Site Characterization Report for 1st Avenue and 76th Street Plume Trackdown (2-31-064) Manhattan, New York

Prepared for

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by

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July 2010
Revision: DRAFT
EA Project No.: 14368.39

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CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

1.1 PROJECT BACKGROUND

The New York State Department of Environmental Conservation (NYSDEC) tasked EA Engineering, P.C. and its affiliate EA Science and Technology (EA) with a Work Assignment to perform the 1st Avenue and 76th Street Plume Trackdown (NYSDEC Site No. 2-31-064) Manhattan, New York City, New York (Figure 1). EA completed a site characterization (SC) to delineate and identify a potential source of a dissolved-phase volatile organic compound (VOC) plume in the 1st Avenue and 76th Street area. The plume was identified during completion of a subsurface investigation at Celebrity French Cleaners and Tailors (NYSDEC site No. 2-31-057) 1427 York Avenue, Manhattan, New York City, New York.

The Work Assignment was conducted under the NYSDEC State Superfund Standby Contract (Work Assignment No. D004438-39). The elements of this SC report were prepared in accordance with the most recent and applicable guidelines and requirements of the NYSDEC and the New York State Department of Health (NYSDOH). Activities completed under this work assignment were performed in accordance with the approved SC Work Plan, submitted to NYSDEC in December 2009[1].

1.2 OBJECTIVES

The goal of the SC is to determine whether a site meets NYSDEC definition of a hazardous waste site by confirming or denying the presence of hazardous waste and determining whether or not the site poses a significant threat to public health or the environment. The objective of the SC was to determine the source area and potential contributors of the chlorinated solvents detected during the preliminary site assessment report completed at Celebrity French Cleaners and Tailors site located at 1427 York Avenue, Manhattan, New York.

The purpose of the field investigation and analytical sampling at the site was to assess and characterize subsurface conditions at the site. The field investigation included the installation of three groundwater monitoring wells. The sampling program consisted of collecting groundwater samples at the newly installed groundwater monitoring well locations (MW-08, MW-09, and MW-10) and existing groundwater monitoring wells (MW-06 and MW-07) (Figure 2).

This SC report will discuss the records review, field investigation activities and summarize the groundwater analytical results.

1. EA Engineering, P.C. 2009. Site Characterization Work Plan, 1st Avenue and 76th Street Plume Trackdown (2-31-064), Manhattan, New York. December.

1.3 REPORT ORGANIZATION

Summary of site background information including site location and description, site geology and hydrology, previous investigation information and an environmental database records search are provided in Section 2. Field investigation activities completed in January and February 2010 are provided in Section 3. Analytical results are summarized in table format and presented in Section 4. Section 5 summarizes the environmental impacts associated with the 1st Avenue and 76th Street area.

The following are provided as appendixes:

- **Appendix A**—Environmental Database Resources (EDR) Report
- **Appendix B**—Previous Investigation Reports (provided by NYSDEC)
- **Appendix C**—Daily Field Reports
- **Appendix D**—Soil Boring /Well Construction Logs
- **Appendix E**—Monitoring Well Development and Sampling Logs
- **Appendix F**—Data Usability Summary Reports (DUSRs)
- **Appendix G**—Laboratory Analytical Data, Form I's, Chain of Custody Forms.

2. SITE BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The 1st Avenue and 76th Street Plume Trackdown is being conducted from the 1st Avenue and 76th Street intersection in a northwesterly direction. The plume trackdown area is bounded to the southwest by East 74th Street, to the northwest by 2nd Avenue, to the northeast by East 77th Street, and the southeast by York Avenue in the borough of Manhattan in New York City, New York (Figure 2).

The site is surrounded by a dense mixture of residential and commercial buildings. John Jay Park and the East River are less than .25 mi from the area to the southeast.

2.2 GEOLOGY AND HYDROGEOLOGY

A review of the geologic map of New York, Lower Hudson Sheet published by the University of the State of New York, the State Education Department and dated 1970, indicates that the subject site lies within the Manhattan Formation, which is part of the Ordivician System consisting of amphibolites and schists. According to the EDR report, the subject site is classified as urban land that lies above approximately less than 10 in. of sands and loams.

According to the Soil Service Geographic Database (SSURGO), the site is underlain by urban land. This soil does not meet requirements for hydric soil. The soil is typically less than 10 in. to unweathered bedrock.

Based on soil boring logs generated during the SC, approximately 4-5 ft of unconsolidated material consisting of silt, sand, gravel, and large cobbles overlie bedrock at the 1st Avenue and 76th Street site.

2.3 ENVIRONMENTAL RECORDS DATABASE SEARCH

An EDR Radius Map Report with Geocheck was provided during completion of the Celebrity French Cleaners and Tailors Preliminary Site Assessment; a NYSDEC project completed in October and November 2008 and can be found in Appendix A. Celebrity French Cleaners and Tailors is located at 1427 York Avenue, Manhattan, New York City, New York and is in close proximity of the current plume trackdown area. This document was used to supplement information considered as additional environmental records. A copy of the EDR database report is presented in its entirety in the Celebrity French Cleaners and Tailors Preliminary Site Assessment report (Appendix B). Additionally, an explanation of the databases is provided within the EDR report.

The Celebrity French Cleaners and Tailors site, located at 1427 York Ave, was identified within several databases: FINDS, Resource Conservation and Recovery Act – Conditionally Exempt Small Quantity Generators (RCRA–CESQG), Underground Storage Tanks (UST), Manifest,

Drycleaners Databases, Voluntary Cleanup Program (VCP), New York Spills (NYSPILLS), Chemical Bulk Storage Underground Storage Tank (CBS UST), Chemical Bulk Storage (CBS), Leaking Underground and Aboveground Storage Tanks (LTANKS), Historical Leaking Underground and Aboveground Storage Tanks (HIST LTANKS), Aboveground Storage Tanks (AST), and Historical Underground Storage Tanks (HIST UST) and Historical Aboveground Storage Tanks (HIST AST).

According to the EDR report, the property listed as East 75th/East 76th St., 503-509 East 75th St. / 502-504 E 76th St., New York, NY 10021 was listed in the VCP database. This site is located on the upper east side of Manhattan, between York Ave and FDR Drive. Four vacant commercial buildings existed on the site at one time and have been since demolished. Prior uses of the property were light industrial and commercial, and included an automobile repair shop, a bakery, as well as a dry cleaner and a garage in which solvents were previously used. The area currently consists of one multi-story school building, Lycee Francais, in a mixed residential and industrial neighborhood. When the school was built, the basement required excavation 30 ft below ground surface (bgs) into bedrock. VOC contaminated soil was removed from this site prior to the schools construction and disposed of offsite. Groundwater is currently being collected, treated and discharged into the New York City sewer system. The foundation of the building is lined with a vapor barrier to minimize the potential for exposures associated with soil vapor intrusion. The site is covered by the onsite building and pavement. Human exposure to groundwater was noted as unlikely since the area is served by public water.

The following sites, upgradient of Celebrity French Cleaners and Tailors, were also identified in the EDR report:

These databases are solely for informational purposes and do not indicate that a release has occurred or that the site has been contaminated from a release. The EDR report contains other related information considered as additional environmental records.

- The property listed for H&H Young Corp, 1427 York Ave is found in the RCRA-CESQG database. The RCRA-Conditionally Exempt Small Quantity Generator (SQGs) listing for the subject property identifies it as a generator of hazardous waste. SQGs generate between 100 and 1,000 kg of hazardous waste per month. One violation was reported for this subject property and a written informal notification was given for a generators manifest.

- The property listed for H&H Young Corp, 1427 York Ave, is found in the FINDS database. The FINDS database contains both facility information and "pointers" to other sources that contain more detail.

- The property listed for H&H Young Corp, 1427 York Ave, is found in the New York Manifest database. The New York Manifest database is a facility and manifest data document that lists and tracks hazardous waste from the generator through transporters to a transportation, storage, and disposal facility.

- The property listed for 1427 York Ave is listed in the UST and HIST UST Databases. The UST and HIST UST databases list registered USTs. USTs are regulated under Subtitle I of the RCRA. These data come from the NYSDEC's Petroleum Bulk Storage (PBS) database. One 4,000-gal steel UST is listed as active for the site.

- The property listed for Celebrity French Cleaners and Tailors/H&H Young Cleaners, 1427 York Ave, is listed in the NYSPILLS database. The NYSPILLS database shows a listing for all spills reported to the NYSDEC since 1 April 1986. Spill No. 02-10958 was reported to the NYSDEC on 1 February 2003 when approximately 5 gal of #2 fuel oil were spilled as a result of a leaking fill pipe. The spill case was closed on 7 July 2003 by the responsible party.

- The property listed for Celebrity French Cleaners and Tailors/H&H Young Cleaners, 1427 York Ave, is listed in the Drycleaners database. The Drycleaners database is a listing of all registered dry cleaning facilities.

- The subject property listed as 75/76 Development Co., LLC, 503-509 E 75th St, New York, NY 10018; and Lycee Francais de New York, 505 E 75th St., New York, NY 10021 were found in the FINDS database. The FINDS database contains both facility information and "pointers" to other sources that contain more detail.

- The subject property listed as 75/76 Development Co., LLC, 503-509 E 75th St, New York, NY 10018 was found in the RCRA-CESQG database. The RCRA-CESQG listing for the subject property identifies the subject property as a generator of hazardous waste. No violations were reported for this subject property.

- The subject property listed as 75/76 Development Co., LLC, 503-509 E 75th St, New York, NY 10018 was found in the New York Manifest database.

- The property listed for target property as East 75th/East 76th St., 503-509 East 75th St. / 502-504 E 76th St., New York, NY 10021 was listed in the VCP database.

- The property listed for the target property as 502-512 E 76th St. / 503-509 E 75th St., New York, NY is listed in the NYSPILLS database. The NYSPILLS database shows a listing for all spills reported to the NYSDEC since 1 April 1986. Spill No. 01-30054 was reported to the NYSDEC on 30 January 2002 as a result of an unknown quantity of unknown petroleum found as a band of contamination within bedrock. The spill case was closed on 11 May 2004 under the VCP.

- The property listed for the target property as 75/76 Street Development Co., LLC, 503-509 East 75th Street, New York, NY 10021 was listed in the CBS UST and the CBS databases. The CBS database includes facilities storing hazardous substances listed in 6 New York Code of Rules and Regulations (NYCRR) Part 597 in ASTs with capacities of 185 gal or greater, and/or in underground tanks of any size. Facilities registered (and closed) since effective date of CBS regulations (15 July 1988) through the date request

are processed. Four 1,080-gal steel USTs were used onsite for the storage of tetrachloroethylene, but are temporarily out of service at this time.

- The property listed for the target property as Old Vacant Property, 503-509 East 75th Street, Manhattan, NY was listed in the LTANKS and the HIST LTANKS database. The LTANKS and HIST LTANKS are records that contain an inventory of reported leaking storage tank incidents reported for 4/1/86 through the most recent update. They can be either leaking USTs or leaking ASTs. The causes of these incidents are tank test failures, tank failures, or tank overfills. Spill No. 00-11107 was reported to the NYSDEC on 11 January 2001 as a result of a tank failure. Four 1,000-gal tanks were pulled from under the slab floor of a former garage building. Contamination was found in the excavation. Most of the contaminated material was removed and endpoint samples were collected. The NYSDEC required the installation of one monitoring well. The spill case was closed by the NYSDEC on 23 March 2004.

- The property listed for the target property as 75th/76th Street Development Co., 503-509 East 75th Street, New York, NY 10021 was listed in the UST, HIST UST, AST, and HIST AST Databases. The UST and HIST UST database contains registered USTs. USTs are regulated under Subtitle I of the RCRA. These data come from the NYSDEC's PBS database. The AST and HIST AST database contains registered ASTs. These data come from the NYSDEC's PBS database. Five 550-gal and one 5,000-gal steel UST, and one 275-gallon steel AST were listed as closed in-place for the site.

- There are 18 drycleaners identified in the EDR report which are located upgradient and within the three block radius identified in Section 2.1. These drycleaners were identified in the RCRA-CESQG, RCRA-NonGen, Manifest, and Drycleaners databases and are found on Figure 3.

2.4 PREVIOUS INVESTIGATIONS

An Off Site Study Report for East 75th/ 76th Street site was prepared in July 2003 by AKRF Engineering, P. C., which reported that a Phase II Investigation had been completed for 75th/76th Street Development Company, LLC at the locations of 503-509 East 75th Street and 502-512 East 76th Street. This investigation included the installation of six groundwater monitoring wells, soil vapor points, and groundwater sampling. Groundwater was collected from six monitoring wells MW-01 through MW-06. Soil and groundwater sampled during the previous investigation contained concentrations of VOCs, semivolatile organic compounds (SVOCs), and metals. Concentrations of chlorinated VOCs (CVOCs) including *cis*-1,2-dicholorethene (*cis*-1,2-DCE), tetrachloroethene (PCE), and trichloroethene (TCE) were reported above NYSDEC Ambient Water Quality Standards (AWQS). A copy of the Off Site Study is provided in Appendix B. In October 2008, two monitoring wells were installed by EA on 76th Street between York Avenue and 1st Avenue to address concerns related to the Celebrity French Cleaners and Tailors site. Soil samples were collected from both monitoring well locations. Lead was detected in soil samples collected from the MW-06 location at concentrations that were greater than 6 NYCRR Part 375 Cleanup Guidance Objectives. Groundwater samples were collected from monitoring

wells MW-06 and MW-07, along with the MW-01 through MW-05, from the 2003 investigation. At the time of the 1st Avenue and 76th Street plume trackdown, monitoring well MW-06 was not located or sampled. The groundwater monitoring wells were re-numbered during the November 2008 groundwater sampling program as shown on Figure 2. *Cis*-1,2-DCE, PCE, and TCE were detected in MW-02, MW-06, and MW-07 at concentrations greater than NYSDEC AWQS. Bis (2-Ethylhexyl) phthalate was detected in MW-01, MW-03, MW-04, and MW-05 at levels greater than NYSDEC AWQS. Barium, beryllium, chromium, iron, lead, magnesium, manganese, nickel, and sodium were detected in each of the wells sampled at concentrations greater than NYSDEC AWQS.

In November 2008, a sub-slab soil sample and a sub-slab soil vapor sample were collected from the basement of the Celebrity French Cleaners and Tailors building. The sub-slab soil sample had concentrations of acetone that were reported greater than the 6 NYCRR Part 375 Cleanup Guidance Objectives. Chloroform, *cis*-1,2-DCE, PCE, and TCE were detected in the sub-slab soil vapor sample.

In March 2009, sub-slab vapor and basement air samples were collected from the basement of the Celebrity French Cleaners and Tailors building. First floor, second floor, and outdoor ambient air samples were collected from inside the drycleaners, on the second floor of apartments above the drycleaners, and at the outside stairway entrance into the basement of the building. Each parameter tested was detected in each of the five samples collected. TCE exceeded NYSDOH Air Guideline Values – Indoor and Outdoor Air (100 µg/m^3) with a concentration of 130 µg/m^3 in the basement sub-slab vapor sample. PCE exceeded NYSDOH Air Guideline Values with concentrations of 3,400 µg/m^3 in the basement sub-slab vapor sample, 170 µg/m^3 in the basement air sample, and 150 µg/m^3 in the store front first floor air sample.

3. FIELD INVESTIGATION ACTIVITIES

Field investigation activities were conducted in accordance with EA's Generic Field Activities Plan (EA, 2007)[2] and as outlined in the SC Work Plan (EA, 2009)[3], with the exception of the deviations specifically identified in the following sections. In accordance with the site specific Health and Safety Plan (HASP), health and safety officer responsibilities were assigned to one of the team members throughout the field program to ensure that personnel were protected from both physical and chemical health hazards. Appropriate protective clothing was worn by field personnel while performing all intrusive activities for protection against contamination and to prevent cross-contamination between sample locations and matrices.

EA's approach for implementing the SC included field sampling activities designed to evaluate the presence or absence of potential chlorinated compounds at the site and to summarize the concentrations of potential contaminants of concern through laboratory analysis.

The field investigation program was performed during January 2010 and February 2010 and included the following activities:

- ***Monitoring Well Installation:*** Three groundwater monitoring wells were installed to determine groundwater quality and flow direction onsite.

- ***Groundwater Sampling:*** Collection and analysis of five groundwater samples (two previously existing and three newly installed monitoring wells).

Copies of the daily field reports are provided in Appendix C. Site sampling locations are detailed in Figure 2.

3.1 COMMUNITY AIR MONITORING

Beginning each day and prior to the start of intrusive field investigation activities, temporary particulate monitoring stations were setup at upwind and downwind locations of the work area. The particulate monitoring was performed using a MIE DR-4000 DataRam Real-Time Aerosol Monitor. At no point during the field investigation activities did the downwind monitoring station exceed 100 $\mu g/m^3$ above the upwind monitoring station. The downgradient DataRam meter stopped working on 11 January 2009, but site work continued. The air monitoring data are included as an attachment in Appendix C.

In addition to particulate air monitoring, the work area was continuously monitored with a photoionization detector (PID) for VOCs. At no point during the field investigation program did the work areas exceed daily background concentrations.

2. EA. 2007. Generic Field Activities Plan for Work Assignments. September.
3. EA. 2009. Preliminary Site Assessment Work Plan, 1st Avenue and 76th Street Plume Trackdown (2-31-064), Mahattan, New York. December.

3.2 GROUNDWATER MONITORING WELL INSTALLATION/SAMPLING

3.2.1 Monitoring Well Installation

The initial intent of the SC Work Plan was to install nine upgradient monitoring wells. However, due to utility clearance issues and limited space, six of the proposed monitoring wells on 76th, 77th, and 78th Streets; and 1st Avenue were not installed. NYSDEC was consulted on the issue and due to permitting issues, alternate locations were not possible.

Three monitoring wells (MW-08, MW-09, and MW-10) were installed to determine groundwater conditions upgradient of the site. Each boring was hand cleared to 5 ft, or if bedrock was encountered, before drilling commenced. The monitoring wells were installed using a sonic drill rig. A sonic drill head works by sending high-frequency resonant vibrations down the drill string to the drill bit, while the operator controls these frequencies to suit the specific conditions of the soil/rock geology. Resonance magnifies the amplitude of the drill bit, which fluidizes the soil particles at the bit face, allowing for penetration through most geological formations. An internal spring system isolates these vibrational forces from the rest of the drill rig. The boreholes were advanced from 15 to 23 ft bgs with the sonic hammer, 5 ft core barrels, and driving casing. A core bag was placed over the drilling rod after the rods and core barrel were pulled up from depth. The rig then discharged the contents of the core barrel into the core bag. Due to the force and power of the sonic drill rig, rock below was slightly pulverized as it was emptied into the core bags. Thus making it harder to log the weathered schist that was being drilled into. At each monitoring well location, after the core bags were cut open, samples were screened with a PID and visually classified and described.

A 2-in. diameter monitoring well was inserted into each open borehole. The monitoring wells were constructed with a 10-ft length of 0.010-in. slotted screen and an appropriate length of Schedule 40 polyvinyl chloride (PVC) riser to the ground surface. The screen filter pack consisting of Morie #00N sand was brought 2-ft above the top of the screen interval. The remaining area in the borehole was backfilled with bentonite chips to ground surface. A 6-in. flush mount cover protective well was installed on each well with a concrete pad with the dimensions of 2 ft × 2 ft × 6 in. The sidewalk flag at each well location was replaced a few days after completion in accordance with Manhattan regulations that state each flag shall be replaced if broken for intrusive purposes. Figure 4 illustrates the well construction diagram of MW-08, MW-09, and MW-10. Monitoring well construction logs are included in Appendix D.

3.2.2 Monitoring Well Development

The newly installed monitoring wells were developed within 24 hours of installation. The wells were developed using surging and bailing techniques. Well development was considered complete when pH stabilized and a turbidity of less than 50 nephelometric turbidity units (NTUs) were achieved, or the monitoring well was purged dry. The wells were developed using 1¾ in. polyethylene bailers until the well was purged dry. A blockage was found at 17 ft while developing MW-10. It had been determined that the PVC piping had broken upon removal of the sonic drill rig casing and the well collapsed filling the casing with the sand pack. The well

was over drilled and the casing was replaced on 13 January 2010. Monitoring well development logs are included in Appendix E.

3.2.3 Monitoring Well Sampling

In total, five monitoring wells, including two existing monitoring wells (MW-06 and MW-07) and three newly installed monitoring wells (MW-08, MW-09, and MW-10), were included in the groundwater sampling program. Groundwater samples were collected on 2 and 3 February 2010 using bailing methods. The monitoring wells were purged using 1¾ in. polyethylene bailers until 3 well volumes were removed or the well went dry, whichever occurred first. Each well was allowed to recharge prior to collecting groundwater samples. During sampling and purging water was discharged to the surface in accordance with the work plan. Groundwater samples were collected from the monitoring wells using dedicated polyethylene bailers.

Groundwater monitoring well sampling procedures included collecting data on water level measurements, well purging, water quality measurements, and sample collection at each monitoring well location. Groundwater sampling logs used to record well purging, water quality measurements, and sampling flow rates are provided in Appendix E. In addition, an oil/water interface probe was used to measure dense non-aqueous phase liquid (DNAPL) thickness (if any) in the groundwater monitoring locations. No DNAPL or obvious odor observations were noted while gauging the site monitoring wells. Groundwater elevation data collected at the site are summarized in Tables 1 and 2. The objective of the groundwater sampling protocol was to obtain samples that are representative of the aquifer.

Groundwater samples were placed in appropriate sample containers, sealed, and submitted to Chemtech for laboratory analysis of VOCs by USEPA Method 8260B. The samples were labeled, handled, and packaged following the procedures described in the Generic Quality Assurance Project Plan (QAPP) and QAPP Addendum. Quality assurance (QA)/quality control (QC) samples were collected at the frequency detailed in the Generic QAPP and QAPP Addendum.

3.3 FIELD DUPLICATE SAMPLING

Field QC sampling included collection of duplicate samples. Field duplicates were collected at the rate of 1 duplicate per 20 original samples.

3.3.1 Groundwater Field Duplicate Sampling

One duplicate sample and one matrix spike/matrix spike duplicate were collected for groundwater samples for quality control purposes.

3.4 DATA VALIDATION

Analytical data results were submitted to Environmental Data Services, Inc for validation. This validation included a review of pertinent QA/QC data such as sample extraction and analysis, holding times, calibration, a review of laboratory blanks and QA/QC sample results, and a

review of the analytical case narrative. A DUSR was prepared which includes a compliance chart, a list of samples included in each sample delivery group, and recalculations of sample results. Nonconforming QA/QC results were evaluated with respect to their implications for data reliability and usability, and data results were flagged accordingly on the results sheets. These qualifiers were entered into the site-specific database and appear in the summary tables presented in this report. DUSRs for the analytical data packages are provided in Appendix F.

3.5 SITE SURVEY

In March 2010, MJ Engineering and Land Surveying, P.C of Manhattan, New York completed a survey at the site that included newly installed monitoring wells MW-08, MW-09, and MW-10. The basemap included the monitoring well locations, curb lines, and spot elevations of the streets the wells were located on for reference. Each vertical datum was referenced to the North American Vertical Datum of 1988 (NAVD). Horizontal control was established by traverse runs to establish location with respect to the New York State planar horizontal coordinate grid system and provided in New York State Plane (NAD83).

4. FIELD INVESTIGATION RESULTS

This section presents the findings of the field sampling activities conducted during the SC. Groundwater was analyzed for VOCs only via USEPA method 8260B. Analytical methods were performed by an Environmental Laboratory Approval Program-certified laboratory. In addition, the laboratory followed the QA/QC, holding time, and reporting requirements as defined in the NYSDEC Analytical Services Protocol of June 2000. Groundwater analyses were performed by Chemtech of Mountainside, New Jersey. Laboratory analytical data are reported using Category B deliverables and the standard electronic data deliverable. Analytical Form I's are provided in Appendix G. Analytical data collected for the Preliminary Site Assessment were validated by Environmental Data Services, Inc., an independent third party. Analytical data were reviewed for completeness; field and laboratory QC sample results were evaluated; significant laboratory control problems were assessed; and data qualifiers were assigned.

Standards, criteria, and guidance (SCGs) are promulgated requirements and non-promulgated guidance which govern activities that may affect the environment, and are widely used at different stages of investigation and remediation of a site. The SCGs applicable for the data set collected during this SC are NYSDEC AWQS for Class GA.

4.1 GEOLOGY

Soil boring logs indicated that unconsolidated materials at the site consisted of 4-5 ft of silt, sand, gravel, and large cobbles. Schist bedrock was encountered between 3 and 10 ft bgs. A clay layer was encountered at 10 ft at monitoring wells MW-08 and MW-09. A change in bedrock color from red-brown to gray was observed between the 15 ft (MW-10) and 20 ft (MW-08 and MW-09) intervals. The schist bedrock was weathered in the upper layers (4-23 ft bgs) and became competent between 15 and 23 ft bgs. Boring logs for the newly installed monitoring wells are provided in Appendix D.

4.2 HYDROGEOLOGY

Groundwater measurements were taken from the top of the inner PVC casing using an oil/water interface probe. Groundwater level measurements were taken on 2 February 2010 and ranged in depth from 10.46 ft bgs (MW-07) and 16.52 ft bgs (MW-10). Table 1 summarizes the depth to groundwater at each monitoring well location for the gauging event. A second round of monitoring well gauging took place on 16 March 2010 and included all 10 wells and is summarized in Table 2. The monitoring well network is screened within the upper bedrock aquifer. Based on the groundwater level measurements collected from the network of monitoring wells, groundwater appears to flow in a southeasterly direction across the site (Figure 5). The regional groundwater flow direction is to the east toward the East River and was consistent with the site flow direction. Wells MW-06 and MW-07 have not been surveyed and were not included on the contour map.

4.3 GROUNDWATER RESULTS

This section presents a summary of the analytical results for groundwater samples collected during this SC. Groundwater results were compared to Technical and Operational Guidance Series 1.1.1 NYSDEC AWQS for Class GA waters.

4.3.1 Volatile Organic Compounds in Groundwater

VOCs, specifically CVOCs, including PCE, TCE, and *cis*-1,2-DCE were detected in monitoring wells MW-06, MW-07, MW-08, MW-09, and MW-10 at concentrations greater than their corresponding SCGs. The results of the groundwater sampling event conducted during this SC are consistent with the previous groundwater samples collected during the October 2008 groundwater sampling event at Celebrity French Drycleaners and Tailors. A summary of the detected VOC concentrations for groundwater samples collected in February 2010 are presented in Table 3. Based on these results, these concentrations indicate that the source(s) of the CVOCs is upgradient of our targeted area and could not be identified through this effort. Figure 6 is a tag map that illustrates the total VOC concentrations in groundwater. Figure 7 illustrates the plume geometry during this sampling event.

5. CONCLUSIONS AND RECOMMENDATIONS

The following sections summarize the findings of the SC and provide recommendations based on an evaluation of the site records review, previous investigations conducted near the site, the field investigation, and the subsequent analytical results.

5.1 CONCLUSIONS

Groundwater flow follows an easterly to southeasterly direction towards the East River. Groundwater analytical data indicate that VOCs are present at levels exceeding the applicable SCGs. CVOCs *cis*-1,2-DCE, TCE, and PCE were detected greater than SCGs in the groundwater monitoring wells at the site. The newly installed groundwater monitoring wells (MW-08, MW-09, and MW-10) contained CVOC concentrations greater than the SCGs. Groundwater samples from MW-09 contained the highest levels of total VOCs. MW-09 is located on 1st Avenue between 77th and 78th Streets, hydraulically upgradient from the previously investigated Celebrity French Cleaners and Tailors site, indicating that the source(s) of CVOCs in this area have not been identified.

Historical records identified a remedial action that took place under the NYSDEC VCP to the southeast of the Celebrity French Cleaners and Tailors site, on West 75th Street. It was noted in the EDR report that contaminated soil was disposed of offsite; however, groundwater at the site was still contaminated with PCE. This site currently collects, treats, and discharges site groundwater to the New York City sewer system. This former source area may still have potential contamination onsite even after the implementation of the remedial action. At this time, the cause of the contamination at the site was unknown.

Concentrations of total VOCs found in monitoring wells MW-01 through MW-05 during the 2003 groundwater sampling event ranged from 1.9 µg/L to 304 µg/L. TCE, PCE, and *cis*-1,2-DCE concentrations were detected in these wells; these results are similar to the results found during the 2008 groundwater sampling event.

There are other potential upgradient sources located within a 1-mi radius of the 1st Avenue and 76th Street Plume Trackdown target area, including 34 drycleaners listed in various databases.

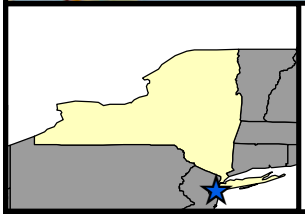
Based on the continued detections of identical CVOCs in groundwater, it would appear that the source area impacting groundwater is located upgradient of the 1st Avenue and 76th Street Plume Trackdown area. According to the EDR report, more than 34 drycleaners are located within a 1-mi radius of the site and have been found on the Drycleaners, Manifest, RCRA–SQG, and RCRA-CESQG databases. At this time the source of the plume is unknown and due to the large amount of contributing factors, an exact source may not be determinable. Potential pathways for CVOCs to enter the water table could be from leaky USTs, surface spills, or broken sewer lines. Groundwater then travels through the fractures in the bedrock and enters the water table. The overall potential for human exposure to groundwater is minimal. The onsite building and surrounding buildings are connected to public water supply and sewer systems. Potential

exposure exists for utility and construction workers to encounter groundwater during subsurface activities that would require encroachment of the groundwater table (i.e., open excavations, utility line replacement and maintenance, etc.).

5.2 RECOMMENDATIONS

Additional unknown sources of groundwater impacts are upgradient of the 1st Avenue and 76th Street target area including 34 drycleaners identified within a 1-mi radius of the target area. Though impacts and potential sources have been identified in the area, additional effort in identifying sources of the impacts is not warranted due to the limited potential for exposure to impacted groundwater, the urban nature of the site, difficulty in placing monitoring wells, and the cost to complete this type of effort in the Metropolitan New York City area.

To confirm current results, a second round of groundwater samples can be collected from each of the current monitoring wells.



1st Ave and 76th St
Site Location

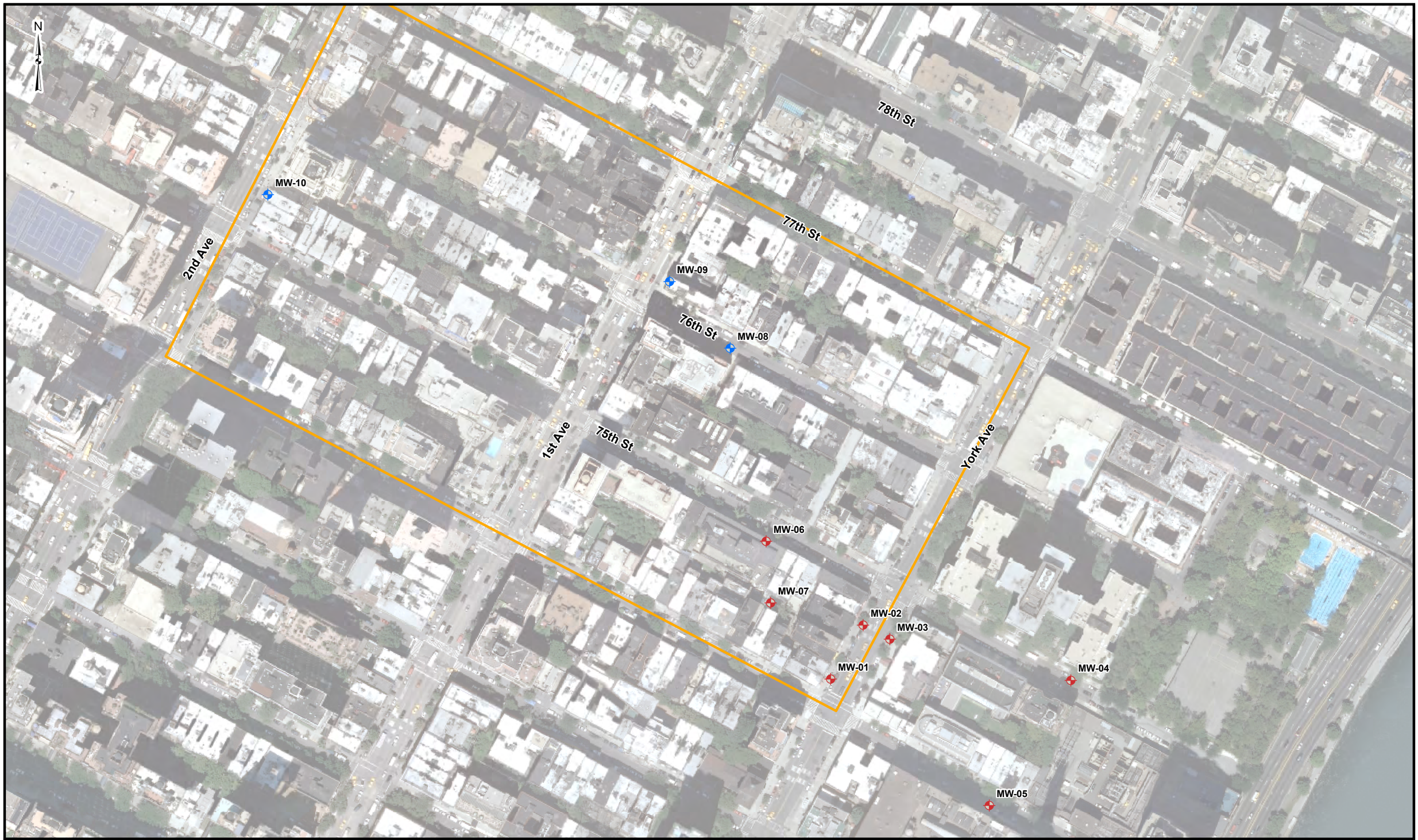
0 0.5 1 2 Miles

ESRI Street Maps USA

SITE CHARACTERIZATION REPORT
1ST AVE AND 76TH ST PLUME TRACKDOWN (231064)
MANHATTAN, NEW YORK

FIGURE 1
SITE LOCATION

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
SLG	DCC	DCC	SLG	AS SHOWN	JULY 2010	14368.39	GIS/PROJECTS/ FIGURE1.MXD



SITE CHARACTERIZATION REPORT
1ST AVE AND 76TH ST PLUME TRACKDOWN (231064)
MANHATTAN, NEW YORK

FIGURE 2
PLUME TRACKDOWN AREA
AND MONITORING WELL LOCATIONS

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
SLG	DCC	DCC	SLG	AS SHOWN	JULY 2010	14368.39	GIS/PROJECTS/ FIGURE2.MXD

Legend

- Previously Installed Monitoring Well
- New Monitoring Well
- Plume Trackdown Area

0 80 160 320 Feet

Source: US Geological Survey

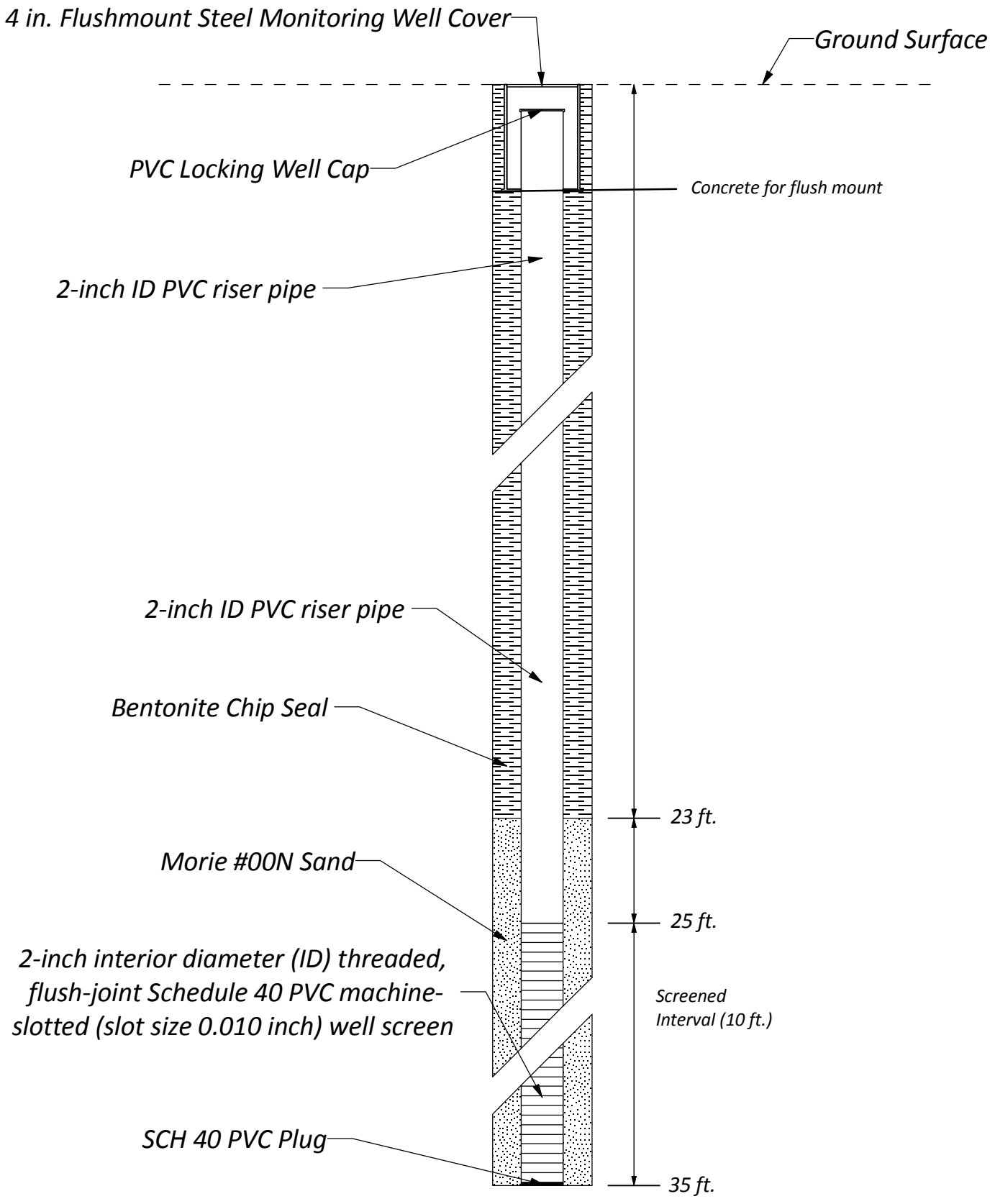
EA®	SITE CHARACTERIZATION REPORT 1ST AVE AND 76TH ST PLUME TRACKDOWN (231064) MANHATTAN, NEW YORK					FIGURE 3 LOCAL PROPERTIES IDENTIFIED	
PROJECT MGR: SLG	DESIGNED BY: DCC	CREATED BY: SAB	CHECKED BY: SLG	SCALE: AS SHOWN	DATE: JULY 2010	PROJECT NO: 14368.39	FILE NO: GIS/PROJECTS/ FIGURE3.MXD

Legend

Source: US Geological Survey

- Dry Cleaner Location
- Previously Installed Monitoring Well
- New Monitoring Well

Note: Highlighted locations were mentioned in the May 2008 EDR report under various databases.



EA®		SITE CHARACTERIZATION REPORT 1ST AVE AND 76TH ST PLUME TRACKDOWN (231064) MANHATTAN, NEW YORK				FIGURE 4 MONITORING WELL CONSTRUCTION DIAGRAMS (MW-08, MW-09, and MW-10)	
PROJECT MGR: SLG	DESIGNED BY: DCC	CREATED BY: DCC	CHECKED BY: SLG	NOT TO SCALE	DATE: JULY 2010	PROJECT NO: 14368.39	FILE NO: GIS/PROJECTS/ FIGURE5.MXD

N

One Stop Laundry and Dry Cleaning

Star Cleaners

Chip's Cleaners

Lillian Cleaners

MW-10
27.44

MW-09
29.78

28

26

24

22

Fancy Dry Cleaners

Potisman Cleaners, Inc.

20

Eastmore Cleaners

MW-08
21.28

First Cleaners

18

16

MW-06

Celebrity French Cleaners

14

12

MW-07

MW-02
13.82

MW-03
11.28

MW-01
12.10

MW-04
10.44

10

9

8

4

MW-05
2.30

Feet
0 50 100 200 300

SITE CHARACTERIZATION REPORT
1ST AVE AND 76TH ST PLUME TRACKDOWN (231064)
MANHATTAN, NEW YORK

FIGURE 5
Interpreted Groundwater Contours
16 March 2010

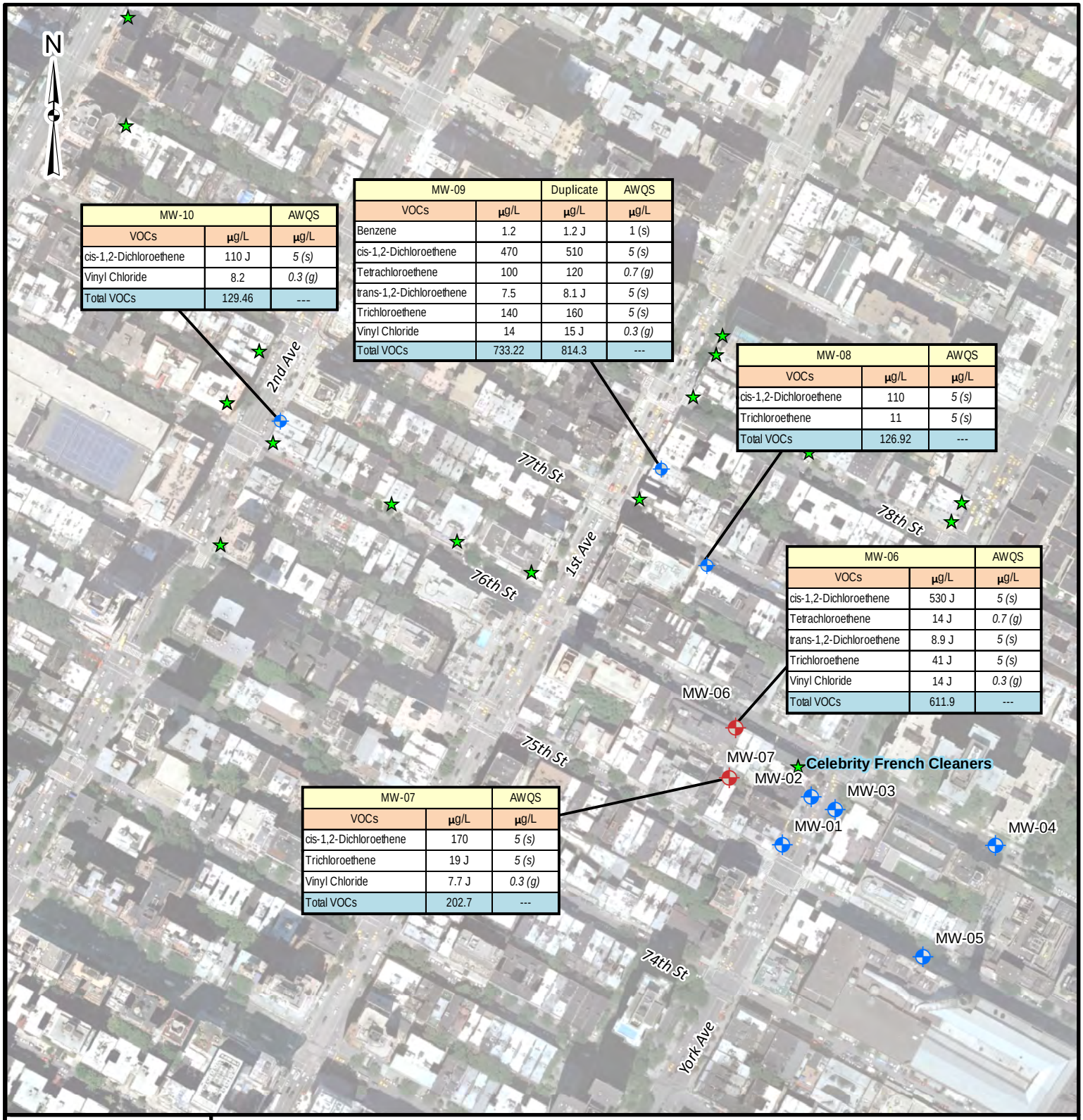
PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
SLG	DCC	DCC	SLG	AS SHOWN	JULY 2010	14368.39	GIS/PROJECTS/ FIGURE6.MXD

Legend

- New Monitoring Well
- Previously Installed Monitoring Well
- Inferred 2 ft Groundwater Contour Interval (ft AMSL)
- Inferred Groundwater Flow Direction
- Dry Cleaner Location

Note: Elevation data not available for MW-06 or MW-07

Source: US Geological Survey



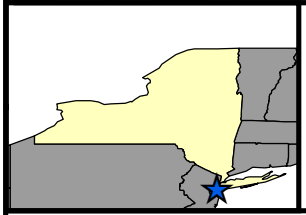
MW-10		AWQS
VOCs	µg/L	µg/L
cis-1,2-Dichloroethene	110 J	*5 (s)*
Vinyl Chloride	8.2	*0.3 (g)*
Total VOCs	129.46	---

MW-09		Duplicate	AWQS
VOCs	µg/L	µg/L	µg/L
Benzene	1.2	1.2 J	1 (s)
cis-1,2-Dichloroethene	470	510	*5 (s)*
Tetrachloroethene	100	120	*0.7 (g)*
trans-1,2-Dichloroethene	7.5	8.1 J	*5 (s)*
Trichloroethene	140	160	*5 (s)*
Vinyl Chloride	14	15 J	*0.3 (g)*
Total VOCs	733.22	814.3	---

MW-08		AWQS
VOCs	µg/L	µg/L
cis-1,2-Dichloroethene	110	*5 (s)*
Trichloroethene	11	*5 (s)*
Total VOCs	126.92	---

MW-06		AWQS
VOCs	µg/L	µg/L
cis-1,2-Dichloroethene	530 J	*5 (s)*
Tetrachloroethene	14 J	*0.7 (g)*
trans-1,2-Dichloroethene	8.9 J	*5 (s)*
Trichloroethene	41 J	*5 (s)*
Vinyl Chloride	14 J	*0.3 (g)*
Total VOCs	611.9	---

MW-07		AWQS
VOCs	µg/L	µg/L
cis-1,2-Dichloroethene	170	*5 (s)*
Trichloroethene	19 J	*5 (s)*
Vinyl Chloride	7.7 J	*0.3 (g)*
Total VOCs	202.7	---



Legend

- Dry Cleaner Location
- New Monitoring Well
- Previously Existing Monitoring Well

µg/L	Micrograms per liter, ppb
J	Concentration is an estimate
s	Standard
g	Guidance Value

Feet: 0 100 200 400

Source: US Geological Service

SITE CHARACTERIZATION REPORT
1ST AVE AND 76TH ST PLUME TRACKDOWN (231064)
MANHATTAN, NEW YORK

FIGURE 6
SUMMARY OF VOC COMPOUNDS
DETECTED IN GROUNDWATER

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
SLG	MJS	DCC	SLG	AS SHOWN	JULY 2010	14368.39	GIS/PROJECTS/ FIGURE7.MXD

N

MW-10
(129.46)

MW-09
(733.22)

MW-08
(329.62)

MW-06
(611.9)

MW-07
(202.7)

Celebrity French Cleaners

MW-02

MW-03

MW-01

MW-04

800 ug/L

700 ug/L

600 ug/L

500 ug/L

400 ug/L

300 ug/L

200 ug/L

100 ug/L

2nd Ave

York Ave

78th St

77th St

76th St

75th St

SITE CHARACTERIZATION REPORT
1ST AVE AND 76TH ST PLUME TRACKDOWN (231064)
MANHATTAN, NEW YORK

FIGURE 7
INTERPRETED TOTAL VOC
ISOPLETH CONTOUR MAP

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
SLG	DCC	DCC	SLG	AS SHOWN	JULY 2010	14368.39	GIS/PROJECTS/ FIGURE7.MXD

Legend

- Dry Cleaner Locations
- New Monitoring Well (Total VOC Concentration)
- Previously Installed Monitoring Well

0 75 150 300 Feet

Source: US Geological Survey

TABLE 1 GROUNDWATER ELEVATION DATA 2-3 FEBRUARY 2010

Monitoring Well ID	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Table Elevation (ft)
MW-06	NM	12.79	NM
MW-07	NM	10.46	NM
MW-08	32.54	11.93	20.61
MW-09	35.43	13.64	21.79
MW-10	42.13	16.52	25.61

NOTE: NM = Not Measured

Horizontal Datum North American Datum of 1983 (NAD 83) UTN Zone 18 Coordinate System for MW-08, MW-09 and MW-10.

Vertical Datum North American Vertical Datum of 1988 (NAVD 88) for MW-08, MW-09, and MW-10.

Units of Measure in U.S. Survey Feet for MW-08, MW-09 and MW-10.

TABLE 2 GROUNDWATER ELEVATION DATA 16 MARCH 2010

Monitoring Well ID	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Table Elevation (ft)
MW-01	23.41	11.31	12.10
MW-02	24.41	10.59	13.82
MW-03	24.59	13.31	11.28
MW-04	29.1	18.66	10.44
MW-05	16.29	13.99	2.30
MW-08	32.54	11.26	21.28
MW-09	42.13	12.35	29.78
MW-10	42.73	15.29	27.44

NOTE: Horizontal Datum North American Datum of 1983 (NAD 83) UTN Zone 18 Coordinate System for MW-08, MW-09 and MW-10.
Vertical Datum North American Vertical Datum of 1988 (NAVD 88) for MW-08, MW-09 and MW-10.
Units of Measure in U.S. Survey Feet for MW-08, MW-09 and MW-10.
Top of Casing elevation collected during the 2003 sampling event for MW-01 through MW-05, App B.
Elevations in Manhattan Borough Datum (2.75 ft above mean sea level) for MW-01 - MW-05.

TABLE 3 VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

Parameter List USEPA Method 8260B	Sample ID	MW-06		MW-07		MW-08		MW-09		MW-10		Duplicate		NYSDEC Ambient Water Quality Standard Class GA
	Lab ID	B1267-07		B1267-06		B1267-03		B1267-02		B1267-01		B1267-08		
	Sample Type	groundwater		groundwater		groundwater		groundwater		groundwater		groundwater		
	Sample Date	2/3/2010		2/3/2010		2/2/2010		2/2/2010		2/3/2010		2/3/2010		
1,1,1-Trichloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,1,2,2-Tetrachloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,1,2-Trichloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	1
1,1,2-Trichlorotrifluoroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,1-Dichloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,1-Dichloroethene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	1.7	J	5
1,2,4-Trichlorobenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,2-Dibromo-3-Chloropropane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	
1,2-Dibromoethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,2-Dichlorobenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	3
1,2-Dichloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
1,2-Dichloropropane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	1
1,3-Dichlorobenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	3
1,4-Dichlorobenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	3
2-Butanone	µg/L	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	50
2-Hexanone	µg/L	(<5.0)	UJ	(<5.0)	UJ	(<5.0)	UJ	(<5.0)	UJ	(<5.0)	UJ	(<5.0)	UJ	50
4-Methyl-2-Pentanone	µg/L	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	(<5.0)	U	NA
Acetone	µg/L	(<5.0)	R	(<5.0)	R	(<5.0)	R	(<5.0)	R	(<5.0)	R	(<5.0)	R	50
Benzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	**1.2**		(<1.0)	U	**1.2**	**J**	1
Bromodichloromethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	50
Bromoform	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	50
Bromomethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	NA
Carbon Disulfide	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	NA
Carbon Tetrachloride	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Chlorobenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	NA
Chloroethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Chloroform	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	2.1		(<1.0)	U	7
Chloromethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	NA
cis-1,2-Dichloroethene	µg/L	**530**	**J**	**170**		**110**		**470**		**110**	**J**	**510**		5
cis-1,3-Dichloropropene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	0.4
Cyclohexane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	
Dibromochloromethane	µg/L	(<1.0)	UJ	(<1.0)	UJ	(<1.0)	UJ	(<1.0)	UJ	(<1.0)	UJ	(<1.0)	UJ	50
Dichlorodifluoromethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Ethyl Benzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Isopropylbenzene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
m/p-Xylenes	µg/L	(<2.0)	U	(<2.0)	U	(<2.0)	U	(<2.0)	U	(<2.0)	U	(<2.0)	U	5
Methyl Acetate	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	
Methyl tert-butyl Ether	µg/L	4.0	J	4.2	J	0.52	J	0.52	J	(<1.0)	U	(<1.0)	U	10
Methylcyclohexane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	
Methylene Chloride	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
o-Xylene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Styrene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
t-1,3-Dichloropropene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	0.4
Tetrachloroethene	µg/L	**14**	**J**	(<1.0)	U	1.6		**100**		0.96	J	**120**		5
Toluene	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
trans-1,2-Dichloroethene	µg/L	**8.9**	**J**	1.8	J	2.8		**7.5**		3.3		**8.1**	**J**	5
Trichloroethene	µg/L	**41**	**J**	**19**	**J**	**11**		**140**		4.9		**160**		5
Trichlorofluoromethane	µg/L	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	(<1.0)	U	5
Vinyl Chloride	µg/L	**14**	**J**	**7.7**	**J**	1.0		**14**		**8.2**		**15**	**J**	2

NOTE: USEPA = United States Environmental Protection Agency
NYSDEC = New York State Department of Conservation
µg/L = micrograms per Liter = parts per billion
U = Analyzed but not reported at a concentration above the reporting limit. Sample quantition limits are shown as (<__).
J = Analyte was positively identified, the associated numerical value is the approximated concentration of the analyte in the sample.
NA = Not Applicable
R =
Bold values indicate
Duplicate was collected at MW-09

Appendix A

Environmental Database Resources (EDR) Report (CD Attachment)

Appendix B

Previous Investigation Reports (Provided by NYSDEC)
(CD Attachment)

Appendix C

Daily Field Reports

DAILY FIELD REPORT **Day: Monday Date: 1-4-10**

NYSDEC

Temperature: (F) 25 F (am) 30 F (pm)

Wind Direction: WNW (am) WNW (pm)

Project Name 1st & 76th Plume Trackdown

Weather: (am) partly cloudy
(pm) partly cloudy

NYSDEC Site # 2-31-064

Contract # D004438-39 Arrive at site 730 (am)

Manhattan, New York Leave site: 1600 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ()	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Onsite at the first boring location (MW-08) on 77th between 1st and York Avenue. Broke up the concrete sidewalk and hand cleared the location to 5 ft. Moved to the second boring location (MW-09) on 1st Ave between 77th and 78th St. Broke up the concrete and started to hand clear and found out the basement of the nearby building extended to the where the sidewalk and road meet. Pulled of the boring and patched up the location. Went into the basement and had to clean up the mess the sonic from the rig made.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Monday Date: 1-4-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Were down for approximately an hour while the drillers left site to buy hand clearing tools. Had to purchase some brooms to clean up the mess that was created when we almost drilled into the basement of the Medical Center.

COMMENTS:

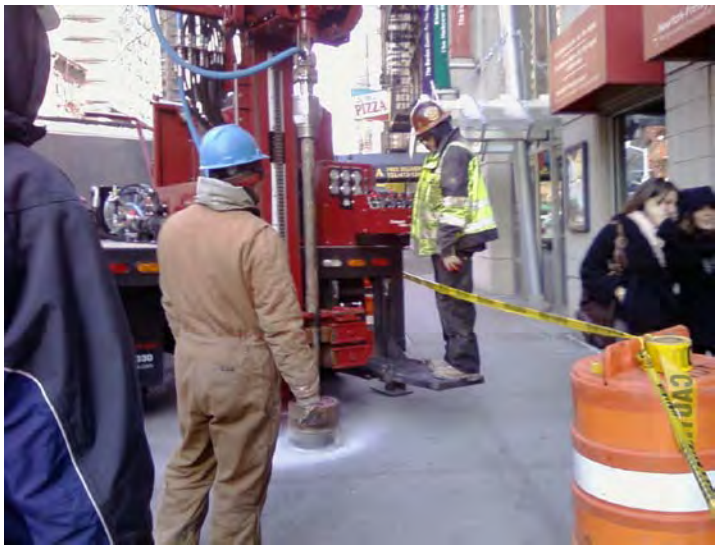
ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

DAILY FIELD REPORT **Day: Monday Date: 1-4-10**
DAILY PHOTOLOG

Set up on MW-08.



Set up on MW-09.

Basement ceiling below MW-09.

DAILY FIELD REPORT **Day: Tuesday Date: 1-5-10**

NYSDEC

Temperature: (F) 25 F (am) 30 F (pm)

Wind Direction: WNW (am) WNW (pm)

Weather: (am) partly cloudy
(pm) partly cloudy

Project Name 1st & 76th Plume Trackdown

NYSDEC Site # 2-31-064

Contract # D004438-39

Manhattan, New York

Arrive at site 730 (am)

Leave site: 1500 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Started back at MW-08, used the compressor and air knife to make sure we were down to 5 ft. Moved to next location (MW-10) located on 2nd Ave between 76th and 77th St. Used the air knife and compressor to hand clear the location. Had refusal at 2 ½ ft and 3 ft in 2 different locations. Backfilled the locations. Rig offsite at 1315. Moved the equipment to the next location on 2nd Ave between 78th and 79th and removed the concrete sidewalk. Walked all the locations with EA and NYSDEC.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Tuesday Date: 1-5-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck, Second Support truck with Compressor and Vac unit

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC
2. Scott Graham, EA

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Need to use the air knife and compressor with vac unit to clear all locations before the rig comes back to site.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:

Handclear MW-10.

DAILY FIELD REPORT **Day: Wednesday Date: 1-6-10**

NYSDEC

Temperature: (F) 30 F (am) 35 F (pm)

Wind Direction: WNW (am) WNW (pm)

Weather: (am) sunny
(pm) sunny

Project Name 1st & 76th Plume Trackdown

NYSDEC Site # 2-31-064

Contract # D004438-39

Manhattan, New York

Arrive at site 745 (am)

Leave site: 1400 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Meet with Premier Locators from Con Edison to markout the remaining locations. Opened up some of the wells that were located on 2nd Avenue. All the wells were Geoprobe points for testing for NYC to install a second subway along 2nd Ave. Walked some of the locations that the locators marked out, not possible for well installation. Hand cleared the location on 2nd Ave between 78th and 79th to 5 ft. Cancelled a few locations.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Wednesday Date: 1-6-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Support truck with Compressor and Vac unit

(*Indicates active equipment)

Other Subcontractors: Premier Locating for Con Edison, (mark out gas and electric lines)

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Too many utilities / trees / parking meters in the areas where the wells were to be installed making the locations unsafe and un drillable. Did not have a permit for the well to be installed on 2nd Ave between 78th and 79th and were unable to obtain a permit for it.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

DAILY FIELD REPORT **Day: Wednesday Date: 1-6-10**

DAILY PHOTOLOG

DAILY FIELD REPORT **Day: Thursday Date: 1-7-10**

NYSDEC

Temperature: (F) 35 F (am) 37 F (pm)

Wind Direction: W (am) W (pm)

Project Name 1st & 76th Plume Trackdown

Weather: (am) sunny

(pm) sunny

NYSDEC Site # 2-31-064

Contract # D004438-39 Arrive at site 745 (am)

Manhattan, New York Leave site: 1500 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

A third boring location was opened and cleared to 3 ft at MW-10. Backfilled and patched the location until the well will be installed. Drilled and installed MW-09 to 35 ft. and set well pad.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Thursday Date: 1-7-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck, 2nd Support truck with Compressor and Vac unit

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Did not have a permit for the well to be installed on 2nd Ave between 78th and 79th and were unable to obtain a permit for it. Small area of dirty soil near the area where the fuel oil fill port was located.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

Drilling of MW-09.

Sample collection.

MW-9 core samples.

DAILY FIELD REPORT **Day: Friday** **Date: 1-8-10**

NYSDEC

Temperature: (F) 23 F (am) 33 F (pm)

Wind Direction: W (am) W (pm)

Project Name 1st & 76th Plume Trackdown

Weather: (am) sunny

(pm) sunny

NYSDEC Site # 2-31-064

Contract # D004438-39 Arrive at site 730 (am)

Manhattan, New York Leave site: 1500 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

MW-09 was gauged and developed. Set up on MW-10 and set the well to 25 ft.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Friday Date: 1-8-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

A car was in the way of the location for MW-08 so we were not able to drill the location. Left a note on the car asking it to move for us on Monday.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

Drilling MW-10.

MW-10 sample collection.

DAILY FIELD REPORT **Day: Monday** **Date: 1-11-10**

NYSDEC

Temperature: (F) 21 F (am) 31 F (pm)

Wind Direction: W (am) W (pm)

Project Name 1st & 76th Plume Trackdown

Weather: (am) sunny

(pm) sunny

NYSDEC Site # 2-31-064

Contract # D004438-39 Arrive at site 745 (am)

Manhattan, New York Leave site: 1530 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Set up on MW-8 and set the well to 35 ft.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT **Day: Monday Date: 1-11-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1. Tom Gibbons, NYSDEC

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Pid was not working and one of the Data Ram air monitoring meters was not working.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:

DAILY FIELD REPORT **Day: Monday** **Date: 1-11-10**

DAILY PHOTOLOG

Drilling MW-08.

MW-08 core samples.

DAILY FIELD REPORT **Day: Tuesday** **Date: 1-12-10**

NYSDEC

Temperature: (F) 25 F (am) 35 F (pm)

Wind Direction: WNW (am) WNW (pm)

Weather: (am) partly cloudy
(pm) partly cloudy

Project Name 1st & 76th Plume Trackdown

NYSDEC Site # 2-31-064

Contract # D004438-39

Manhattan, New York

Arrive at site 800 (am)

Leave site: 1515 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Developed MW-08 and MW-10. MW-10 was blocked. A rig was sent out to the location to flush the well. The well was broken upon installation.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT

Day: Tuesday **Date: 1-12-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Rig to flush the well

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1.

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

MW-10 was broken upon installation.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:

DAILY PHOTOLOG

DAILY FIELD REPORT **Day: Tuesday Date: 1-12-10**

DAILY FIELD REPORT **Day: Wednesday** **Date: 1-13-10**

NYSDEC

Temperature: (F) 25 F (am) 35 F (pm)

Wind Direction: W (am) W (pm)

Weather: (am) partly cloudy
(pm) partly cloudy

Project Name 1st & 76th Plume Trackdown

NYSDEC Site # 2-31-064

Contract # D004438-39

Manhattan, New York

Arrive at site 830 (am)

Leave site: 1500 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes (x)	n/a ( )	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Overdrilled and reinstalled MW-10.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:

DAILY FIELD REPORT

Day: Wednesday **Date: 1-13-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Matt Starr

(Name of Subcontractor) personnel: Aquifer Drilling and Testing (ADT)

(Name of contractor) equipment: Sonic Rig, Support Truck

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1.

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

DAILY PHOTOLOG

DAILY FIELD REPORT **Day: Tuesday Date: 2-2-10**

NYSDEC

Temperature: (F) 30 F (am) 35 F (pm)

Wind Direction: E (am) E (pm)

Weather: (am) sunny
(pm) partly cloudy

Project Name 1st & 76th Plume Trackdown

NYSDEC Site # 2-31-064

Contract # D004438-39

Manhattan, New York

Arrive at site 1230 (pm)

Leave site: 1730 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes ( )	n/a (x)	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Drove to site. Developed MW-10. Collected groundwater samples at MW-08 and MW-09 using bailers and string. Collected parameters using the Horiba U-22.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:
MW-08		Groundwater samples
MW-09		Groundwater samples

DAILY FIELD REPORT

Day: Tuesday **Date: 2-2-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Diane Wang

(Name of Subcontractor) personnel:

(Name of contractor) equipment: bailers, horiba U22, interface probe

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1.

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

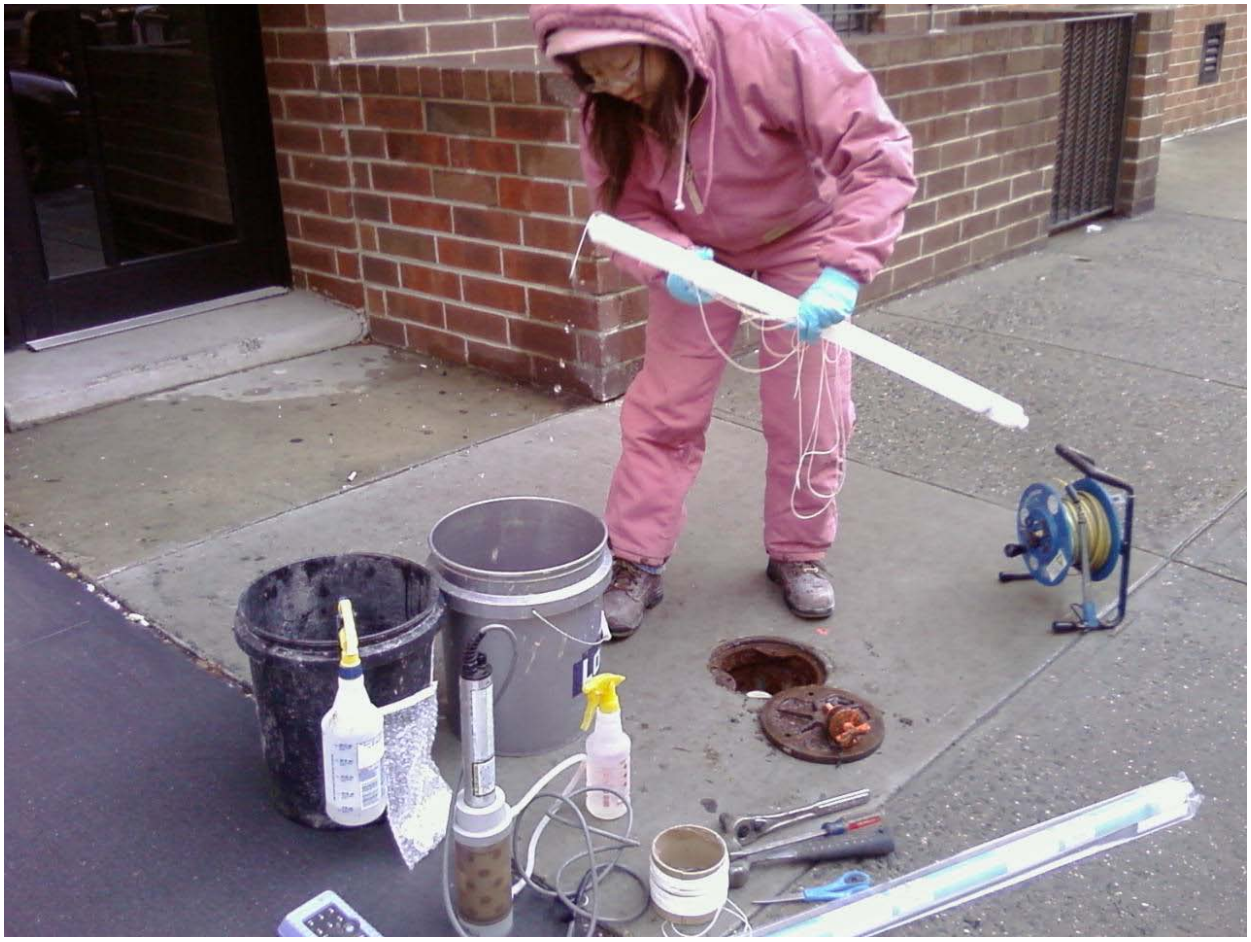
COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

SITE REPRESENTATIVE:

Name: *Sarah Nelson*
cc:

DAILY PHOTOLOG



Bailing and collecting groundwater samples at MW-6.

DAILY FIELD REPORT **Day: Wednesday Date: 2-3-10**

NYSDEC

Temperature: (F) 29 F (am) 39 F (pm)

Wind Direction: N (am) N (pm)

Project Name 1st & 76th Plume Trackdown

Weather: (am) partly cloudy
(pm) sunny

NYSDEC Site # 2-31-064

Contract # D004438-39 Arrive at site 0800 (pm)

Manhattan, New York Leave site: 1230 (pm)

HEALTH & SAFETY:

Are there any changes to the Health & Safety Plan? Yes ( ) No (x)
(If yes, list the deviation under items for concern)

Are monitoring results at acceptable levels?

Soil	Yes ( )	n/a (x)	* No ( )
Waters	Yes ( )	n/a (x)	* No ( )
Air	Yes ( )	n/a (x)	* No ( )

- *If No, provide comments*

OTHER ITEMS:

Site Sketch Attached: Yes ( ) No (x)
Photos Taken: Yes (x) No ( )

DESCRIPTION OF DAILY WORK PERFORMED:

Collected groundwater samples at MW-06, MW-07 and MW-10 using bailers and string. Collected parameters using the Horiba U-22.

PROJECT TOTALS:

SAMPLING (Soil/Water/Air)

Contractor Sample ID:	DEC Sample ID:	Description:
MW-06		Groundwater samples
MW-07		Groundwater samples
MW-10		Groundwater samples

DAILY FIELD REPORT **Day: Wednesday Date: 2-3-10**

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Diane Wang

(Name of Subcontractor) personnel:

(Name of contractor) equipment: bailers, horiba U22, interface probe

(*Indicates active equipment)

Other Subcontractors:

VISITORS TO SITE:

1.

PROJECT SCHEDULE ISSUES:

NA

PROJECT BUDGET ISSUES:

None.

ITEMS OF CONCERN:

Had a difficult time opening MW-06 and MW-07, the well bolts were slightly stripped.

COMMENTS:

ATTACHMENT(S) TO THIS REPORT:

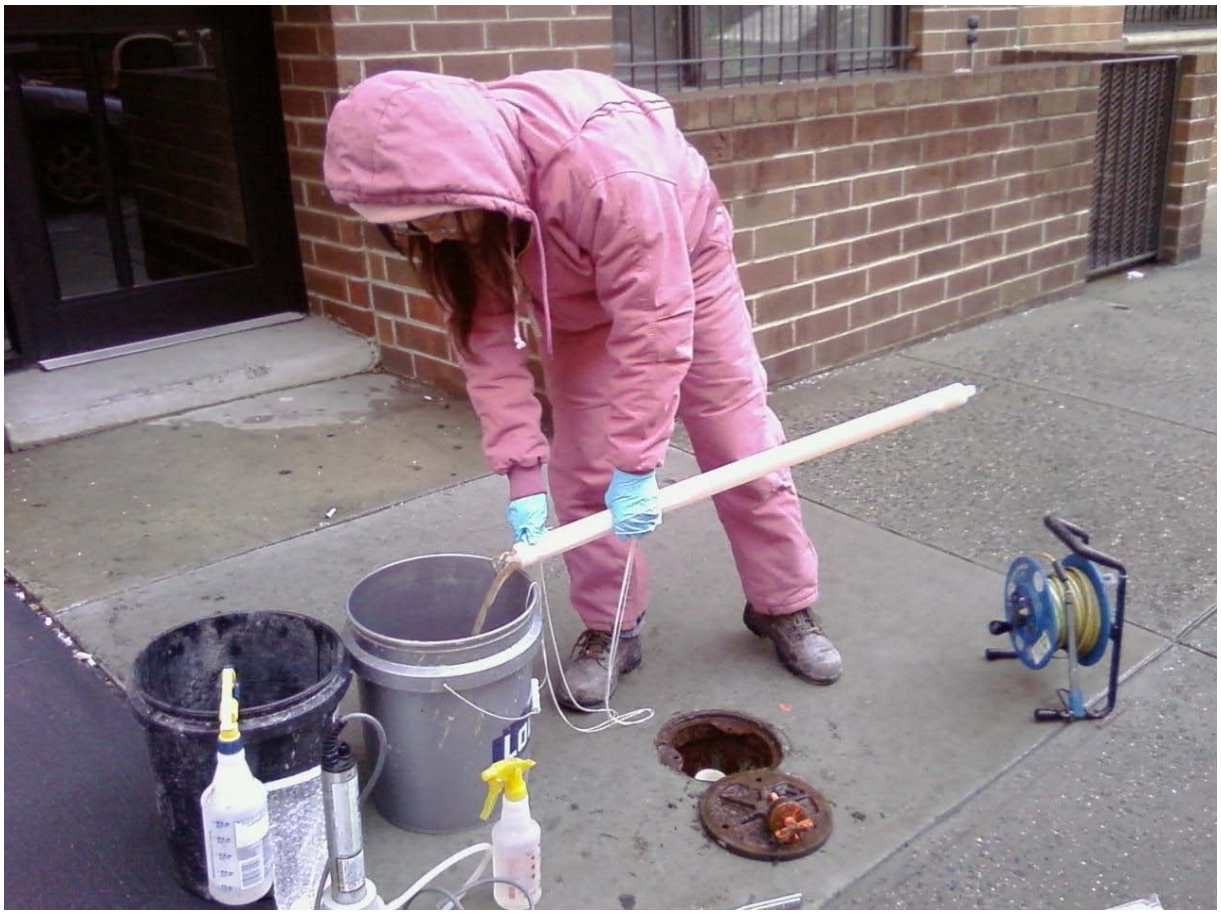
SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:

DAILY FIELD REPORT **Day: Wednesday Date: 2-3-10**

DAILY PHOTOLOG



Bailing and collecting groundwater samples at MW-6.

Appendix D

Soil Boring/Well Construction Logs

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No.	Client:	Location:
14368.39	New York State Department of Environmental Conservation	77th St. between 1st & York Ave
Drilling Method: Sonic		Soil Boring Number: MW-08
Sampling Method: Sonic cores		Sheet 1 of 2

Water Lev.					Drilling Start	Drilling Finish
Time					1/11/10; 11:00	1/11/10; 15:00

Surface Conditions: concrete sidewalk
Weather: sunny, cold
Temperature: ~25 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
				0		0-5' Hancleared to 5 ft. Red brown SILT, SAND and GRAVEL (backfill).
				1		
				2		
				3		
				4		
				5		5-10' Red Brown SILT, some Gravel and Fine Sand. Moist, soft.
				6		
				7		
				8		
				9		
				10		10-15' (10-13') Grey and Orange mottled CLAY. Moist
				11		
				12		
				13		(13-15') Red Brown SILT, some Fine Sand and Clay with Mica. Moist
				14		
				15		15-20' (15-19') Brown Fine SAND with Mica. Moist.
				16		
				17		
				18		
				19		(19-20') Red Orange Medium to Fine SAND with Mica.
				20		

Logged by: S. Nelson Date: 1/11/2010

Drilling Contractor: ADT Driller: Chris Stratton

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No.	Client:	Location:
14368.39	New York State Department of Environmental Conservation	77th St. between 1st & York Ave
Drilling Method:	Sonic	Soil Boring Number: MW-08
Sampling Method:	Sonic cores	Sheet 2 of 2

Water Lev.					Drilling Start	Drilling Finish
Time					1/11/10; 11:00	1/11/10; 15:00

Surface Conditions: concrete sidewalk
Weather: sunny, cold
Temperature: ~25 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
				20		20-25' Grey SAND, some Silt with Mica, trace Gravel and bedrock fragments. (Weathered Bedrock)
				21		
				22		
				23		Competant bedrock at 23 ft.
				24		
				25		25-30' Grey Weathered Bedrock, Schist. Moist, harder to drill through.
				26		
				27		
				28		
				29		
				30		30-35' Grey Schist. Core samples were pulverized by the sonic rig. Dry.
				31		
				32		Set well at 34'. Riser 0-24' / Screen 24-34' / Sand 22-34' / Bentonite Chips 20-22' / Grout / Bentonite Mix grade - 20'
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		

Logged by: S. Nelson Date: 1/11/2010

Drilling Contractor: ADT Driller: Chris Stratton

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No.	Client:	Location:
14368.39	New York State Department of Environmental Conservation	1st Ave between 77th & 78th

Drilling Method:	Soil Boring Number:
Sonic	MW-09

Sampling Method:	Sheet 1 of 2
Sonic cores	

Water Lev. / Time	Drilling Start	Drilling Finish
	1/7/10; 10:00	1/7/10; 14:00

Surface Conditions: concrete sidewalk
Weather: sunny, cold
Temperature: ~25 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
			0	0		0-5' Hancleared to 5 ft. Red brown SILT, SAND and GRAVEL (backfill).
				1		
				2		
				3		
				4		
			0	5		5-10' Red Brown SILT, some Gravel and Fine Sand and Clay with Mica. Moist, soft.
				6		
				7		
				8		
				9		
			0	10		10-15' Light Grey and Brown mottled CLAY, some Silt with Mica. Moist
				11		
				12		
			35.6	13		(12-15') Dark Grey Weathered Schist, Silt with Mica. Staining and odor.
				14		
			4.0	15		15-20' Pink/Purple Weathered Schist, Silt with mica. Slight odor.
				16		
				17		
				18		
				19		(19-20') Red Orange Medium to Fine SAND, some Silt with Mica.
				20		

Logged by: S. Nelson Date: 1/7/2010

Drilling Contractor: ADT Driller: Chris Stratton

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No.	Client:	Location:
14368.39	New York State Department of Environmental Conservation	1st Ave between 77th & 78th

Drilling Method:	Sonic
Sampling Method:	Sonic cores

Soil Boring Number: MW-09

Sheet 2 of 2

Water Lev.					Drilling Start	Drilling Finish
Time					1/7/10; 10:00	1/7/10; 14:00

Surface Conditions: concrete sidewalk
Weather: sunny, cold
Temperature: ~25 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
			0	20		20-25' Dark Grey Schist. Competant. Water at 20', top of bedrock interface.
				21		
				22		
				23		
				24		
			0	25		25-30' Dark Grey Schist. Slightly weathered. Moist, softer.
				26		
				27		
				28		
				29		
			0	30		30-35' Grey Schist. Core samples were pulverized by the sonic rig.
				31		
				32		Set well at 35'. Riser 0-20' / Screen 20-35' / Sand 18-35' / Bentonite Chips 16-18' / Grout / Bentonite Mix grade - 16'
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		

Logged by: S. Nelson Date: 1/7/2010

Drilling Contractor: ADT Driller: Chris Stratton

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

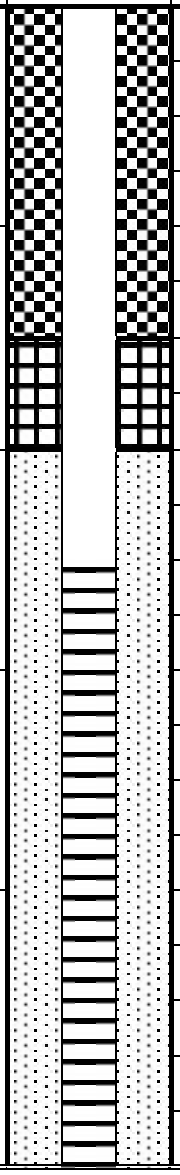
Job. No.	Client:	Location:
14368.39	New York State Department of Environmental Conservation	2nd Ave between 76th & 77th

Drilling Method:	Soil Boring Number:
Sonic	MW-10

Sampling Method:	Sheet 1 of 2
Sonic cores	

	Drilling	
Water Lev.	Start	Finish
Time	1/8/10; 10:00	1/8/10; 14:00

Surface Conditions: concrete sidewalk
Weather: partly cloudy, some snow
Temperature: ~30 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
				0		0-5' Hancleared to 3 ft.
						(0-3')Red brown SILT, SAND and GRAVEL (backfill).
				1		
				2		
				3		(3-5') Red Brown Weathered Schist.
				4		
				5		5-10' Red Brown SILT and Fine SAND with Mica, Weathered Schist. Tight, hard.
				6		
				7		
				8		
				9		
				10		10-15' Red Brown SILT and Fine SAND with Mica.
				11		
				12		
				13		
				14		(14-15') Gray Schist pulverized by the sonic rig. Water interface at 14 ft.
				15		15-20' Grey Brown Weathered Schist. Wet.
				16		
				17		
				18		
				19		
				20		

Logged by: S. Nelson Date: 1/8/2010

Drilling Contractor: ADT Driller: Chris Stratton

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates:
Surface Elevation:
Casing Below Surface:
Reference Elevation:
Reference Description:

Job. No.	Client:		Location:
14368.39		New York State Department of Environmental Conservation	2nd Ave between 76th & 77th
Drilling Method:		Sonic	Soil Boring Number: MW-10
Sampling Method:		Sonic cores	Sheet 2 of 2

Water Lev.					Drilling Start	Drilling Finish
Time					1/8/10; 10:00	1/8/10; 14:00

Surface Conditions: concrete sidewalk
Weather: partly cloudy, some snow
Temperature: ~30 F

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet	USCS Log	
				20		20-25' Dark Grey Weathered Schist.
				21		
				22		
				23		(23-25') Pulverized rock from the sonic rig. Dry zone.
				24		
				25		Set well at 25'. Riser 0-10'
				26		Screen 10-25'
				27		Sand 8-25'
				28		Bentonite Chips 6-8'
				29		Grout / Bentonite Mix grade - 6'
				30		
				31		
				32		
				33		
				34		
				35		
				36		
				37		
				38		
				39		
				40		

Logged by: S. Nelson Date: 1/8/2010

Drilling Contractor: ADT Driller: Chris Stratton

Appendix E

Monitoring Well Development and Sampling Logs

EA Engineering PC and its Affliate,
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MW-06	**EA Personnel:** SN / DW	**Client:** NYSDEC
Location: 76th between 1st & York	**Well Condition:** good	**Weather:** sunny / ~35 F
Sounding Method: interface probe	**Gauge Date:** 2/3/2010	**Measurement Ref:**
Stick Up/Down (ft): flush	**Gauge Time:** 1210	**Well Diameter (in):** 2 in

Purge Date: 2/3/2010	**Purge Time:**
Purge Method: Bailers	**Field Technician:** S. Nelson / D. Wang

Well Volume

A. Well Depth (ft): 33.82	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 12.79	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B): 21.03	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1214				6.87	7	14.5	1.72	1.55	667
1218				6.84	-41	17.5	1.7	3.73	
1222				6.88	-50	17.7	1.71	3.63	849
1226				6.84	-53	17.8	1.73	3.37	
1230				6.82	-58	17.2	1.75	4.98	
1235				6.79	-53	18.4	1.73	5.44	

Total Quantity of Water Removed (gal): 15 gallons
Samplers: SN / DW
Sampling Date: 3-Feb-10
Sampling Time: 1300
Split Sample With: na
Sample Type: gw

COMMENTS AND OBSERVATIONS: Used a bailer to purge the well. Bailed out 15 gallons of water.
Water was rusty orange in color for the first few gallons of water.

EA Engineering PC and its Affliate,
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MW-07	**EA Personnel:** SN / DW	**Client:** NYSDEC
Location: 76th between 1st & York	**Well Condition:** good	**Weather:** sunny / ~30 F
Sounding Method: interface probe	**Gauge Date:** 2/3/2010	**Measurement Ref:**
Stick Up/Down (ft): flush	**Gauge Time:** 1051	**Well Diameter (in):** 2 in

Purge Date: 2/3/2010	**Purge Time:**
Purge Method: Bailers	**Field Technician:** S. Nelson / D. Wang

Well Volume

A. Well Depth (ft): 21.34	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 10.46	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B): 10.88	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1053				9.13	-47	15.3	0.448	1.45	
1103				8.07	-112	17.8	0.649	1.02	
1106				7.86	-112	17.6	0.92	0.96	
1110				7.53	-114	18.1	1.16	0.83	
1115				7.38	-110	18.4	1.25	1.77	
1121				7.14	-99	18.1	1.81	2.47	
1124				7.15	-101	18.4	1.31	3.52	

Total Quantity of Water Removed (gal):	15 gallons	**Sampling Time:**	1125
Samplers:	SN / DW	**Split Sample With:**	na
Sampling Date:	3-Feb-10	**Sample Type:**	gw

COMMENTS AND OBSERVATIONS: Used a bailer to purge the well. Bailed out 15 gallons of water.

EA Engineering PC and its Affliate,
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MW-08	**EA Personnel:** SN / DW	**Client:** NYSDEC
Location: 77th between 1st Ave & York	**Well Condition:** good	**Weather:** partly cloudy / ~34 F
Sounding Method: interface probe	**Gauge Date:** 2/2/2010	**Measurement Ref:**
Stick Up/Down (ft): flush	**Gauge Time:** 1450	**Well Diameter (in):** 2 in

Purge Date: 2/2/2010	**Purge Time:**
Purge Method: Bailers	**Field Technician:** S. Nelson / D. Wang

Well Volume

A. Well Depth (ft): 33.02	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 11.93	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B): 21.09	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1456				7.15	180	15.8	0.67	3.70	298
1500				6.80	-73	19	1.13	3.34	325
1504				6.54	-52	18.9	1.07	2.44	214
1508				6.50	-40	18.4	0.9	3.07	263
1512				6.43	-36	19.2	0.877	2.74	286

Total Quantity of Water Removed (gal): 10 gallons
Samplers: SN / DW
Sampling Date: 2-Feb-10
Sampling Time: 1522
Split Sample With: ms/msd
Sample Type: gw

COMMENTS AND OBSERVATIONS: Used a bailer to purge the well. Bailed out 10 gallons of water.

EA Engineering PC and its Affliate,
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MW-09	**EA Personnel:** SN / DW	**Client:** NYSDEC
Location: 1st Ave between 77th & 78th	**Well Condition:** good	**Weather:** partly cloudy / ~30 F
Sounding Method: interface probe	**Gauge Date:** 2/2/2010	**Measurement Ref:**
Stick Up/Down (ft): flush	**Gauge Time:** 1645	**Well Diameter (in):** 2 in

Purge Date: 2/2/2010	**Purge Time:**
Purge Method: Bailers	**Field Technician:** S. Nelson / D. Wang

Well Volume

A. Well Depth (ft): 33.96	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 13.64	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B): 20.32	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
1652				6.52	-94	14.1	3.57	3.71	859
1656				6.50	-85	16.4	3.71	2.25	574
1700				6.45	-86	16.7	3.76	2.6	414
1705				6.47	-86	17.1	3.77	2.64	476
1709				6.46	-82	16.9	3.77	2.58	434
1713				6.47	-83	16.5	3.73	2.1	472

Total Quantity of Water Removed (gal): 10 gallons
Samplers: SN / DW
Sampling Date: 2-Feb-10
Sampling Time: 1730
Split Sample With: duplicate
Sample Type: gw

COMMENTS AND OBSERVATIONS: Used a bailer to purge the well. Bailed out 10 gallons of water.

EA Engineering PC and its Affliate,
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MW-10	**EA Personnel:** SN / DW	**Client:** NYSDEC
Location: 2nd Ave between 76th and 77th	**Well Condition:** good	**Weather:** wet / snow / ~34 F
Sounding Method: interface probe	**Gauge Date:** 2/3/2010	**Measurement Ref:**
Stick Up/Down (ft): flush	**Gauge Time:** 910	**Well Diameter (in):** 2 in

Purge Date: 2/3/2010	**Purge Time:**
Purge Method: Bailers	**Field Technician:** S. Nelson / D. Wang

Well Volume

A. Well Depth (ft): 23.45	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft): 16.52	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B): 6.93	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)
915				8.4	74	16.1	2.72	5.85	
919				9.29	54	17	2.45	6.83	
923				9.21	51	17.6	2.25	5.6	
927				9.28	53	17.6	2.04	6.45	

Total Quantity of Water Removed (gal): 7 gallons
Samplers: SN / DW
Sampling Date: 3-Feb-10
Sampling Time: 940
Split Sample With: na
Sample Type: gw

COMMENTS AND OBSERVATIONS: Used a bailer to purge the well. Bailed out 7 gallons of water.
Developed well on 2/2/2010, removed ~7 gallons, DTW 15.82; DTB 23.22

Appendix F

Data Usability Summary Report
(CD Attachment)

Appendix G

Laboratory Analytical Data, Form I's, Chain of Custody Forms (CD Attachment)