboring buildings. Sampling has indicated that vapor intrusion potential is limited to the building on-site. On-site indoor air is being monitored quarterly and occasional exceedances of the NYSDOH Air Guidelines were identified at only two sampling locations, both presently unoccupied spaces with stagnant air. In addition, an off-site vapor intrusion assessment was performed as part of the RI. The indoor air and sub-slab vapor sample results were applied to NYSDOH matrices for evaluation of PCE and TCE, and no further action was recommended off-site.

If additional issues of public concern are raised, they will be addressed as appropriate in subsequent work at the site.

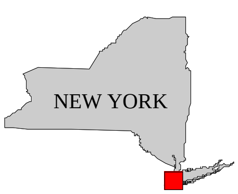
Appendix A – Site Location Map



SCALE IN FEET

0’ 1000’ 2000’ 4000’

SCALE: 1”=2000’



N

SOURCE:
7.5 MINUTE SERIES USGS TOPOGRAPHIC MAP
QUADRANGLE: CENTRAL PARK, NY 1995

2350 FIFTH AVENUE
NEW YORK, NEW YORK

PROJECT SITE LOCATION

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE	**1.20.11**
PROJECT No.	**08010**
SCALE	**as shown**
FIGURE	**1**

Appendix B – Project Contacts and Document Repositories

Project Contacts

For information about the site's remedial program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Bryan Wong
Project Manager
NYSDEC Region 2
Division of Environmental Remediation
47-40 21st Street
Long Island City, NY 11101-5407
(718) 482-4905

Thomas Panzone
Citizen Participation Specialist
NYSDEC Region 2
Public Affairs
47-40 21st Street
Long Island City, NY 11101-5047
(718) 482-4958

New York State Department of Health (NYSDOH):

Dawn Hettrick
Project Manager
NYSDOH
547 River Street
Troy, NY 12180-2216
(800) 458-1158 ext. 27880

Document Repositories

The document repositories identified below have been established to provide the public with convenient access to important project documents:

Countee Cullen Library 104 West 136th Street New York, NY 10030 Attn: Ms. Jackson Phone: (212) 491-2070 Hours: Mon Tue Wed Thu Fri Sat Sun 10-8 10-8 10-8 10-8 10-5 10-5 —	NYSDEC Region 2 Division of Environmental Remediation 47-40 21st Street Long Island City, NY 11101-5407 Attn: Bryan Wong Phone: (718) 482-4905 Hours: Mon. to Fri 7:30-3:30 (call for appointment)

Appendix C – Inactive Hazardous Waste Site Contact List

Community Boards:

Manhattan Community Board 10
Chair: Mr. Franc Perry
215 West 125th Street
New York, NY 10027
Email: info@cb10.org

Manhattan Community Board 10
District Manager: Mr. Paimaan Lodhi, AICP
215 West 125th Street
New York, NY 10027
Email: info@cb10.org

Manhattan Community Board 11
District Manager: Mr. George Sarkissian
1664 Park Avenue, Ground Floor
New York, NY 10035
Email: info@cb11m.org

Manhattan Community Board 11
Chair: Mr. Matthew Washington
1664 Park Avenue, Ground Floor
New York, NY 10035
Email: info@cb11m.org

Elected Officials:

Hon. Inez E. Dickens
New York City Council Member
Adam Clayton Powell, Jr. Bldg.
163 West 125th Street
New York, NY 10027

Hon. Bill Perkins
New York State Senator
30th State Senatorial District
Adam Clayton Powell, Jr. Bldg. Suite 912
163 West 125th Street
New York, NY 10027
Email: perkins@senate.state.ny.us

Hon. Kirsten Gillibrand
United States Senate
780 Third Avenue, Suite 2601
New York, NY 10017
Email: contact@gillibrand.senate.gov

Hon. Charles Schumer
United States Senate
757 Third Avenue, Suite 17-02
New York, NY 10017
Email: senator@schumer.senate.gov

Joseph Crua *(electronic copy only requested – via email Jpc04@health.state.ny.us)*
Bureau of Environmental Exposure Investigation
New York State Department of Health
Flanigan Square
547 River Rd
Troy, NY 12180-2216

Hon. John Liu
NYC City Comptroller
1 Centre Street
New York, NY 10007
Email: intergov@comptroller.nyc.gov

Hon. Keith L.T. Wright
New York State Assembly Member
70th Assembly District
Adam Clayton Powell, Jr. Bldg. Suite 920
163 West 125th Street
New York, NY 10027
Email: WrightK@assembly.state.ny.us

US House of Representatives District -15
Representative: Charles B. Rangel
Adam Clayton Powell State Office Building
163 West 125th Street, 7th Floor
New York, NY 10027
Email: rangel@mail.house.gov

Hon. Scott M. Stringer
Manhattan Borough President
1 Centre Street 19th Floor
New York, NY 10007
Email: jgetlin@manhattanbp.org

Mayor Michael Bloomberg
City Hall
New York, NY 10007

Hon. Bill de Blasio
Public Advocate
1 Centre Street, 15th Floor
New York, NY 10007
Email: kjfoy@pubadvocate.nyc.gov

Robert Kulikowski, Director
NYC Office of Environmental Coordination
253 Broadway – 14th Floor
New York, NY 10007

Amanda Burden, Director
NYC Department of City Planning
22 Reade Street
New York, NY 10007

Jane O'Connell *(electronic copy only requested – via email jhoconne@gw.dec.state.ny.us)*
NYS Department of Environmental Conservation
Division of Environmental Remediation
1 Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101

Robert Cozzy *(electronic copy only requested – via email rjcozzy@gw.dec.state.ny.us)*
Bureau Director, Remedial Bureau "B"
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany NY 12233-2216

NYC Director of Zoning
Michael Weil
NYC Department of City Planning
22 Reade Street
New York, NY 10038

Norman Goodman,
Manhattan County Clerk
60 Centre Street, Room 161
New York, NY 10007

John Wuthenow
Office of Environmental Planning & Assessment
NYC Dept. of Environmental Protection
96-05 Horace Harding Expressway
Flushing, NY 11373

Public Water Supplier:

Hon. Caswell Holloway
Commissioner
NYC Department of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

Environmental Organizations:

Eddie Bautista, Executive Director
NYC Environmental Justice Alliance (NYCEJA)
166A 22nd Street
Brooklyn, NY 11232
Email: nyceja@gmail.com

Exec. Director: Peggy Shepard
West Harlem Environmental Action, Inc.
P.O. Box 1846
New York, NY 10027

Document Repository:

New York Public Library
Countee Cullen Branch
104 West 136th Street
New York, NY 10030
Phone: (212) 491-2070

Current Tenant:

Jack Guttman
American Self-Storage
386 Park Avenue South, Suite 214
New York, NY 10016

Other:

Bob Huffman – Facilities Director
United Cerebral Palsy of New York City
121 Lawrence Avenue
Brooklyn, New York 11230

Adjacent Properties owners:

Properties located west and south: (apartment buildings)

Savoy Park Owner, LLC
45 West 139th Street
New York, NY 10037

Valerie Orridge, President
Savoy Park Tenants Association
45 West 139th Street Apt. 3E
New York, NY 10037

North of project site:

Orlando Pinnock, Superintendent
New York Army National Guard
Fifth Avenue Armory
2366 Fifth Avenue
New York, NY 10037-1028

Schools and Daycare Facilities:

St. Mark Evangelist School
55 West 138th Street
New York, NY 10037
Email: stmarkharlem@gmail.com

Anne G. Newsome Head Start Center
129 Odell Clark Place
New York, NY 10030

St. Charles Borromeo RC School
214 West 142nd Street
New York, NY 10030

Public School 197 John B. Russwurm
2230 5th Avenue
New York, NY 10037
Attn: Renardo Wright, Principal

Harlem Children's Zone
40 West 143rd Street
New York, NY 10037
Attn: Malaika Lambert, Director
Email: mlambert@hcz.org

Community, Civic, Religious and other Educational Institutions:

Manhattan Chamber of Commerce
1375 Broadway, Third Floor
New York, NY 10018
Email: info@manhattancc.org

Upper Manhattan Empowerment Zone Development Corporation
290 Lenox Avenue, 3rd Floor
New York, NY 10027
Phone: (212) 410-0030
Fax: (212) 410-9083
Attn: Kenneth Knuckles, President and CEO
Email: kknuckles@umez.org

Minisink Townhouse
646 Malcolm X Boulevard
New York, NY 10037
Email: info@harlemonestop.org

New Mt. Zion Baptist Church
171 West 140th Street
New York, NY 10030
Email: churchadmin@nmzbc.org

St. Charles Church
211 West 141st Street
New York, NY 10030
Email: scbharlem211@yahoo.com

St. Mark Evangelist Roman Catholic Church
65 West 138th Street
New York, NY 10037

Project Renewal
145 Odell Clark Place
New York, NY 10030

Abyssinian Baptist Church
132 Odell Clark Place
New York, NY 10030
Email: esimpson@abyssinian.org

Frederick Samuel (NYCHA) Development Office
105 West 143rd Street
New York, NY 10030

Frederick Samuel Resident Association (NYCHA)
c/o Jacqueline Robinson, President
105 West 143rd Street
New York, NY 10030

Community Center
c/o Abyssinian Baptist Church
669 Lenox Avenue
New York, NY 10030

Day Care Center
Graham-Windham Children's Services
669 Lenox Avenue
New York, NY 10030

Local Media Outlets:

NY1 News
75 Ninth Avenue
New York, NY 10011
Email: ny1news@ny1.com

New York Post
1211 Avenue of the Americas
New York, NY 10036

New York Daily News
450 West 33rd Street
New York, NY 10001
Email: news@edit.nydailynews.com

Pat Stevenson
CEO & Publisher
Harlem News Group, Inc.
P.O. Box #1775
New York, NY 10027
Phone: (212) 996-6006
Fax: (212) 996-6010
Email: harlemnewsinc@aol.com

The Amsterdam News
2340 Frederick Douglass Blvd.
New York, NY 10027
Phone: (212) 932-7400
Fax: (212) 932-7431

Appendix D – Identification of Citizen Participation Activities

Program Citizen Participation Requirements	CP Requirement(s) Occur at This Point
Site Listing:	
• Mail notice to site contact list. If contact list not developed, publish notice in local newspaper and provide notice to adjacent property owners. All mailings require certification of mailing to DER within 5 days.	When final decisions about a site listing or reclassification are made. A Class 1 or Class 2 inactive hazardous waste disposal site on the Registry is eligible for a Technical Assistance Grant.
Start of Remedial Investigation (RI):	
• Prepare site contact list • Establish document repository • Prepare Citizen Participation (CP) Plan • Place RI Work Plan in document repository • Mail fact sheet to site contact list that announces availability of RI Work Plan and describes upcoming RI field work	CP Plan was approved by DER before distribution in June 2007. Fact Sheet mailed in August 2007.
Before DER Approves Proposed Remedial Investigation Report (RIR):	
• Mail fact sheet to site contact list that describes RI results • Place approved RIR in document repository	Before DER approves RIR: Final RIR published, with copy sent to repository and corresponding Fact Sheet mailed in June 2010.
When DER Issues Proposed Remedial Action Plan (PRAP):	
• Place PRAP in document repository • Mail fact sheet to site contact list that describes PRAP and announces 30-day comment period • Public meeting about PRAP	When DER issues PRAP: Comment period begins/ends as per dates identified in fact sheet. Public meeting is held during the comment period.
When DER Issues Record of Decision (ROD):	
• Place ROD in document repository • Mail fact sheet to site contact list that announces availability of ROD and describes selected remedy. ROD includes responsiveness summary of significant comments about PRAP	When DER issues ROD.
Before Start of Remedial Construction:	
• Mail fact sheet to site contact list that describes upcoming remedial construction	Before the start of remedial construction at the site.
When DER Issues Certificate of Completion (COC):	
• Place COC in document repository • Mail fact sheet to site contact list that announces issuance of Certificate of Completion (COC)	Within 10 days of DER issuing COC.
Proposed Site Delisting:	
• Provide notice as described for site listing and reclassification, above. Announce 30-day public comment period • Publish notice in Environmental Notice Bulletin • Publish notice in local newspaper • Make summary of comments received available to the public	At least 60 days before proposed site delisting.

Appendix E – Inactive Hazardous Waste Site Cleanup Program Process

Site Listing

Develop RI Work Plan
Prepare CP Plan

Fact Sheet on RI Work Plan

DEC Approves RI Work Plan

Complete Investigation and Submit RIR and Feasibility Study

Fact Sheet on RI Results

DEC Approves RIR

Submit Feasibility Study

DEC develops Proposed Remedial Action Plan

30-Day Comment Period
Fact Sheet, ENB Notice
Public Meeting

DEC Issues ROD

Fact Sheet on ROD

Submit Remedial Design

DEC Approves Remedial Design

Fact Sheet on Remedial Construction

Complete Construction

DEC Issues Certificate of Completion

Proposed Delisting or Reclassification

30-Day Comment Period
Fact Sheet, ENB Notice, Newspaper

Delisting or Reclassification

<u>Notes:</u>
ENB = Environmental Notice Bulletin
CP = Citizen Participation
RI/FS = Remedial Investigation/Feasibility Study
ROD = Record of Decision

Revised Attachment 4 - Excel Mailing List Template (Site Contact List)

Site #: 231004

Site Name: 2350 Fifth Avenue | **List Last Updated: 1/11/2013**

Current Occupant	Name, Title	Address 1	Address 2	Category	Street Address	City	State	Zip
	Mayor Michael R. Bloomberg			Elected/Government Officials	City Hall	New York	NY	10007
	Hon. John Liu, NYC Comptroller			Elected/Government Officials	1 Centre Street	New York	NY	10007
	Hon. Bill de Blasio, Public Advocate			Elected/Government Officials	1 Centre Street 15th Fl	New York	NY	10007
	Hon. Scott M. Stringer, Manhattan Borough President			Elected/Government Officials	1 Centre Street 19th Fl	New York	NY	10007
	Hon. Inez E Dickens, NYC Council Member	Adam Clayton Powell, Jr. Bldg		Elected/Government Officials	163 West 125 Street	New York	NY	10027
	Hon. Keith L. T. Wright, NYS Assemblymember	Adam Clayton Powell, Jr. Bldg Suite 911		Elected/Government Officials	163 West 125 Street	New York	NY	10027
	Hon. Bill Perkins, NYS Senator	Adam Clayton Powell, Jr. Bldge Suite 912		Elected/Government Officials	163 West 125 Street	New York	NY	10027
	Charles B. Rangel, US House of Representatives	Adam Clayton Powell, Jr. Bldg		Elected/Government Officials	163 West 125 street 7th FL	New York	NY	10027
	Hon. Kirsten Gillibrand, US Senator			Elected/Government Officials	780 Third Ave Suite 2601	New York	NY	10017
	Hon. Charles Schumer, US Senator			Elected/Government Officials	757 Third Ave Suite 17-02	New York	NY	10017
	Dr. Robert Kulikowski, NYC Office of Env. Coordination			Elected/Government Officials	253 Broadway 14th floor	New York	NY	10007
	Norman Goodman, Manhattan County Clerk			Elected/Government Officials	60 Centre Street, Room 161	New York	NY	10007
	Michael Weil, NYC Director of Zoning	NYC Department of City Planning		Elected/Government Officials	22 Reade Street	New York	NY	10038
	ShaKing Alston, Exec. Director	NYC Environmental Justice Alliance		Community, Civic, Religious	115 West 30th Street Suite 1110B	New York	NY	10001
	Peggy Shepard, Exec. Director	West Harlem Environmental Action, Inc.		Community, Civic, Religious	1854 Amsterdam Avenue (at 152nd	New York	NY	10027
	Cecil D. Corbin-Mark	West Harlem Environmental Action, Inc.		Community, Civic, Religious	1854 Amsterdam Avenue (at 152nd	New York	NY	10027
	Edward R. Matthews, CEO	United Cerebral Palsy of NYC		Community, Civic, Religious	80 Maiden Lane, 8th Floor	New York	NY	10038
	Yasmin Cornelius	Savoy Park		Adjacent Property Owner	45 West 139th Street	New York	NY	10037
	Savoy Park Owner, LLC			Adjacent Property Owner	45 West 139th Street	New York	NY	10037
	Valerie Orridge, President	Savoy Park Tenants Association		Community, Civic, Religious	45 West 139th Street	New York	NY	10037
	Robert A. Rissetto, general Manager	C&C Affordable Management, LLC		Adjacent Property Owner	45 West 139th Street	New York	NY	10035
	Debra kenyon, Esq	SLM Savoy Park I LLC		Adjacent Property Owner	1865 Palmer Avenue, Suite 203	Larchmont	NY	10538
	Beverly Alston	Riverbend Apartments		Adjacent Property Owner	2289 Fifth Avenue	New York	NY	10037
	Katrina McMillian	Riverbend Apartments		Adjacent Property Owner	2289 Fifth Avenue	New York	NY	10037
	Orlando Pinnock, Superintendent	Fifth Avenue Armory	New York Army National Guard	Adjacent Property Owner	2366 Fifth Avenue	New York	NY	10037
	Riverton Square Management	C/o Riverton Leasing Office		Adjacent Property Owner	2156 Madison Avenue	New York	NY	10037
	Mr. Franc Perry, Chair	Manhattan Community Board 10		Elected/Government Officials	215 West 125th Street 4 fl	New York	NY	10027
	Paimaan Lodhi, District Manager	Manhattan Community Board 10		Elected/Government Officials	215 West 125th Street 4 fl	New York	NY	10027
	George Sarkissian, District Manager	Manhattan Community Board 11		Elected/Government Officials	1664 Park Avenue ground fl	New York	NY	10035
	Matthew Washington, Chair	Manhattan Community Board 11		Elected/Government Officials	1664 Park Avenue ground fl	New York	NY	10035
	St. Mark Evangelist School			Schools & Daycare Facilities	55 West 138th street	New York	NY	10037
	Anne G. Newsomehead Star Center			Schools & Daycare Facilities	129 Odell Clark Place	New York	NY	10030
	St. Charles Borromeo RC School			Schools & Daycare Facilities	214 West 142nd Street	New York	NY	10030
	Natasha Spann, Principal	Public School 197		Schools & Daycare Facilities	2230 5th Avenue	New York	NY	10037
	Sonya CiD Martinez	Day care facility		Schools & Daycare Facilities	30 West 141st stret	New York	NY	10037
	Manhattan Chamber of Commerce			Community, Civic, Religious	1375 Broadway 3rd fl	New York	NY	10018
	Frederick Samuel Houses	NYCHA	C/o Sheila Stainback, Communic	Community, Civic, Religious	250 Broadway	New York	NY	10007
	Kenneth Knuckles, President and CEO	Upper Manhattan Empowerment Zone Development Corporation		Community, Civic, Religious	55 West 125th Street, 11th floor	New York	NY	10027
	Jacqueline Robinson, President	Frederick Samuel Resident Association (NYCHA)		Community, Civic, Religious	105 West 143 street	New York	NY	10030
	Minisink Townhouse			Community, Civic, Religious	646 Malcolm X Boulevard	New York	NY	10037
	Community Center	c/o Abyssinian Baptist church		Community, Civic, Religious	669 Lenox Avenue	New York	NY	10030
	New Mt. Zion Baptist church			Community, Civic, Religious	171 West 140 street	New York	NY	10030
	Day Care Center	Graham-Windham Children's services		Community, Civic, Religious	669 Lenox Avenue	New York	NY	10030
	St. Charles Church			Community, Civic, Religious	211 West 141 street	New York	NY	10030
	St. Mark Evangelist Roman Catholic Church			Community, Civic, Religious	65 West 138th Street	New York	NY	10037
	Minisink Townhouse of the NYC Mission Society	C/o William Allen		Community, Civic, Religious	646 Lenox Avenue	New York	NY	10037
	Minisink Townhouse of the NYC Mission Society	C/o Courtney Bennet		Community, Civic, Religious	646 Lenox Avenue	New York	NY	10037
	Rendell Memorial Presbyterian Church			Community, Civic, Religious	59 West 137th Street	New York	NY	10037
	Project Renewal			Community, Civic, Religious	145 Odell Clark Place	New York	NY	10030
	Abyssinian Baptist Church			Community, Civic, Religious	132 Odell Clark place	New York	NY	10030
	Greater Harlem Nursing Home	Director		Community, Civic, Religious	30 West 138th Street	New York	NY	10037
	NY1 News			Local Media Outlets	75 Ninth Avenue	New York	NY	10011
	New York Post			Local Media Outlets	1211 Avenue of the Americas	New York	NY	10036
	New York Daily News			Local Media Outlets	4 New York Plaza	New York	NY	10001
	The Amsterdam News			Local Media Outlets	2340 8th Avenue	New York	NY	10027
	Pat Stevenson, CEO & Publisher	Harlem News Group, Inc.		Local Media Outlets	P. O. Box #1775	New York	NY	10027
	Hon. Carter Strickland, NYC DEP Commissioner	NYC DEP		Public Water Supplier	59-17 Junction Blvd 13FL	Flushing	NY	11373
	Maurice Winter	NYC DEP, Office of Env. Plan & Assessement		Public Water Supplier	96-05 Horace Harding Expressway	Flushing	NY	11373
	Bryan Wong	NYSDEC Project Manager		Elected/Government Officials	One Hunter's Point Plaza, 47-40 2	Long Island City	NY	11101

Site #: 231004								
Site Name: 2350 Fifth Avenue		List Last Updated: 1/11/2013						
Current Occupant	Name, Title	Address 1	Address 2	Category	Street Address	City	State	Zip
	Jane O'Connell	NYSDEC Region 2 Chief of Superfund		Elected/Government Officials	One Hunter's Point Plaza, 47-40 2	Long Island City	NY	11101
	Thomas Panzone	NYSDEC Regional Citizen Participation Specialist		Elected/Government Officials	One Hunter's Point Plaza, 47-40 2	Long Island City	NY	11101
	Joseph Crua	NYSDOH		Elected/Government Officials	Flanigan Square, 547 River Street	Troy	NY	12180
	Dawn Hettrick	NYSDOH		Elected/Government Officials	Flanigan Square, 547 River Street	Troy	NY	12180
	Countee Cullen Library	New York Public Library		Document Repository	104 West 136th Street	New York	NY	10030
	Larry Ennist	NYSDEC		Elected/Government Officials	625 Broadway	Albany	NY	12233
	Joseph Howell			Site Tenant	60 West 142nd Street, Apt 4L	New York	NY	10037
	Rev. Monica Sutton	5 Stream Global Entertainment		Site Tenant	51 Knox Ave	Cliffside park	NJ	07010
	George Ramadhan	Honor General Contracting corp.		Site Tenant	30 West 141st Street	New York	NY	10037
	Jack Cesareo			Site Tenant	9 seaman Ave Apt. 4K	New York	NY	10034
	Christine M. Greene			Site Tenant	928 Shepard Ave	Hamden	CT	06514
	Tiffiny Ciupri	Chill Berry Inc		Site Tenant	414 Lenox ave	New York	NY	10037
	William Mendez			Site Tenant	935 ST. NICHOLAS AVE, APT 6.	New York	NY	10032
	Derek Fordjour			Site Tenant	764 GRAMATAN AVE	Mt. Vernon	NY	10552
	Jeffrey T Sonhouse			Site Tenant	00 WEST 175th STREET, APT# 5	New York	NY	10033
	Ona Otitie			Site Tenant	524 Seminary Row #1C	New York	NY	10027
	Paula Wynter			Site Tenant	409 Edgecombe ave, Apt 3F	New York	NY	10032
	Xenobia Bailey			Site Tenant	114 EDGECOMBE AVENUE	New York	NY	10030
	Harriott Myers	Harlem Hospital Center		Site Tenant	506 Lenox Ave, RHB RM 1061	New York	NY	10037
	Natalie Wood			Site Tenant	26 EAST 105th STREET APT#A	New York	NY	10029
	Socrates Marquez			Site Tenant	8 BRADHURST AVE, APT PH 1V	New York	NY	10039
	Rick Shaw Andy	Rickshaw Andy Inc.		Site Tenant	9 WEST 147TH STREET, APT 26	New York	NY	10039
	Duhirwe Rushemeza			Site Tenant	630 lenox ave 1F	New York	NY	10037
	Peter George			Site Tenant	05 WEST 147TH STREET, APT 1	New York	NY	10039
	Wendell Flowers			Site Tenant	5 WEST 139TH STREET, APT 12	New York	NY	10037
	Mila Dau			Site Tenant	175 WEST 90th Street, Apt #14B	New York	NY	10024
	Makalani Ray Vance	Designs of Harlem		Site Tenant	2096 Randall Ave	Bronx	NY	10473
	Adrian Kondratowicz	Adrian K Studio		Site Tenant	78 Bogart avenue apt 2	Garfield	NJ	07026
	Ray Llanos			Site Tenant	06 WEST 140TH STREET, APT#2	New York	NY	10030
	Paige Humphries	Maximum Focus TC Inc		Site Tenant	300 MANHATTAN AVE, APT 4C	New York	NY	10026
	Syn Martinez	Afro Brutality Inc.		Site Tenant	800 GRAND CONCOURSE 3WS	Bronx	NY	10451
	Renee Cox			Site Tenant	236 WEST 139TH ST.	New York	NY	10030
	Patrick Burns			Site Tenant	00 LEXINGTON AVENUE, APT#	New York	NY	10029
	Anina Banks			Site Tenant	34 W. 139TH ST. #7G	New York	NY	10037
	Gina Gonzalez			Site Tenant	1268 Olmstead ave #6w	bronx	ny	10462
	Sanford Biggers	Studio SB LLC		Site Tenant	2700 BROADWAY	New York	NY	10025
	Lynne Foster			Site Tenant	2115 Fifth Ave	New York	NY	10035
	Whitney Mero			Site Tenant	630 lenox ave 1F	New York	ny	10037
	John Means			Site Tenant	14 Saint Marks Place	New York	NY	10003
	Francisco Mora, Jr.			Site Tenant	626 RIVERSIDE DR, APT#24A	New York	NY	10031
	Martha Jones			Site Tenant	270 CONVENT AVE APT 6A	New York	NY	10031
	Trevor Zhou			Site Tenant	1742 2nd ave, Apt 5s	New York	NY	10128
	Ruth Rodriguez			Site Tenant	20 WEST 139TH STREET, APT#	New York	NY	10030
	James Michael Childs			Site Tenant	55 BLENIS PLACE, APT 1	Valhalla	NY	10595
	Jill Austen			Site Tenant	P.O Box 409	New York	NY	10030
	Wen Wen Lin			Site Tenant	71 WEST 70TH STREET, APT G	New York	NY	10023
		Carrefour Pastoral Africain Inc.		Site Tenant	374 Boston Post Road Apt. 2-B	Bronx	NY	10456
	Alfredo Hernandez	Gotham Lock & Door Co Inc.		Site Tenant	1801 Victor St FL2	Bronx	NY	10463
	Felicia Gordon	Sugar Hill Cluture Club		Site Tenant	400 W 150th Street Apt 5	New York	NY	10031
	John Coleman	Burn Apparel Inc.		Site Tenant	335 W 135th Street	New York	NY	10027
	Daniel Mapango			Site Tenant	99 Metropolitan Oval Apt #7E	Bronx	NY	10402
	Milagros Batista			Site Tenant	327 Rutland Ave	Teaneck	NJ	07666
	Vicky Lytle & Gina Gonzalez			Site Tenant	1268 Olmstead Ave #19	Bronx	NY	10462
	Eric Mack			Site Tenant	319 134th Ave Apt #4E	Jamaica	NY	11434
	Andrew Nichols			Site Tenant	161-30 119th Ave	Jamaica	NY	11434
	Harriet Tubman Daycare Center			Schools & Daycare Facilities	138 West 143rd Street	New York	NY	10030
	Central Harlem Senior Center			Community, Civic, Religious	120 West 140th Street	New York	NY	10030
	Sheltering Arms Daycare Center			Schools & Daycare Facilities	2311 Fifth Avenue	New York	NY	10037
	Risa Schneider	Workspace Harlem Tenant		Site Tenant	45 West 132nd Street	New York	NY	10032
	Delores Ford-Bolling	45 West 139th Street Tenant Association		Site Tenant	45 West 139th Street	New York	NY	10037

Site #: 231004

Site Name: 2350 Fifth Avenue

List Last Updated: 1/11/2013

Current Occupant	Name, Title	Address 1	Address 2	Category	Street Address	City	State	Zip

APPENDIX I

REMEDIAL COSTS

Appendix I-1
Summary of Costs for Remedial Activities
Treatment and Partial Insulation Removal
2350 Fifth Avenue, New York, New York

Remedial Alternatives	Description	Capital Costs	Engineering & Expenses	Operation & Maintenance Costs	Total
S2	Soil Vapor Extraction	$174,000	$60,960	$221,040	$456,000
S3/G2	Chemical Oxidation	$137,400	$72,000	$133,560	$342,960
G3	NAPL Recovery	$27,000	$19,200	$154,920	$201,120
I3/V3	Subslab Depressurization System	$183,600	$55,440	$825,840	$1,064,880
I2B (Partial)	Insulation Removal (1,000 sf area)	$310,560	$100,800	$0	$411,360
NA	Tank Closure	$40,000	$15,000	$0	$55,000
	Total	**$872,560**	**$323,400**	**$1,335,360**	**$2,531,320**

Appendix I-2
Soil Remedial Activities
2350 Fifth Avenue, New York, New York

Description	Quantity	Units	Unit Price	Cost	# Years	Total O&M Cost (NPV)	Contingency (20%)	Total
S2 - Soil Vapor Extraction								
Capital Costs								
Mobilization	1	LS	$10,000	$10,000			$2,000	**$12,000**
Well installation	10	per well	$2,500	$25,000			$5,000	**$30,000**
Trenching, Piping & Restoration	1	LS	$75,000	$75,000			$15,000	**$90,000**
Blower Package & Carbon Units	1	LS	$30,000	$30,000			$6,000	**$36,000**
Electrical	1	LS	$5,000	$5,000			$1,000	**$6,000**
Subtotal				**$145,000**			**$29,000**	**$174,000**
Engineering & Expenses								
Design, Coordination & Reporting	1	LS	$25,000	$25,000			$5,000	**$30,000**
Field Oversight & Start-up	20	days	$1,200	$24,000			$4,800	**$28,800**
Laboratory (TO-15)	6	samples	$300	$1,800			$360	**$2,160**
Subtotal				**$50,800**			**$10,160**	**$60,960**
Annual O&M Costs								
Carbon Replacement	1	LS	$10,000	$10,000	5	$44,500	$8,900	**$53,400**
Electricity (7.5HP blower)	49275	per KW-hr	$ 0.15	$7,400	5	$32,900	$6,580	**$39,480**
Inspection, Maintenance & Monitoring	12	months	$2,000	$24,000	5	$106,800	$21,360	**$128,160**
Subtotal				**$41,400**		**$184,200**	**$36,840**	**$221,040**
				Total S2 - Soil Vapor Extraction				**$456,000**

Appendix I-2
Soil Remedial Activities
2350 Fifth Avenue, New York, New York

Description	Quantity	Units	Unit Price	Cost	# Years	Total O&M Cost (NPV)	Contingency (20%)	Total
S3/G2 - Chemical Oxidation (Soil and Groundwater)								
Capital Costs								
Mobilization	4	per event	$10,000	$40,000			$8,000	**$48,000**
Well Installation	46	per well	$750	$34,500			$6,900	**$41,400**
Chemical injection	2	per event	$20,000	$40,000			$8,000	**$48,000**
Post Treatment Monitoring (driller and lab)	1	LS	$7,000	$7,000			$1,400	**$8,400**
Subtotal				**$114,500**			**$22,900**	**$137,400**
Engineering & Expenses								
Baseline Monitoring	1	per event	$4,000	$4,000			$800	**$4,800**
Interim Monitoring	2	per event	$4,000	$8,000			$1,600	**$9,600**
Post Treatment Monitoring (coord. and oversight)	1	LS	$5,000	$5,000			$1,000	**$6,000**
Design, Coordination & Reporting	1	LS	$25,000	$25,000			$5,000	**$30,000**
Field Oversight & Start-up	15	days	$1,200	$18,000			$3,600	**$21,600**
Subtotal				**$43,000**			**$8,600**	**$72,000**
Annual O&M Costs								
Groundwater Monitoring	1	est.	$20,000	$20,000	5	$89,000	$17,800	**$106,800**
Reporting	1	LS	$5,000	$5,000	5	$22,300	$4,460	**$26,760**
Subtotal				**$25,000**		**$111,300**	**$22,260**	**$133,560**
				Subtotal S3 - Chemical Oxidation				**$342,960**

Notes:
Total O&M Costs based upon specified years of O&M and discount rate of 4%
Electricity consumption based on $0.15 per kw-hr

Appendix I-3
Groundwater Remedial Activities
2350 Fifth Avenue, New York, New York

Description	Quantity	Units	Unit Price	Cost	# Years	Total O&M Cost (NPV)	Contingency (20%)	Total
G2 - Groundwater In-Situ Treatment								
To be performed in conjunction with in-situ soil treatment. See Appendix I-2.								
G3 - NAPL Recovery								
Capital Costs								
Mobilization	1	LS	2500	$2,500			$500	**$3,000**
Well Installation	5	wells	4000	$20,000			$4,000	**$24,000**
Subtotal				**$22,500**			**$4,500**	**$27,000**
Engineering & Expenses								
Design, Coordination & Reporting	1	LS	10000	$10,000			$2,000	**$12,000**
Field Oversight & Start-up	5	days	1200	$6,000			$1,200	**$7,200**
Subtotal				**$16,000**			**$3,200**	**$19,200**
Annual O&M Costs								
Well Gauging & Product Recovery	12	months	2000	$24,000	5	$106,800	$21,360	**$128,160**
Reporting	1	LS	5000	$5,000	5	$22,300	$4,460	**$26,760**
Subtotal				**$29,000**		**$129,100**	**$25,820**	**$154,920**
						Subtotal G3 - NAPL Recovery		**$201,120**

Notes:
Total O&M Costs based upon specified years of O&M and discount rate of 4%

Appendix I-4
Insulation Remedial Activities
2350 Fifth Avenue, New York, New York

Description	Quantity	Units	Unit Price	Cost	# Years	Total O&M Cost (NPV)	Contingency (20%)	Total
I2B - Insulation Removal and Off-Site Disposal (Partial Removal - max. 1,200 square foot area)								
Capital Costs								
Mobilization & General Conditions	1	LS	50000	$50,000			$10,000	**$60,000**
Asbestos Abatement	1	LS	30000	$30,000			$6,000	**$36,000**
Utility Relocation/Repair	1	LS	10000	$10,000			$2,000	**$12,000**
Demolition	1	LS	30000	$30,000			$6,000	**$36,000**
Floor & Cork Removal	100	CY	500	$50,000			$10,000	**$60,000**
Backfill & Compaction	80	CY	60	$4,800			$960	**$5,760**
Containment/HVAC	1	LS	30000	$30,000			$6,000	**$36,000**
Loading & Disposal	80	tons	300	$24,000			$4,800	**$28,800**
Restoration	1	LS	30000	$30,000			$6,000	**$36,000**
Subtotal				**$258,800**			**$51,760**	**$310,560**
Engineering & Expenses								
Geotechnical/Structural Design	1	LS	5000	$5,000			$1,000	**$6,000**
Remedial Design, Coordination & Reporting	1	LS	50000	$50,000			$10,000	**$60,000**
Air Monitoring Equipment	1	month	10000	$10,000			$2,000	**$12,000**
Field Oversight & Start-up	20	days	1200	$24,000			$4,800	**$28,800**
Laboratory	1	LS	5000	$5,000			$1,000	**$6,000**
Subtotal				**$94,000**			**$16,800**	**$100,800**
Annual O&M Costs								
Subtotal				**$0**	**0**	**$0**	**$0**	**$0**
	Subtotal I2B - Insulation Removal (Partial Removal - max. 1,200 square foot area)							**$411,360**

Notes:
Total O&M Costs based upon specified years of O&M and discount rate of 4%
Electricity consumption based on $0.15 per kw-hr

Appendix I-5
Soil Vapor Remedial Activities
2350 Fifth Avenue, New York, New York

Description	Quantity	Units	Unit Price	Cost	# Years	Total O&M Cost (NPV)	Contingency (20%)	Total
V3 - Subslab Depressurization System								
Capital Costs								
Mobilization	1	LS	10000	$10,000			$2,000	**$12,000**
Suction Pit Installation	14	zones	2500	$35,000			$7,000	**$42,000**
Piping & Restoration	14	zones	2500	$35,000			$7,000	**$42,000**
Blower Package (1HP)	14	zones	3500	$49,000			$9,800	**$58,800**
Carbon Units	4	zones	2500	$10,000			$2,000	**$12,000**
Electrical	14	zones	1000	$14,000			$2,800	**$16,800**
Subtotal				**$153,000**			**$30,600**	**$183,600**
Engineering & Expenses								
Design, Coordination & Reporting	1	LS	15000	$15,000			$3,000	**$18,000**
Field Oversight & Start-up	20	days	1200	$24,000			$4,800	**$28,800**
Laboratory (TO-15)	24	samples	300	$7,200			$1,440	**$8,640**
Subtotal				**$46,200**			**$9,240**	**$55,440**
Annual O&M Costs								
Carbon Replacement	2	change-outs	4000	$8,000	30	$138,300	$27,660	**$165,960**
Electricity (14 x 1.0 HP blower)	91980	per KW-hr	0.15	$13,800	30	$238,600	$47,720	**$286,320**
Inspection, Maintenance & Monitoring	12	months	1500	$18,000	30	$311,300	$62,260	**$373,560**
Subtotal				**$39,800**		**$688,200**	**$137,640**	**$825,840**
				Total V3 - Subslab Depressurization System				**$1,064,880**

Notes:
Total O&M Costs based upon specified years of O&M and discount rate of 4%
Electricity consumption based on $0.15 per kw-hr

APPENDIX J

SOIL VAPOR EXTRACTION SYSTEM PILOT DOCUMENTATION

Appendix J
2350 Fifth Avenue
New York, NY
SVE Pilot Test
Induced Vacuum Testing Summary

SVE-3

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	8.43

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SV-1/sg-7?	S	6	NA
SVE-4	W	18	NA
M-11E/M-11D	W	21	NA
M-11W/m-11s	W	24	NA
SVE-5	W	47	NA

Applied Vacuum (inches of water column)	10	20	22	38.5	37.5
Air velocity at wellhead (feet per minute)	335	625	730	885	875
Air flow rate at wellhead (cubic feet per minute)	29	55	64	77	76

Net Vacuum at Monitoring Well (inches of water column)					
	SG-7	0	0	0	0.61
	SVE-4	0.03	0.06	0.06	0.1
	M-11E/M-11D	0	0	0	0
	M-11W/M-11S	0.03	0.055	0.05	0.1
	SVE-5	0.01	0.01	0.005	0.005

SVE-4

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	8.37

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
M-11E	W	4	NA
M-11W	W	6	NA
SVE-3	E	18	NA
SV-1	E	19	NA
SG-15	SSE	30	NA
SVE-5	W	30	NA
SVE-6	S	30	0.01
SG-16	SSE	53	NA

Applied Vacuum (inches of water column)	11	21	30	38
Air velocity at wellhead (feet per minute)	550	1145	1380	1515
Air flow rate at wellhead (cubic feet per minute)	48	100	120	132

Net Vacuum at Monitoring Well (inches of water column)					
	M-11E	0	0	1.5	0
	M-11W	0.5	0.98	0	2
	SVE-3	0.135	0.25	0.32	0.45
	SV-1	0.16	0.4	0.58	0.74
	SG-15	NA	0	0	0
	SVE-5	0.01	0.03	0.03	0.045
	SVE-6	0.015	0.035	0.05	0.065
	SG-16	NA	0.025	0.045	0.055

SVE-5

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	8.03

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
M-2	SSE	12	0.02
M-11W	E	25	NA
SVE-4	E	30	NA
SVE-6	SE	36	0.01
SVE-3	E	47	NA
SV-3	SE	47	NA
SV-1	E	48	NA
SVE-7	SSE	64	0.01

Applied Vacuum (inches of water column)	10	20	40
Air velocity at wellhead (feet per minute)	350	790	
Air flow rate at wellhead (cubic feet per minute)	31	69	

Net Vacuum at Monitoring Well (inches of water column)				
	M-2	0.02	0.02	0.12
	M-11W	0.01	0.02	0.06
	SVE-4	0.005	0.01	0.02
	SVE-6	0.01	0.01	0.01
	SVE-3	0.005	0.005	0.01
	SV-3	0	0	0
	SV-1	0	0	0.005
	SVE-7	0.01	0.01	0

Appendix J
2350 Fifth Avenue
New York, NY
SVE Pilot Test
Induced Vacuum Testing Summary

SVE-6

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	10.09

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SG-16W	NE	7	0.01
SG-17E(sg-16e)	NE	8	NA
M-3	S	16	0.02
SG-15	E	16	NA
M-3D	SE	16	NA
M-2	NW	26	0.02
SG-17N	SSW	29	0.01
SG-17S	SSW	32	0
SVE-7	SSW	34	0.01
SVE-8	WSW	38	0.015

Applied Vacuum (inches of water column)	10	20	30	40
Air velocity at wellhead (feet per minute)	600	715	745	1050
Air flow rate at wellhead (cubic feet per minute)	52	62	65	92

Net Vacuum at Monitoring Well (inches of water column)				
SG-16W	0.24	0.51	0.95	1.51
SG-16E	0	0.005	0.01	0.02
M-3	0.02	0.03	0.05	0.065
SG-15	0	0.005	0.01	0.02
M-3D	0	0	0	NA
M-2	0.02	0.02	0.02	0.025
SG-17N	0.01	0.01	0.01	0.01
SG-17S	0	0	0	0
SVE-7	0.01	0.015	0.02	0.03
SVE-8	0.015	0.02	0.03	0.035

SVE-7

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	10.12

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SG-17S	N	3	0
SG-17N	N	5	0.01
M-3	NNE	20	0.02
M-3D	NE	27	NA
SVE-6	NNE	34	0.01
SVE-8	NW	35	0.015
SG-17W	NNE	40	NA
SG-17E	NNE	40	NA
SG-15	NNE	41	NA
M-2	NNW	52	0.02

Applied Vacuum (inches of water column)	10	20	30	40
Air velocity at wellhead (feet per minute)	445	645	NA	820
Air flow rate at wellhead (cubic feet per minute)	39	56		72

Net Vacuum at Monitoring Well (inches of water column)				
SG-17S	0	0	NA	0
SG-17N	0.01	0	NA	0
M-3	0.02	0	NA	0
M-3D	0	NA	NA	NA
SVE-6	0.01	0	NA	0
SVE-8	0.015	0	NA	0
SG-17W	0	0	NA	0.005
SG-17E	0	0	NA	0
SG-15	0	0	NA	0
M-2	0.02	0	NA	0

SVE-8

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	9.05

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SVE-10	W	21	0.02
SVE-11	SW	27	0.015
SVE-9	NW	30	0.02
SG-17N	SE	34	0.01
SVE-7	SE	35	0.01
SG-17S	SE	35	0
M-2	NNE	36	0.02
M-3	E	38	0.02
SVE-6	NE	39	0.01
SG-16W	NE	44	0.01
SG-16E	NE	45	0.01

Applied Vacuum (inches of water column)	10	30	40	37.5	50
Air velocity at wellhead (feet per minute)	475	745	1020	1085	960
Air flow rate at wellhead (cubic feet per minute)	41	65	89	95	84

Net Vacuum at Monitoring Well (inches of water column)					
SVE-10	0.04	0.02	0.02	0.02	0.02
SVE-11	0.03	0.025	0.025	0.025	0.015
SVE-9	0.04	0.02	0.02	0.02	0.02
SG-17N	0.02	0.01	0.01	0.01	0.02
SVE-7	0.02	0.015	0.015	0.015	0.01
SG-17S	0	0	0	0	0
M-2	0.04	0.02	0.02	0.02	0.02
M-3	0.04	0.025	0.03	0.03	0.03
SVE-6	0.02	0.01	0.015	0.015	0.02
SG-16W	0.02	0.01	0.01	0.01	0.01
SG-16E	0.02	0.01	0.01	0.01	0.06

Appendix J
2350 Fifth Avenue
New York, NY
SVE Pilot Test
Induced Vacuum Testing Summary

SVE-9

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	10.11

Applied Vacuum (inches of water column)	10	30	40
Air velocity at wellhead (feet per minute)	630	1050	1250
Air flow rate at wellhead (cubic feet per minute)	55	92	109

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)	Net Vacuum at Monitoring Well (inches of water column)	10	30	40
SVE-10	S	20	0.02	SVE-10	0.02	0.02	0.02
SVE-8	SE	30	0.015	SVE-8	0.015	0.015	0.015
M-2	ENE	39	0.02	M-2	0.02	0.02	0.02
SVE-11	S	39	0.015	SVE-11	0.015	0.015	0.015
SVE-6	E	57	0.01	SVE-6	0.01	0.01	0.01
SG-16W	E	60	0.01	SG-16W	0.01	0.01	0.01
SG-18I	SE	61	NA	SG-18I	<0.005	0	0
SG-16E	E	61	0.01	SG-16E	0.01	0.01	0.01
M-3	ESE	62	0.02	M-3	0.02	0.02	0.02
SG-17N	SE	62	0.01	SG-17N	0.01	0.01	0.01
SG-17S	SE	63	0	SG-17S	0	0	0
SG-18D	SE	65	NA	SG-18D	0.01	0.01	0.01
SVE-7	SE	65	0.01	SVE-7	0.01	0.01	0.01
SG-19I	SE	79	NA	SG-19I	0.01	0.01	0.01
SG-19D	SE	81	NA	SG-19D	0	0	0
SVE-2	SE	83	NA	SVE-2	0.005	0	0.002
SG-20S	SE	89	NA	SG-20S	0	NA	NA

SVE-10

Depth to Water (feet below grade)	NA
Total depth (feet below grade)	9.95

Applied Vacuum (inches of water column)	10	30	70
Air velocity at wellhead (feet per minute)	415	850	1245
Air flow rate at wellhead (cubic feet per minute)	36	74	109

Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)	Net Vacuum at Monitoring Well (inches of water column)	10	30	70
SVE-11	S	19	0.015	SVE-11	0.01	0.015	0.015
SVE-9	N	20	0.02	SVE-9	0.01	0.015	0.025
SVE-8	E	21	0.015	SVE-8	0.005	0.04	0.05
M-2	NE	47	0.02	M-2	0.005	0.005	0.005
SG-17N	ESE	53	0.01	SG-17N	0	0	0
SG-17S	ESE	54	0	SG-17S	0	0	0
SVE-7	ESE	55	0.01	SVE-7	0	-0.005	0
SVE-6	ENE	58	0.01	SVE-6	-0.005	-0.005	0
M-3	E	59	0.02	M-3	0	0	0.015
SG-16W	ENE	63	0.01	SG-16W	0	-0.005	0
SG-16E	ENE	64	0.01	SG-16E	-0.005	-0.005	0

Appendix J
2350 Fifth Avenue
New York, NY
SVE Pilot Test
Induced Vacuum Testing Summary

SVE-11			
Depth to Water (feet below grade)	NA		
Total depth (feet below grade)	10.08		
Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SVE-10	19	N	0.02
SVE-8	27	NE	0.015
SVE-9	38	N	0.02
SG-17S	50	E	NA
SVE-7	50	E	0.015
SG-17N	51	E	0.01
M-2	61	NE	0.02
M-3	61	ENE	0.02
SVE-6	64	NE	0.01
SG-16W	70	NE	0.015
SG-16E	71	NE	0.01

	Applied Vacuum (inches of water column)	65
	Air velocity at wellhead (feet per minute)	1180
	Air flow rate at wellhead (cubic feet per minute)	103
Net Vacuum at Monitoring Well (inches of water column)	SVE-10	0.022
	SVE-8	0.03
	SVE-9	0.015
	SG-17S	NA
	SVE-7	0
	SG-17N	0
	M-2	0.005
	M-3	0.005
	SVE-6	-0.01
	SG-16W	0
	SG-16E	0

SVE-2			
Depth to Water (feet below grade)	NA		
Total depth (feet below grade)	14		
Monitoring well name	Location Relative to SVE-3	Distance from SVE Well (feet)	Background Positive Pressure (inches of water column)
SG-19S	W	10	0
SG-19I	W	10	0
SG-19D	W	10	0
SG-20S	E	15	NA
SG-20D	E	15	0
SG-17S	NW	25	0.045
SG-17D	NW	25	0.055
SG-18S	W	30	0
SG-18I	W	30	-0.005
SG-18D	W	30	-0.005
M-3	NW	45	-0.08
SG-14	N	50	0
SG-16S	N	65	0.05
SG-16D	N	65	0.07
SG-21D	E	99	

	Applied Vacuum (inches of water column)	10			20			40		
	Air velocity at wellhead (feet per minute)									
	Air flow rate at wellhead (cubic feet per minute)	208	208	208	196	196	196	196	185	182
Net Vacuum at Monitoring Well (inches of water column)	SG-19S	0	0	0	0	0	0	0	0	0
	SG-19I	0	0	0	0	0	0	0	0	0
	SG-19D	0.095	0.1	0.1	0.2	0.195	0.195	0.21	0.4	0.4
	SG-20S	na	na	na	NA	NA	NA	NA	NA	NA
	SG-20D	0.025	0.025	0.025	0.045	0.05	0.045	0.05	0.1	0.1
	SG-17S	0	0	0	0	0	0	0	0	0
	SG-17D	0.245	0.24	0.024	0.4	0.4	0.4	0.4	0.8	0.8
	SG-18S	0	0	0	0	0	0	0	0	0
	SG-18I	0	0	0	0	0.005	0	0	0.005	0
	SG-18D	0	0	0.005	0.005	0.005	0.005	0.005	0.1	0
	M-3	0.005	0	0.005	0	0.01	0.01	0.01	0.02	0.02
	SG-14	0.005	0.005	0.005	0.01	0.01	0.01	0.01	0.02	0.02
	SG-16S	0	0	0	0	0	0	0	0	0
	SG-16D	0	0	0	0	0	0	0	0.01	0.005
	SG-21D	0	0	0	0	0	0	0	0	0

SVE Sample Calculation

Mass Loading

Total VOC concentration from SVE-2= **26,000 µg/m^3**

Wells likely to have high PCE concentrations= **5 wells**

Potential total VOC concentration from SVE system= **130,000 µg/m^3**

Air flow rate= [85 f^3/min]x[6 SVE points]= **510 f^3/min**

VOC emissions per year (given *flow rate*= 510 f^3/min)=

[130,000 (µg/m^3)]x[510 (f^3/min)]x[0.027826 (m^3/f^3)]x[1x10^{-6} (g/µg)]x[1x10^{-3} (kg/g)]x[2.2 (lbs/kg)]x

[60 (min/hr)]x[24 (hr/day)]x[365 (days/year)] = **2,133 (lbs/year)**

VOC emissions per month = **177 (lbs/month)**

GAC Sizing Assumptions

50% Safety factor

10% VOC loading

GAC use per month= [210 (lbs/month)]x[(1+50%)/10%]

= **2,666 (lbs. carbon/month)**

APPENDIX K

SUB-SLAB DEPRESSURIZATION SYSTEM PILOT DOCUMENTATION

Appendix K
2350 Fifth Avenue
New York, NY
SSDS Pilot Test Communications Testing Summary

Pit type	Pit Number	Fan model used	Applied Vacuum (inches of water column)	Air Flow Rate (cubic feet per minute)	VOC Concentration (parts per million)	Communication Achieved?	Distance from Pit (feet)	Orientation relative to Pit	Approximate Induced Vacuum (Inches of water column)	Pit Dimensions	Pit Location	Date Tested	Misc Notes
SSDS	1	GP-501	3.25	33	1.0	Y	20	S	0.004	2x2	Café West (Room)	9-Nov	
							30	E	0.004				
							30	N	0.004				
							33	NE	0.004				
							40	N	0.004				
SSDS	2	GP-501	4	7	227.0	Y	17	NE	0.004	2X2	Café East (Room)	9-Nov	
							20	NW	0.004				
							20	ESE	0.004				
							27	SW	0.004				
							30	W	0.004				
							30	SE	0.004				
							43	N	0.004				
SSDS	3	GP-501	3.5	10	2.6	Y	13	SW	0.004	2X2	Outside Room 114 (Hall)	9-Nov	
							17	E	0 (communication point on opposite side of subsurface obstruction)				
							20	NE	0.004				
							23	NW	0.0015-0.0034				
SSDS	4	GP-501	4		1.0	Y	20	NW	0.004	2x2	Small room east of Room 134	9-Nov	
							23	NNW	0.004				
							30	SSE	0.004				
							30	SSW	0				
SSDS	5	GP-501	3.5	34	1.8	Y	20	S	0.004	2X2	West of Room 130 (Hall)	9-Nov	
SSDS	6	GP-501	3.75	10	1.6	Y	10	E	0.004	1X1	West of Room 129 (Hall)	9-Nov	
							17	SW	0.004				
SSDS	7	GP-501	3.25	19	1.0	Y	17	W	0.004	1x1	South of Room 113 (Hall)	9-Nov	
							17	E	0.004				
							20	SW	0.004				
							27	N	0.0015-0.0034				
SSDS	8	GP-501	3.5	<2	1.4	Y	17	NW	0.004	1x1	South of Room 130 (Hall)	9-Nov	
							20	NNW	0.004				
SSDS	9	GP-501	3.5	<2	2.1	Y	13	SSE	0.004	2x2	East of Room 164 (Hall)	9-Nov	
							17	W	0.004				
							20	WNW	0.004				
							30	NNW	0.0015-0.0034				
							30	NE	0.004				
SSDS	10	GP-501	3.5	7	4.6	Y	3	S	0.004	2x2	South of Room 109 (Hall)	9-Nov	Half on footer
							10	N	0.004				
							10	W	0.004				
							20	E	0.004				
SSDS	15	GP-501	3.75	23	ND	Y	15	NW	0.004	1x1		9-Dec	
SSDS	16	GP-220	3.75	3	0.1	Y	17	SSE	0.004	1X1		9-Dec	
SSDS	17	GP-501	2.75-3	3	0.1	Y	NA	NA	NA	1x1	Room 149	9-Dec	Completely enclosed by subsurface obstructions. Vacuum induced within enclosed subsurface space.

Appendix K
2350 Fifth Avenue
New York, NY
SSDS Pilot Test Communications Testing Summary

Pit type	Pit Number	Fan model used	Applied Vacuum (inches of water column)	Air Flow Rate (cubic feet per minute)	VOC Concentration (parts per million)	Communication Achieved?	Distance from Pit (feet)	Orientation relative to Pit	Approximate Induced Vacuum (Inches of water column)	Pit Dimensions	Pit Location	Date Tested	Misc Notes
SSDS	18	GP-501	4	6	0.6	Y	10	SW	0.004	2x2	North of Room 162 (Hall)	8-Dec	
							10	SE	0.004				
							13	E	0.004				
							23	S	0.004				
SSDS	19	GP-501	4	4	1.2	Y	13	S	0.004	2x2	East of Room 141 (Hall)	8-Dec	
							17	WSW	0.004				
							23	WNW	0.004				
							23	SW	0.004				
SSDS	20	GP-501	3.25	27	1.0	Y	20	ENE	0.004	2x2	SW of freight elevator (Hall)	8-Dec	
							23	ESE	0.004				
SSDS	21	GP-501	3.75	16	0.8	Y	13	NW	0.0015-0.0034	2x2	North of Room 146 (Hall)	8-Dec	
SSDS	22	GP-501	3.75	8	0.8	Y	10	NE	0.004	2x2	East of Room 146 (Hall)	8-Dec	
							17	SE	0.004				
							20	S	0.004				
SSDS	23	GP-501	4	6	0.9	Y	7	SW	0.004	2x2	North of Room 147 (Hall)	8-Dec	
							10	E	0.004				
SSDS	24	GP-501	2.5	61	0.6	Y	NA	NA	NA	1x1	Room 146	8-Dec	Limited communications testing due to inaccessible rooms to the south and southeast. Pit behaves like void space point.
SSDS	25	GP-501	4	14	1.9	Y	10	SE	0.004	2x2	West of Room 161 (Hall)	8-Dec	
							23	E	0.004				
SSDS	26	GP-501	4	9	0.9	Y	7	N	0.004	2x2	North of Room 148A (Hall)	8-Dec	
							13	NE	0.004				
SSDS	27	NA	NA	NA	NA	NA	NA	NA	NA		Room 148		No testing due to inaccessible areas. Abutted by SSDS pits SSDS 24 and SSDS 31 to the west and east, respectively.
SSDS	28	GP-501	3.75	21	0.5	Y	10	N	0.004	2x2	North of Room 148 (Hall)	8-Dec	
							10	SE	0.004				
							13	NE	0.004				
SSDS	29	GP-501	2	72	ND	Y	10	N	0.004	1X1	Room 150	9-Dec	Pit behaves like void space point.
							13	NE	0.004				
SSDS	30	GP-501	4	12	1.0	Y	10	SW	0.004	2x2	North of Room 149 (Hall)	8-Dec	
							10	N	0.004				
							20	SE	0.004				
SSDS	31	GP-501	4	6	0.7	Y	13	W	0.004	1X1	Room 149	9-Dec	
							20	E	0.004				
SSDS	32	GP-501	3.75	9	0.1	Y	10	W	0.004	1x1	South of Room 156 (Room)	9-Dec	
SSDS	33	GP-501	3.75	10	0.1	Y	13	SW	0.004	2x2	Room 156	9-Dec	
							13	S	0.004				
SSDS	34	GP-501	4	10	0.5	Y	10	E	0.004	2x2	Northwest of Rom 156 (Hall)	8-Dec	
							16	SW	0.004				
							20	SE	0.004				

Appendix K
2350 Fifth Avenue
New York, NY
SSDS Pilot Test Communications Testing Summary

Pit type	Pit Number	Fan model used	Applied Vacuum (inches of water column)	Air Flow Rate (cubic feet per minute)	VOC Concentration (parts per million)	Communication Achieved?	Distance from Pit (feet)	Orientation relative to Pit	Approximate Induced Vacuum (Inches of water column)	Pit Dimensions	Pit Location	Date Tested	Misc Notes
SSDS	35	GP-501	1	87	0.4	Y	17	SW	0.004	2X2	Sales office kitchen East Closet (Room)	9-Dec	Pit behaves like void space point.
							33	NW	0.004				
							33	SW	0.004				
							33	S	0.004				
SSDS	36	GP-501	1	92	0.4	Y	10	SW	0.004	2X2	Locker Area, North of Auto door	9-Dec	Pit behaves like void space point.
SSDS	37	GP-501	3.5	20	0.5	Y	13	S	0.004	2X2	Between 1116 and 1117, East of SSDS 36	9-Dec	
							17	N	0.004				
							30	N	0.0015-0.0034				
SSDS	38	GP-501	4	6	0.5	Y	33	S	0.004	2X2	Between 1126 and 1127, North of SSDS 37	9-Dec	
Void Space	1	GP-501	1	96	0.3	NA	NA	NA	NA	4"	North of Room 152 (Hall)	9-Dec	Limited communications testing conducted due to large void throughout eastern portion of Site.
Void Space	2	GP-501	2.75	61	0.5	NA	NA	NA	NA	4"	West of Room 154 (Hall)	9-Dec	
Void Space	3	GP-501	2	82	0.1	NA	NA	NA	NA	4"	West of Room 155 (Hall)	9-Dec	
Void Space	4	GP-501	2.5	67	0.1	NA	NA	NA	NA	4"	SE of Room 134 (Hall)	9-Dec	
Void Space	5	GP-501	3	59	0.0	Y	10	S	0.0015-0.0034	4"	West of Room 109 (Hall)	9-Dec	
Void Space	6	GP-501	3	57	0.1	Y	20	N	0.0015-0.0034	4"	North of Room 134 (Hall)	9-Dec	

Notes

SSDS pits SSDS 11, SSDS 12, SSDS 13, and SSDS 14 were planned for the basement area but not installed. A separate measure will be implemented to mitigate the basement space.

Only monitoring results from communications points on the same side of subsurface obstructions as the SSDS pit reported. All remaining communications testing resulted in no vacuum, identifying the presence of a subsurface obstruction which prevented any vacuum from being induced.

<u>SSDS Sample Calculation</u>

<u>Mass Loading</u>

Total VOC concentration from all SSDS pits= **31,000 µg/m^3**
Air flow rate= [25 f^3/min]x[10 SSDS points]= **250 f^3/min**

VOC emissions per year (given *flow rate*= 250 f^3/min)=
[31,000 (µg/m^3)]x[250 (f^3/min)]x[0.027826 (m^3/f^3)]x[1x10^{-6} (g/µg)]x[1x10^{-3} (kg/g)]x[2.2 (lbs/kg)]x
[60 (min/hr)]x[24 (hr/day)]x[365 (days/year)] = **249 (lbs/year)**

VOC emissions per month = **21 (lbs/month)**

<u>GAC Sizing Assumptions</u>
50% Safety factor
10% VOC loading

GAC use per month= [21 (lbs/month)]x[(1+50%)/10%]

= **315 (lbs. carbon/month)**

SSDS Sample Calculation

Mass Loading

Total VOC concentration from all SSDS pits= **31,000 µg/m^3**
Air flow rate= [100 f^3/min]x[6 SSDS points]= **600 f^3/min**

VOC emissions per year (given *flow rate*= 600 f^3/min)=
[31,000 (µg/m^3)]x[600 (f^3/min)]x[0.027826 (m^3/f^3)]x[1x10^{-6} (g/µg)]x[1x10^{-3} (kg/g)]x[2.2 (lbs/kg)]x
[60 (min/hr)]x[24 (hr/day)]x[365 (days/year)] = **598 (lbs/year)**

VOC emissions per month = **50 (lbs/month)**

GAC Sizing Assumptions
50% Safety factor
10% VOC loading

GAC use per month= [50 (lbs/month)]x[(1+50%)/10%]

= **750 (lbs. carbon/month)**