CA RICH
ENVIRONMENTAL SPECIALISTS

February 15, 2007

Michael D. MacCabe, P.E.
Senior Environmental Engineer
Division of Environmental Remediation
NYS Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233-7016

Re: **Revised - Remedial Investigation (RI) Report**
Club East - BCP Site # C231048
Index # A2-0531-1105
421-433 East 13th St. & 420 East 14th St.
New York, New York

Dear Mr. MacCabe:

On behalf of the 13th and 14th Street Realty, LLC., CA Rich Consultants, Inc. is pleased to provide you with the attached revised Remedial Investigation (RI) Report for the above-referenced project. The report was revised to address the New York State Department of Health (NYSDOH) comment in their November 29, 2006 letter to the New York State Department of Environmental Conservation. Specifically, the NYSDOH's comment requested that the Qualitative Exposure Assessment be placed into the body of the report.

As requested, a complete electronic copy of this revised RI Report has also been included for your convenience. This report is being submitted in accordance with the requirements of the Brownfield Cleanup Agreement executed on November 15, 2005. The RI Work Plan was approved on December 20, 2005. We look forward to the NYSDEC's comments and approval of this document.

If you have any questions, please do not hesitate to call us, immediately.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

Stephen Malinowski
Project Manager

Charles A. Rich, CPG
President

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Attachments

cc: Dawn Hettrick - NYSDOH (Hard copy and PDF Format)
Robert Kaliner, 13th and 14th Street Realty, LLC. (PDF Format only)
Lawrence P. Schnapf, Esq. (PDF Format only)

Remedial Investigation (RI) Report
"CLUB EAST"
BCP Site # C231048
Index # A2-0531-1105
421-433 E. 13th St. & 420 E. 14th St., New York, NY 10009

Submitted:
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Revised:
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Prepared for:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

CA RICH
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Remedial Investigation Report
"CLUB EAST"
BCP Site # C231048 - Index # A2-0531-1105
13TH AND 14TH STREET REALTY, LLC.
421-433 E. 13th St. and 420 E. 14th St., New York, NY 10009

1.0 INTRODUCTION

The following Remedial Investigation (RI) Report has been prepared by CA RICH CONSULTANTS, INC. (CA RICH) of Plainview, NY on behalf of the 13th & 14th Street Realty, LLC. to gather hydrogeologic and soil vapor data underlying and adjacent to the redevelopment property located at 421-433 East 13th Street and 420 East 14th Street (the "Site") in New York, New York (Fig. 1).

This Site is identified by the New York State Department of Environmental Conservation (NYSDEC) as Brownfield Cleanup Program (BCP) Site # C231048, Index # A2-0531-1105. 13th and 14th Street Realty, LLC. entered the BCP as an innocent Volunteer and as such, under agreement terms pursuant to the BCP, is not responsible for any off-Site issues. This work was performed in conformance with CA RICHs NYSDEC-approved-RI Work Plan dated June 2005.

The contaminants of concern for this Brownfield investigation are tetrachloroethene (*also known as perchloroethylene or PCE, a common dry cleaning solvent)* and PCE degradation products (trichloroethene, dichloroethene, and vinyl chloride). This volatile organic compound (VOC) is a residual contaminant allegedly attributable to historical discharges from a former dry cleaning operation that was situated on the 427 East 13th Street portion of the Property. The historical presence of VOCs found in the underlying soil and groundwater led to several sequential environmental studies by others and delayed planned improvements for this property.

The jointly agreed-upon goals of this Remedial Investigation in addition to soil and soil vapor, also included determining the depth, flow direction, and quality of uppermost groundwater occurring beneath the Site. To accomplish this, the Remedial Investigation consisted of design, installation and development of four (4) water table monitoring wells, one (1) on-site multi-depth well cluster and three (3) soil vapor points. This work was followed by the collection and chemical analyses of groundwater and soil vapor samples from the newly-installed monitoring points. Since this work was performed on behalf of the BCP Volunteer, a detailed determination of the areal extent of groundwater quality downgradient of the property was beyond the scope of this work.

In addition to the subsurface work outlined in the RI Work Plan, Appendix E of this Report includes groundwater data received from Con Edison wells OOMWS-7 & OOMWD-07 located beneath the nearby Stuyvesant Town Apartments situated on a former Manufactured Gas Plant (MGP) Site on the opposite (northern) side of E14th Street.

2.0 SITE BACKGROUND and PHYSICAL SETTING

2.1 Site History/Description

The Site is located at 421-433 East 13th Street and 420 East 14th Street and is situated along and between the north side of East 13th and the south side of East 14th Streets midway between First Avenue to the west and Avenue A to the east (see Figure 1). The neighborhood is referred to as the East Village in lower Manhattan. East 14th Street is two-way traffic and East 13th Street is one-way westbound. This area is now a rapidly evolving commercial and residential neighborhood with the relatively large residential apartment complex known as Stuyvesant Town situated directly to the north.

Legally, the Site is designated as Block 441, Lots #17 (421-429 E. 13th St. & 420 E. 14th St.), #45 (433 E. 13th St.) and #46 (431 E. 13th St.) and is situated within C1-6A, a Commercial (Local Retail) District. The property consists of approximately 16,827 square feet of urban land. The Site was formerly occupied by old adjoining one-story, two-story, and three-story buildings that were demolished in October 2005. These former Site buildings were most recently occupied by East Side Lumber, Personal Touch Valet, LaChapelle Photo Studio, White Express Cleaning, and a grocery store.

The former Site buildings were first built between 1903 and 1920. Previous occupants included a church, a wagon builder, and a dry cleaning facility. The 1944 through 1996 Sanborn Maps show that the 431-433 East 13th Street part of the site (easternmost Lot Nos. #45 & #46) were occupied by the New York City Department of Sanitation with wood and oil storage noted. The building located at 427 East 13th Street (in the middle of the property) was utilized as a dry cleaning facility. The dry cleaning equipment was located on the first floor and the full basement was utilized for storage purposes. The cleaner had a self-contained laundry machine, which used PCE and historically stored drums of waste PCE in the "Rear Yard".

In January 2006, when the RI field activities commenced, the Site was completely free of structures. The soil beneath the portions of the former buildings not containing basements had been excavated to a level of approximately 11-feet below the sidewalk elevation. The excavation extended to the sidewalks on East 13th Street and to the adjoining existing off-site building walls on the eastern and western Site boundaries. The northern boundary was to the East 14th Street sidewalk or to the adjacent property boundary. A Site Plan is included as Figure 2.

2.2 Surrounding Land Use

Abutting the Site directly to the east is a one-story U.S. Post Office distribution facility, which is identified present on the Sanborn Fire Insurance maps since 1950. Abutting the Site directly to the west is the Immaculate Conception School also identified on the Sanborn maps since 1985. Abutting much of the rear of the Site to the north on East 14th Street are existing four-story residential apartment buildings, with retail stores at street level and rear yards. Also to the north, across East 14th Street is a one-story grocery store – "Associated Supermarket" and there is an east-west subway line running beneath East 14th Street. The land use in the surrounding area is predominantly mixed residential, commercial and retail. The most common types of nearby buildings are four to six-story residential apartment buildings, some of which have retail space at street level.

2.3 Hydrogeologic Setting

According to the USGS 7.5 Minute Series Topographic Map of Brooklyn, NY Quadrangle, dated 1995, the Site elevation is approximately 15 feet above mean sea level. Based upon site-specific geotechnical data obtained by Langan Engineering and Environmental Services, P.C. (Langan) the subsurface geology beneath the buildings generally consists of a surficial layer of construction fill down to 10-20 feet below the surface. The fill is underlain by a natural sand deposit followed by silt and fine sand, then decomposed and weathered bedrock at 77-85 foot depths. Although competent bedrock was not encountered by Langan, it is anticipated that the Manhattan Schist occurs beneath the property at depths greater than 200 feet.

The uppermost groundwater surface occurs under unconfined conditions (i.e. the water table) at a depth of approximately 12-feet below grade and within the unconsolidated fill materials. Based upon site-specific groundwater information, the direction of horizontal shallow groundwater flow is east-southeast in a direction downgradient toward the East River. Underlying groundwater is not used for potable supply purposes, as such, no potable groundwater resources appear to be threatened by local groundwater quality. A Groundwater Elevation Contour Map is included as Figure 3.

3.0 PREVIOUS ENVIRONMENTAL WORK

Previous assessments and investigations have already been performed at this Site for environmental due diligence purposes. The following list identifies earlier studies prepared for this Site.

Investigation	Date
Phase I ESA, AIRTEK Corp.	March 2004
Phase II Investigation, SOIL MECHANICS ENVIRONMENTAL SERVICES	January 2005
Phase II Investigation, ENVIRO BUSINESS, INC.	April 2005
Soil Waste Characterization & Groundwater Tests, CA RICH CONSULTANTS, INC.	June & Oct. 2005

The previous environmental assessments and investigations listed above were conducted by other companies as well as CA RICH on the Property before the Volunteer purchased the Site. Copies of the above-listed environmental documents are included in Attachment 3 of the BCP Application submitted by CA RICH in June 2005. Most notably, two Phase II Investigations were conducted in 2005. These are a Phase II by Soil Mechanics dated January 10, 2005 and a subsequent more detailed Phase II Investigation by EnviroBusiness Inc. (EBI) dated April 27, 2005.

During the Soil Mechanics and EBI Phase II studies a total of 15 soil and 12 shallow groundwater quality samples were collected for chemical analyses utilizing a remote access Geoprobe unit or hand tools in the rear exterior of the Property and throughout the multi-level interior of the formerly-occupied tenant spaces. To summarize, the testing of both the soil and uppermost groundwater identified the presence of PCE and its chemical breakdown byproducts at concentration levels above applicable regulatory guidelines. According to the EBI Phase II, which was primarily involved with exploratory soil test borings and soil sampling site-wide, the shallow soil behind the former dry cleaner tenant space (427 East 13th St.) was found to contain elevated levels of PCE above applicable guidance values provided in the New York State Department of Environmental Conservation (NYSDEC) Technical Administration Memo (TAGM) 4046.

The PCE concentrations in the soil underlying the Site, as tested in the EBI study in April 2005, ranged from 52 micrograms per kilogram (ug/Kg) or parts per billion (ppb) to 6,920 ug/Kg. According to the EBI report, groundwater occurs at 13-15 feet below street grade. The groundwater samples that were collected ranged in PCE concentration from non-detected to as much as 12,600 ug/Kg. It was concluded that the PCE soil contamination was attributable to the former dry cleaning operations and a spill was reported to NYSDEC (NYSDEC Spill #0501135). The reported Spill was subsequently Closed on May 3, 2005 because it was not associated with a petroleum discharge. The inactive Spill Case was moved from NYSDEC's Spills Group to the Division of Hazardous Waste for possible reassignment. In addition, the property transaction that spurred the initial testing was terminated.

A new prospective purchaser, 13th & 14th Street Realty, LLC hired CA RICH to further investigate, confirm, and expand the Phase II test data collected earlier by EBI and Soil Mechanics. During the week of June 5, 2005, CA RICH, on behalf of the interests of the 13th & 14th Street Realty, LLC, mobilized a Geoprobe™ to the Site to conduct soil testing and to install 1-inch diameter micro-wells on the Site. The primary purpose of this additional work was to test the impacted soils on-Site for waste disposal-related characteristics to determine how the soil will be handled during a planned full-scale remedial and construction-related soil excavation for the new building's foundation.

The PCE concentrations in the subsurface soil and earth fill materials underlying the Site that were tested by CA Rich ranged from non-detect to only 170 ug/Kg, much lower than the earlier EBI results. A comparison of the June 2005 results and the boring logs included in EBI's Report was made. It appears that the most PCE-elevated samples collected by EBI may have been collected from saturated soil below the groundwater interface, which would support greater PCE detections. The results of CA RICHs groundwater quality tests collected from 1-inch diameter micro-wells installed on the Property indicate that upgradient location (MCW-3) did not contain PCE. Alternatively, the shallow groundwater quality beneath the rear yard of 427 East 13th Street contained 4,100 micrograms per liter (ug/L) of PCE, and a further presumed downgradient location (to the east-southeast) contained 42 ug/L of PCE. The analytical results from a deeper groundwater sample intentionally collected from 12-17 feet below street level in the rear yard of 427 East 13th Street indicate that the levels of PCE dropped down to 140 ug/L at this depth.

A copy of the impacted soil-related waste characterization test results and additional VOC soil tests results are included in Appendix A of the IRM Work Plan for this Site. The soil composite test results were forwarded to several qualified disposal facilities and waste brokers for their review and potential acceptance. The results are included as Appendix A and B of the IRM Work Plan.

3.1 Additional Waste Classification Testing

In September and October 2005, and before the Site buildings were demolished as required by the potential waste disposal facility, CA RICH conducted additional waste classification testing. Nine (9) test pits were excavated and four (4) hand-cored soil borings were advanced in non-source areas. A total of six composite soil samples and six grab soil samples were obtained from the test pits and boring locations and submitted to NYS-certified American Analytical Laboratories in Farmingdale, New York for specified chemical analyses. Each of these samples were tested for an extended list of parameters including VOCs, semi-volatile organic compounds (SVOCs), PCBs, hexavalent chromium, trivalent chromium, cyanide, pesticides, flashpoint, reactivity, corrosivity, asbestos and heavy metals (mercury, antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc). The resulting Waste Characterization classification analysis indicated that these fill materials beneath portions of the former buildings contain elevated levels of SVOCs, select heavy metals, and some petroleum constituents. As such, results were forwarded to the Allied Group in Merrick, New York

for acceptance at a suitable waste disposal facility.

Based upon the waste classification results from the test pits and original soil borings, CA RICH selected the Clean Earth of Philadelphia, Inc. (CEP) waste disposal Facility for the off-site disposal of the non-hazardous fill materials from the non-source areas of the Site. CEP is a permitted thermal treatment facility that utilizes extremely high temperatures to destroy the waste contaminants. The CEP Facility includes an on-site laboratory for the quality control of incoming soil as well as post treatment effectiveness. However, due to the anticipated volume of approximately 10,000+ tons, we were advised by CEP that additional grab and composite samples must be obtained to meet CEP-specific acceptance frequency criteria. The CEP acceptance criteria requires one grab sample for VOCs and TCLP VOCs every 180 tons, and one composite sample for SVOCs, TCLP Metals, ignitability, corrosivity, reactivity, PCBs, TOX, total sulfur, and TCLP SVOCs, TCLP Pesticides, and TCLP herbicides for every 900 tons.

To meet this Facility's acceptance criteria to dispose of the anticipated construction fill materials from the upcoming excavation required for the new building's foundation, a further 16 grab and three composite soil samples were collected from test pits on November 17, 2005. In addition, during the first stage of the excavation on December 5, 2005, an additional five grab and one composite samples were collected from beneath the 421 East 13th Street portion of the Site. A copy of the waste classification test results and sample location maps are attached in Appendix A. As the foundation excavation progressed, the CEP Facility conducted additional analysis on incoming loads.

3.2 NYSDEC Spill # 0507771

During the advancement of soil boring WCB-1 in the basement of 421 East 13th Street, petroleum impacted materials were observed in the soil, NYSDEC was notified and NYSDEC Spill # 0507771 was assigned for 421 East 13th Street. Upon acceptance into the BCP, the spill investigation was transferred from NYSDEC Region II Spills Group to the NYSDEC Division of Environmental Remediation in Albany, New York.

On February 23, 2006, Michael MacCabe of the NYSDEC (BCP Site Manager) visited the Site to oversee ongoing excavation activities. During his visit, soil from beneath 421 East 13th Street was being excavated to facilitate the installation of the elevator pit and a sump ejector pit. The excavated material contained obvious signs of petroleum contamination. Approximately 13 truckloads of petroleum-impacted soil was unearthed and shipped off-site to the CEP Facility. On April 19, 2006, NYSDEC Closed Spill #0507771. Further information regarding this Spill will be included in the Remedial Action Report for this Site ("RAR" Report under separate cover).

4.0 INTERIM REMEDIAL MEASURES (IRM)

An Interim Remedial Measures (IRM) Work Plan for the Club East site was submitted to NYSDEC back in June 2005 in anticipation of the need to remediate impacted soil unearthed at the Site along with the necessary construction-related excavation activities required to prepare the Site for installation of the new building's foundation. The IRM Work Plan provides that all on-site soils or earth fill materials be excavated laterally to the property boundaries and vertically down to at least 15-feet below grade (3-feet into groundwater) and disposed of at approved disposal facilities. CA RICH managed all of the IRM soil excavation and testing activities detailed in the IRM Work Plan between December 2005 and April 2006. The excavation included the regulated off-Site disposal of 202.08 tons of hazardous soil to the Stablex Facility in Canada and 11,682.39 tons of non-hazardous soil to the Clean Earth of Philadelphia Facility in Pennsylvania.

To achieve the desired depth for the excavation a few feet below the water table, an activated carbon filtration system was incorporated into the construction-dewatering plan. Following the removal of all on-site soils and uppermost groundwater, a waterproofing membrane, that also serves as a vapor barrier, was installed as part of the construction of the building foundation. A separate Remedial Action Report ("RAR") documenting the completed IRM cleanup activities is currently being prepared and is scheduled for submittal September 2006.

5.0 REMEDIAL INVESTIGATION FIELD SUMMARY

The following Remedial Investigation scope of work was performed to gather further hydrogeologic data underlying the Site, including the depth and flow direction of the shallow groundwater as well as groundwater quality information.

5.1 Installation of Groundwater Monitoring Wells

One on-site multi-depth well couplet and four water table monitoring wells were installed during the period of January 24 through 26, 2006 using a Davy Kent hollow-stem auger restricted access track drilling rig as the method of drilling. The monitoring well locations are depicted on Figure 4. Well construction diagrams are included as Figures 7 through 11.

The first two monitoring wells MW-1 and MW-2 were installed in the sidewalk frontage along East 13th Street. The wells are 23-feet deep and are constructed of two-inch diameter PVC casing and 15-feet of 0.020-inch slotted (20 slot) screens set 10-feet into the shallow water table. The wells were completed with a gravel pack, cement-bentonite seal, and furnished with locking caps and a bolting, flush-mounted vault. Monitoring well construction details are included as Figures 7 and 8. The redevelopment plan is not expected to extend into the sidewalk area, and these two monitoring wells may be preserved. Although the wells are located on the front sidewalk they are within the Site boundary.

The multi-depth well couplet identified as MW-3S and MW-3D, was installed in the rear suspect source area of 427 East 13th Street. During well installation, the surface elevation was approximately 11-feet below the sidewalk grade and approximately 1-foot above the shallow water table. The multi-depth well was drilled using 6 5/8-inch diameter hollow stem augers equipped with a bottom plug. The wells were constructed of two-inch diameter PVC casing and 10-feet of 0.020-inch slotted (20 slot) screens. The deeper of the two monitoring wells was set at 26 to 36 feet below the existing grade or approximately 37 to 47 feet below sidewalk elevation. The shallow well screen was set at 4 to 14 feet below the existing grade, or approximately 15 to 25 feet below sidewalk elevation. The multi-depth wells were completed with a gravel pack, cement-bentonite seal, and furnished with locking caps and 12-inch steel caisson. The caisson was used to protect the well during on-Site remedial excavation and ongoing site preparation activities. However, despite this effort, this installation well was destroyed by a track-hoe in March 2006. The well construction diagram is included as Figure 9.

During the installation of the three wells proposed in the approved-RI Work Plan for this Site, the Property Owner requested that two additional monitoring wells identified as MW-4 and MW-5 be installed in the on-site excavation to assist in measuring water levels during construction dewatering activities. Monitoring wells MW-4 and MW-5 were constructed of two-inch diameter PVC casing and 20-feet of 0.020-inch slotted (20 slot) screens set at 3.5 to 23.5 feet below the existing grade or approximately 14.5 to 34.5 feet below sidewalk elevation. During the March 2006 excavation activities, a track-hoe excavator crushed both wells. The well construction diagrams are included as Figures 10 and 11.

Once installed, all of the wells were developed using a small-diameter submersible pump that was capable of discharging at a rate of about 1 gallon per minute to minimize turbidity. The wells were pumped until the discharge water was relatively turbid-free. Well development data for each well is included on Figures 7 through 11.

5.2 Groundwater Sampling

One week after well development, CA RICH collected depth-to-water measurements and groundwater samples from the four newly-installed water table wells and the new multi-depth well couplet. Prior to sampling, at least three times the volume of water was removed from each well using new polyethylene tubing and a submersible pump. The field technicians noted that during the process of purging the wells, the well water level drawdown measured was less than one foot and that the discharge from the wells was clear. These observations suggest that the wells were properly developed and that water levels measurements are representative of the shallow aquifer. The submersible pump was decontaminated between sample collection by passing a laboratory grade detergent through the pump, followed a fresh water scrub and a fresh water rinse. Gloves worn for sample handling were discarded between each sampling point.

After purging was complete, the samples were collected using pre-cleaned polyethylene disposal bailers. All groundwater samples were placed into laboratory-issued 40 mil glass vials, placed in a cooler on ice and delivered to ELAP-certified Severn Trent Laboratories, Inc. (STL) in Shelton, Connecticut for chemical analysis. The samples were analyzed for VOCs using USEPA Method 8260 and NYSDEC ASP Category B deliverables. The following samples were also collected for QA/QC purposes in accordance with the Site's Quality Assurance Project Plan (QAPP): 1 trip blank, 1 field blank, 1 duplicate sample, 1 matrix spike and 1 matrix spike duplicate. A qualified third-party Data Validator reviewed the groundwater laboratory data and a Data Usability Summary Report (DUSR) was prepared. A complete copy of the validated groundwater data package is attached as Appendix B. A copy of the DUSR is included in Appendix D. The lab results are summarized on Table 1 and the detections are illustrated on Figure 5.

5.3 Water Table Elevation Map

The well casing elevations of the newly installed wells MW-3S, MW-4, and MW-5 were surveyed by a licensed surveyor to the nearest 0.01-foot on February 17, 2006. Monitoring wells MW-1 and MW-2 were unable to be surveyed due to the presence of construction materials. Groundwater elevations were measured on February 1, 2006 using a chalked steel tape. The elevations were then plotted to determine the horizontal direction of groundwater flow. The water table map is presented on Figure 3. A tabulation of the casing elevations and depth to water measurements is included on Table 2. Based upon the existing monitoring wells, the direction of groundwater flow is toward the east-southeast.

5.4 Soil Vapor Point Installation

On January 24, 2006, three soil vapor points were installed beneath the sidewalk of East 13th and East 14th Streets. Vapor point VMP-1 was installed on the southern sidewalk of East 13th Street (across the street) directly opposite the Site. The second point VMP-2 was installed on the sidewalk of East 13th Street near the southeastern corner of the Site. The last vapor point VMP-3 was installed in the sidewalk frontage of 420 East 14th Street. No vapor points were installed within the future building's footprint because the excavation depth required for the new building's foundation will be 3-4 feet beneath the water table, thus eliminating the vadose zone. In addition, the construction plan for the new building includes a water/vapor barrier beneath the entire Site. The locations for all of the soil vapor points are illustrated on Figure 4.

The soil vapor points were installed by drilling a 6-inch hole through the concrete sidewalk using a hammer-drill equipped with a carbide bit, followed by a 2 ¼-inch diameter hole in the soil using a manually-operated hand auger. After advancing the hole to 3-feet, a vapor point comprised of 2.5-feet of ¼-inch polyethylene tubing with a 6-inch stainless steel mesh screen was inserted into the hole. The screened zone was filled with #2 Morie sand. The top of the screened zone was then sealed with a bentonite slurry. A flush mounted steel cover was cemented in place to protect the point during upcoming construction activities.

5.5 Soil Vapor Point Sampling

On January 25 and 27, 2006, CA RICH returned to the Site to collect subsurface soil vapor samples from the newly-installed points as well as an ambient air sample for background purposes. The following procedure was used to sample the points: First the ¼-inch polyethylene tubing was connected to a "T" connector three-way valve assembly, with one end of the "T" connector leading to a battery operated vacuum pump and the other end leading to a pre-cleaned six-liter summa canister with a regulator calibrated to collect a sample at a rate of less than 0.2 liters per minute. The soil vapor sample tubing was then purged of approximately three volumes of the sample tubing using a vacuum pump set at a rate of approximately 0.2 liters per minute. A helium tracer gas was used to enrich the atmosphere of the sampling location. The tracer gas was used to verify that the ambient air was not inadvertently drawn into the sample. A plastic container was then placed over the vapor point and a helium tracer gas was injected into the container to enrich the atmosphere. Both the purge volume from the sampling tube and the helium-enriched air within the container were screened for the tracer gas using a Gowmac Model 21-250 gas leak detector.

Following the purging and tracer gas verification steps, the valve leading to the pump was closed, the pump was turned off, and the soil vapor was directed to the summa canister for sample collection. The summa canister regulator restricted the sample collection rate to 42 milliliters per minute over a two hour time period. Upon completion of the sample collection, the canisters were disconnected and sealed for shipping to Severn Trent Laboratories, Inc. (STL) in Knoxville Tennessee for chemical analysis. The samples were analyzed for VOCs using USEPA Method T015 and NYSDEC ASP Category B deliverables. For QA/QC purposes an ambient air sample was collected from an upwind location to establish background levels. A qualified third-party Data Validator reviewed the soil vapor data and a DUSR was prepared. A complete copy of the validated soil vapor data package is attached as Appendix C. A copy of the DUSR is included in Appendix D. The analytical detections are illustrated on Figure 6.

6.0 SUMMARY OF REMEDIAL INVESTIGATION RESULTS

The following is a summary of the findings from this Remedial Investigation.

- The underlying water table was encountered at a depth of approximately 12.5 feet below grade. The direction of groundwater flow based upon water levels collected from the network of monitoring wells is toward the east-southeast.

- PCE was detected in groundwater wells MW-1 and MW-2 at 11 ug/L and 27 ug/L, respectively. These wells are located side gradient to the former suspect source area on the sidewalk frontage of East 13th Street. The NYSDEC groundwater standard (Ref. 6) for PCE is 5 ug/L.

- PCE and its breakdown products were detected in the multi-depth well MW-3S and MW-3D located within the footprint for the new building. The concentrations in the shallow well MW-3S ranged from 1.7 ug/L to 270 ug/L. The deeper well MW-3D screened 37 to 47 feet below the sidewalk elevation contained a lower range of concentration level from 2.3 ug/L to 21 ug/L.

- Groundwater quality at the upgradient well location, MW-4, located within the new building footprint did not contain PCE. However, PCEs breakdown products Vinyl Chloride and Cis-1,2-Dichloroethene were detected at 1.9 ug/L and 1.8 ug/L, respectively. The NYSDEC groundwater standard (Ref. 6) for vinyl chloride is 2 ppb and Cis-1,2-Dichloroethene benzene is 5 ug/L.

- Groundwater quality at the downgradient well location, MW-5, located within the new building footprint contained PCE at 170 ug/L. This was the highest level of PCE detected in all of the wells sampled during this sampling event. PCE's breakdown products Vinyl Chloride, Cis-1,2-Dichloroethene and trichloroethene were also detected between 4.4 ug/L and 44 ug/L.

- PCE was reported at 330 ug/M^3 in soil vapor at VMP-1, located off-site, beneath the sidewalk, on the south side of East 13th Street. Petroleum constituents benzene, toluene, and M&P Xylene were also detected at this location. The concentrations ranged from 9.7 ug/M^3 to 26 ug/M^3.

- PCE was reported at 11,000 ug/M^3 in the subsurface soil vapor at VMP-2, located on the southeastern sidewalk frontage of East 13th Street. PCE's breakdown products cis-1,2-Dichlororethene and trichloroethene were reported at 450 ug/M^3 and 240 ug/M^3, respectively.

- PCE was reported at 16 ug/M^3 in the soil vapor at VMP-3 located on sidewalk frontage on East 14th Street.

- According to the groundwater sample results provided to CA RICH by CON EDISON for monitoring wells 00MWS07 and 00MWD07 located northeast of the Site beneath the Stuyvesant Town Apartments, PCE and its breakdown products were not detected.

7.0 Exposure Assessment

7.1 Introduction

CA RICH conducted an Exposure Assessment (EA) of the Site. This qualitative EA was designed to characterize whether the Property poses an existing or future health hazard to the exposed or potentially exposed population. The available sampling data for the environmental media was reviewed to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport.

This EA was prepared in accordance with Appendix 3B and Section 3.12 (a) 5 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation (Ref. 8) using the methodology detailed in the NYSDEC Spill Response Guidance Manual (SGM), January 1990, Section 1.6-13 to Section 1.6-32, Corrective Action-Exposure and Risk Assessment (Ref. 9).

The five elements of an exposure pathway are: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future.

7.2 Contaminants of Concern

7.2.1 General Background

Based upon all of the background information and sampling data, the contaminants of concern include tetrachloroethene *(also known as perchloroethylene or PCE, a common dry cleaning solvent)*, PCE degradation products (trichloroethene, dichloroethene, and vinyl chloride), fuel oil (number 2 and/or number 4), Lead, and Polycyclic Aromatic Hydrocarbons (PAHs).

PCE is a manufactured chemical that is widely used for the dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products. PCE is a nonflammable liquid at room temperature. PCE and its degradation products are described as "sweet" or "aromatic" smelling and are narcotic in high concentrations. Acute exposure to significant concentrations of these chemicals can cause irritation of the skin, eyes and mucus membrane, headache, dizziness, nausea, and in high enough concentrations, loss of consciousness and death *(Sax, 1984)*. The Department of Health and Human Services (DHHS) has determined that PCE may reasonably be anticipated to be a carcinogen as it has been shown to cause liver tumors in mice and kidney tumors in male rats.

Number 2 and number 4 fuel oils are yellowish to light brown liquid mixtures of heating oils that are derived from crude petroleum. They are produced by different petroleum refining processes, depending on their intended uses. Little information is available about the health effects that may be caused by fuel oils. Breathing some fuel oils for short periods may cause nausea, eye irritation, increased blood pressure, headache, light-headedness, loss of appetite, poor coordination, and difficulty concentrating. The International Agency for Research on Cancer (IARC) has determined that some heavy fuel oils may cause cancer in humans, but for light fuel oils, there is not enough information to make a determination. IARC has also determined that occupational exposures to fuel oils during petroleum refining are probably carcinogenic in humans.

Lead is a highly toxic metal that was used for many years in products such as paint and gasoline. Lead can also be found in urban dust. Lead may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Children six years old and under are most at risk, because their bodies are undergoing rapid neurological and physical development.

PAH's are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot. Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides. Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

7.2.2 Regulatory Criteria

The concentrations of the contaminants of concern found at the Site were compared to the following standards or guidance values: 1) NYSDEC TAGM 4046 (soil only); 2) NYSDEC Draft 6 NYCRR Part 375 Track 1 (soil only) (Ref. 10); and 3) Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, NYSDEC (groundwater only) (Ref. 7).

7.2.3 Soil/Fill

The fill or subsurface soils around the Site were analyzed for the contaminants of concern during the September and October 2005 waste classification testing. Additional subsurface samples were not obtained for analysis during the Remedial Investigation (RI) since all of the impacted soil on-Site was excavated and removed as part of the approved Interim Remedial Measures (IRM) activities conducted between December 2005 and April 2006.

All on-Site soils were removed from grade down to five feet into the shallow groundwater table. The results for two endpoint samples collected from 17 feet below sidewalk grade in the former source area detected PCE at 84 and 48 ug/Kg or parts per billion (ppb).

7.2.4 Ground Water

One on-Site multi-depth well couplet and four water table monitoring wells were installed during the period of January 24 through 26, 2006 using a Davy Kent hollow-stem auger restricted access track drill rig as the method of drilling. The first two monitoring wells MW-1 and MW-2 were installed in the sidewalk frontage along East 13th Street. The wells are 23-feet deep and are constructed of two-inch diameter PVC casing and 15-feet of 0.020-inch slotted (20 slot) screens set 10-feet into the shallow water table. The wells were completed with a gravel pack, cement-bentonite seal, and furnished with locking caps and a bolting, flush-mounted vault. The redevelopment plan is not expected to extend into the sidewalk area, and therefore, these two monitoring wells may be preserved. Although the wells are located on the front sidewalk they are within the Site boundary.

The multi-depth well couplet identified as MW-3S and MW-3D, was installed in the rear suspect source area of 427 East 13th Street. During well installation, the surface elevation was approximately 11-feet below the sidewalk grade and approximately 1-foot above the shallow water table. The multi-depth well was drilled using 6 5/8-inch diameter hollow stem augers equipped with a bottom plug. The wells were constructed of two-inch diameter PVC casing and 10-feet of 0.020-inch slotted (20 slot) screen. The deeper of the two monitoring wells was set at 26 to 36 feet below the existing grade or approximately 37 to 47 feet below sidewalk elevation. The shallow well screen was set at 4 to 14 feet below the existing grade, or approximately 15 to 25 feet below sidewalk elevation. The multi-depth wells were completed with a gravel pack, cement-bentonite seal, and furnished with locking caps and 12-inch steel caisson. The caisson was used to protect the well during on-Site remedial excavation and ongoing site preparation activities. However, despite this effort, the well was destroyed by a track-hoe in March 2006.

During the installation of the three wells proposed in the approved-RI Work Plan for this Site, the Property Owner requested that two additional monitoring wells identified as MW-4 and MW-5 be installed in the on-Site excavation to assist in measuring water levels during construction dewatering activities. Monitoring wells MW-4 and MW-5 were constructed of two-inch diameter PVC casing and 20-feet of 0.020-inch slotted (20 slot) screens set at 3.5 to 23.5 feet below the existing grade or approximately 14.5 to 34.5 feet below sidewalk elevation. During the March 2006 excavation activities, a track-hoe crushed both wells.

Once installed, all of the wells were developed using a small-diameter submersible pump that was capable of discharging at a rate of about 1 gallon per minute to minimize turbidity. The wells were pumped until the discharge water was relatively turbid-free.

The analytical results indicated that PCE was detected in groundwater wells MW-1 and MW-2 at 11 ug/L and 27 ug/L, respectively. These wells are located side gradient to the former suspect source area on the sidewalk frontage of East 13th Street. The NYSDEC groundwater standard for PCE is 5 ug/L.

PCE and its breakdown products were detected in the multi-depth well, MW-3S and MW-3D, located within the footprint for the new building. The concentrations in the shallow well MW-3S ranged from 1.7 ug/L to 270 ug/L. The deeper well MW-3D screened 37 to 47 feet below the sidewalk elevation contained a lower range of concentration from 2.3 ug/L to 21 ug/L.

Groundwater quality at the upgradient well location, MW-4 (located within the new building footprint) did not contain PCE. However, PCEs breakdown products Vinyl Chloride and Cis-1,2-Dichloroethene were detected at 1.9 ug/L and 1.8 ug/L, respectively. The NYSDEC groundwater standard (Ref. 6) for vinyl chloride is 2 ppb and Cis-1,2-Dichloroethene benzene is 5 ug/L.

Groundwater quality at the downgradient well location, MW-5 (located within the new building footprint) contained PCE at 170 ug/L. This was the highest level of PCE detected in all of the wells sampled during this sampling event. PCE's breakdown products Vinyl Chloride, Cis-1,2-Dichloroethene and trichloroethene were also detected between 4.4 ug/L and 44 ug/L.

7.2.5 Soil Vapor

On January 24, 2006, three soil vapor points were installed beneath the sidewalk of East 13th and East 14th Streets. Vapor point VMP-1 was installed on the southern sidewalk of East 13th Street (across the street) directly opposite the Site. The second point VMP-2 was installed on the sidewalk of East 13th Street near the southeastern corner of the Site. The last vapor point VMP-3 was installed in the sidewalk frontage of 420 East 14th Street. No vapor points were installed within the future building's footprint because the excavation depth required for the new building's foundation will be 3-4 feet beneath the water table, thus eliminating the vadose zone. In addition, the construction plan for the new building includes a water/vapor barrier beneath the entire Site.

The soil vapor points were installed by drilling a 6-inch hole through the concrete sidewalk using a hammer-drill equipped with a carbide bit, followed by a 2 ¼-inch diameter hole in the soil using a manually-operated hand auger. After advancing the hole to 3-feet, a vapor point comprised of 2.5-feet of ¼-inch polyethylene tubing with a 6-inch stainless steel mesh screen was inserted into the hole. The screened zone was filled with #2 Morie sand. The top of the screened zone was then sealed with a bentonite slurry. A flush mounted steel cover was cemented in place to protect the point during upcoming construction activities.

On January 25 and 27, 2006, CA RICH returned to the Site to collect subsurface soil vapor samples from the newly-installed points as well as an ambient air sample for background purposes. The following procedure was used to sample the points: First the ¼-inch polyethylene tubing was connected to a "T" connector three-way valve assembly, with one end of the "T" connector leading to a battery operated vacuum pump and the other end leading to a pre-cleaned six-liter summa canister with a regulator calibrated to collect a sample at a rate of less than 0.2 liters per minute. The soil vapor sample tubing was then purged of approximately three volumes of the sample tubing using a vacuum pump set at a rate of approximately 0.2 liters per minute. A helium tracer gas was used to enrich the atmosphere of the sampling location. The tracer gas was used to verify that the ambient air was not inadvertently drawn into the sample. A plastic container was then placed over the vapor point and a helium tracer gas was injected into the container to enrich the atmosphere. Both the purge volume from the sampling tube and the helium-enriched air within the container were screened for the tracer gas using a Gowmac Model 21-250 gas leak detector.

Following the purging and tracer gas verification steps, the valve leading to the pump was closed, the pump was turned off, and the soil vapor was directed to the summa canister for sample collection. The summa canister regulator restricted the sample collection rate to 42 milliliters per minute over a two-hour time period. Upon completion of the sample collection, the canisters were disconnected and sealed for shipping to Severn Trent Laboratories, Inc. (STL) in Knoxville Tennessee for chemical analysis. The samples were analyzed for VOCs using USEPA Method T015 and NYSDEC ASP Category B deliverables. For QA/QC purposes an ambient air sample was collected from an upwind location to establish background levels. A qualified third-party Data Validator reviewed the soil vapor data and a DUSR was prepared.

The analytical results illustrated that PCE is present at a concentration of 330 ug/M^3 in the soil vapor at VMP-1 located off-site, beneath the sidewalk, on the south side of East 13th Street. Petroleum constituents benzene, toluene, and M&P Xylene were also detected at this location. The concentrations ranged from 9.7 ug/M^3 to 26 ug/M^3.

PCE was also reported at 11,000 ug/M^3 in the subsurface soil vapor at VMP-2, located on the southeastern sidewalk frontage of East 13th Street. PCE's breakdown products cis-1,2-Dichlororethene and trichloroethene were reported at 450 ug/M^3 and 240 ug/M^3, respectively.

In addition, PCE was reported at 16 ug/M^3 in the soil vapor at VMP-3 located on sidewalk frontage on East 14th Street.

7.3 Potential Sensitive Receptors

7.3.1 On-Site Receptors

Since demolition of on-site buildings in the fall of 2005, the Property has been an active construction site. The Property is to be redeveloped into an approximately 100,000 square feet multi-story residential building with 2,500 square feet of retail space fronting East 14th Street. Currently, construction workers are the only on-Site potential sensitive receptors. Once the Property is redeveloped into a multi-story residence, the on-Site potential sensitive receptors will include adult and child residents, and commercial workers. Visitors and miscellaneous delivery persons would have significantly less exposure than building occupants, and therefore, were deleted from further consideration.

7.3.2 Off-Site Receptors

Potential off-site receptors within a 0.25-mile radius of the Site include adult and child residents, and commercial and construction workers based on the following:

1. Commercial Businesses (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Residential Buildings with backyards (adjacent) – existing and future
4. Building Construction/Renovation (up to 0.25 mile) – existing and future
5. Surface Water – East River (approximately 1,000 feet to the east) – existing and future
6. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future

Visitors, pedestrians, trespassers, cyclists, and miscellaneous delivery persons would have significantly less exposure than building occupants; and therefore, were deleted from further consideration.

Groundwater in this region is not used for drinking water. Private or municipal water wells do not exist within one-mile of the Site. Both drinking water (via reservoirs) and sewer systems are supplied by the City of New York. Therefore, the risk of the site contaminating the public water supply does not exist.

7.4 Exposure Route

An exposure route is the mechanism by which a receptor comes into contact with a chemical. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with water, fill, soil or building materials.

7.5 Exposure Pathways

Based on the current and projected future use of this Site as well as the Preferred Exposure Pathway Models identified in the SGM, the following pathways will be evaluated in this Exposure Assessment:

1. Subsurface Soil Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation;
2. Groundwater Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation;
3. Subsurface Soil Concentrations Protective of Enclosed Space Air (Indoor) Vapor Inhalation;
4. Groundwater Concentrations Protective of Enclosed Space Air (Indoor) Vapor Inhalation; and
5. Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils.

The following exposure pathways were not applicable:

- Inhalation of Vapor Emissions – not evaluated since no airborne contaminants were released into the environment.

- Soil Concentrations Protective of Groundwater – not evaluated since the groundwater has already been impacted by the contaminants of concern.

7.6 Identification and Evaluation of Exposure Pathways (Contaminant source, Contaminant release and transport mechanism, Point of exposure, Route of exposure, Receptor population)

Since the BCP Applicant entered into an agreement with the NYSDEC as a "Volunteer", only on-Site concentrations were and can be evaluated as part of this Qualitative Exposure Assessment. According to the June 2005 soil investigation, waste characterization sampling, and the Remedial Investigation, elevated levels of PCE, lead, fuel oil constituents, and PAHs occur on-Site. Based on the concentrations of PCE in the soil and groundwater at the eastern Property boundary and the visual observation of oily soil at the southwest Property boundary, it is possible that the contaminants of concern may have migrated onto the adjoining properties. Therefore, it is necessary to examine all of the above-listed exposure pathways for adult and child residents, and commercial and construction workers.

7.6.1 On-Site (existing)

Before completion of the IRM, there was an exposure pathway (Subsurface Soil Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation and Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils) from surface and subsurface soil/fill as a result of on-Site construction activities. On-Site construction workers potentially could have ingested, inhaled or had dermal contact with any exposed impacted fill or soils. Since the IRM has been completed, there is no existing potential exposure pathway from subsurface soil/fill to on-Site receptors.

There was also an exposure pathway (Groundwater Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation) from the groundwater as a result of on-Site excavation and/or dewatering activities for construction purposes. On-Site construction workers could have potentially inhaled or had dermal contact with any soil/fill that was saturated with contaminated groundwater and/or the contaminated groundwater itself. Since the IRM has been completed, on-site dewatering activities have ceased, and a water/vapor barrier has been installed underneath

the new foundation, there is no existing potential exposure pathway from groundwater to on-Site receptors.

7.6.2 Off-Site (existing)

There is an exposure pathway (Subsurface Soil Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation and Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils) from contaminated surface and subsurface soil/fill to off-Site adult and child residents, and commercial workers as a result of on-Site construction activities. Off-Site adult and child residents, and commercial workers could potentially inhale soil/fill dust or have dermal contact with any soil/fill that may emanate from the site during sidewalk/street (off-Site) construction activities.

There is also an exposure pathway (Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils) from contaminated surface and subsurface soil/fill to off-Site adult and child residents of the adjoining properties based on the close proximity of the adjoining backyards to the source area of the on-Site PCE-contaminated surface and subsurface soil/fill. If the backyards contain contaminated soil, then the off-Site adult and child residents could have direct dermal contact with that contaminated soil while playing, gardening, or performing other outdoor activities. In addition, off-Site adult and child residents could potentially track contaminated soil into their home from the backyard via their shoes or clothing--creating another exposure pathway.

In addition, there is an exposure pathway (Groundwater Concentrations Protective of Enclosed Space Air (Indoor) Vapor Inhalation) from soil gas emanating from volatile organic compounds (VOCs), including PCE and fuel-related compounds, within the groundwater to enter into the adjoining buildings as a result of any sub-basement floor or lower wall openings/cracks. The indoor air quality at the adjoining properties is susceptible to contamination from subsurface vapor intrusion attributable to VOCs emitted from the shallow contaminated groundwater beneath the Site. The potential receptors from such a migration pathway into the building would be to off-Site commercial workers, and adult and child residents. The primary route of exposure would be inhalation.

7.6.3 On-Site (future)

All of the impacted soil on-Site was excavated and removed as part of the approved Interim Remedial Measures (IRM) activities conducted between December 2005 and April 2006. Source removal was accomplished by excavation, transport, and off-Site disposal of contaminated soils to a regulated waste disposal facility. Soils were excavated down to 17 feet in the source area (four feet into the water table) and 15-feet below street grade in the rest of the Site (three feet into the water table). The lateral extent of the excavation was to the two sidewalks to the north and south, and the adjoining property lines to the east and west. Two endpoint samples were collected from 17 feet below sidewalk grade in the former source area to document the removal of the contaminated soil.

Since no impacted soil above the water table remains on-Site, there is no longer a potential presence of soil vapor attributable to impacted soil contaminants occurring within the unsaturated vadose zone. However, there may be some minor off gassing of residual VOCs dissolved in the underlying uppermost groundwater. Therefore, the BCP applicant installed a water/vapor barrier throughout the entire Site to eliminate any potential soil vapor from entering the building or Property. Since the IRM was implemented according to the NYSDEC-approved work plan and the vapor barrier was installed according to its specifications, there are no potential exposure pathways for on-Site adult or child residents, or commercial workers.

There is a potential exposure pathway (Subsurface Soil Concentrations Protective of Ambient Air (Outdoor) Vapor Inhalation and Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils) for future on-Site construction workers conducting construction-related activities underneath the vapor barrier if future construction activities require on-Site workers to come into direct dermal contact with residual contaminated groundwater and/or soil within the saturated zone.

7.6.4 Off-Site (future)

There is a potential exposure pathway (Inhalation of Vapors and Particulates, Dermal Contact, and Ingestion of Chemicals in Surficial Soils) from contaminated surface and subsurface soil/fill to off-Site adult and child residents based on the close proximity of the backyards of the adjoining properties to the source area of the on-Site contaminated surface and subsurface soil/fill. Since the Brownfield Applicant entered into an agreement with the NYSDEC as a "Volunteer", only on-Site contamination will be addressed as part of the BCP Program, which means that only on-Site soils were excavated as part of the IRM. Therefore, off-Site adult and child residents could have direct dermal contact with that contaminated soil while playing, gardening, or performing other outdoor activities. In addition, off-Site adult and child residents could potentially track contaminated soil into their home from the backyard via their shoes or clothing creating another exposure pathway.

There is also a potential exposure pathway (Groundwater Concentrations Protective of Enclosed Space Air (Indoor) Vapor Inhalation) from soil gas emanating from any residual contaminated groundwater to enter into the adjoining buildings as a result of any sub-basement floor or lower wall openings/cracks. The indoor air quality at the adjoining properties is susceptible to contamination from subsurface vapor intrusion attributable to any residual VOCs that would be emitted from the shallow groundwater beneath the Site. The potential receptors from such a migration pathway into the building would be to off-site commercial workers, and adult and child residents. The primary route of exposure would be inhalation.

7.7 Conclusions and Recommendations

Based upon this analysis, there was an existing exposure pathway from contaminated surface and subsurface soil/fill and groundwater to on-Site construction workers as a result of on-site construction and dewatering activities. However, all of the impacted soil on-Site was excavated and removed as part of the approved IRM activities conducted between December 2005 and April 2006. Therefore, there is no longer an existing exposure pathway from soil/fill and groundwater to on-Site receptors.

Completion of the IRM did not affect the potential exposure pathways to off-Site receptors that currently exist. The following existing potential exposure pathways have been identified: off-Site adult and child residents, and commercial workers could potentially inhale soil/fill dust or have dermal contact with soil/fill that may emanate from the Site during sidewalk/street (off-Site) construction activities; off-Site adult and child residents could potentially have direct dermal contact with contaminated soil in their backyard during gardening or other outdoor activities; off-Site child residents could potentially ingest contaminated soil while playing in their backyard; off-Site adult and child residents could potentially track contaminated soil into their home from the backyard via their shoes and clothing; and, off-Site adult and child residents, and commercial and construction workers could be susceptible to contamination from subsurface vapor intrusion attributable to VOCs that are emitted from the shallow contaminated groundwater beneath the Site.

Once sidewalk/street (off-Site) construction activities have ceased, there will no longer be a potential exposure pathway/route from inhalation or dermal contact to on-Site construction workers, off-Site adult and child residents, and off-Site commercial workers regarding soil/fill dust from the Site. However, the following future potential exposure pathways would still remain: on-Site construction and/or utility workers conducting construction or utility-related activities underneath the vapor barrier could come into contact with residual contaminated groundwater and/or soil within the saturated zone; off-Site adult and child residents could potentially have direct dermal contact with contaminated soil in their backyard during gardening or other outdoor activities; off-Site child residents could potentially ingest contaminated soil while playing in their backyard; off-Site adult and child residents could potentially track contaminated soil into their home from the backyard via their shoes and clothing; and, off-Site adult and child residents, and commercial and construction workers could be susceptible to contamination from subsurface vapor intrusion attributable to VOCs being emitted from the shallow groundwater beneath the Site.

Therefore, in our professional opinion (based on the results of the Exposure Assessment), certain engineering and/or institutional controls need to be put in place on-Site to ensure that the above-listed on-Site exposure pathways, relating to the vapor barrier and contact with subsurface soils and/or groundwater underneath the vapor barrier, are eliminated. In addition, it is recommended that the NYSDEC conduct an off-Site investigation to address the above-listed off-site potential exposure pathways.

7.8 Disclaimer

This Exposure Assessment was prepared for 13th and 14th Street Realty, LLC. CA RICH conducted this Exposure Assessment in accordance with generally accepted protocols within the environmental consulting profession. The conclusions and recommendations provided by CA RICH in this Exposure Assessment are based solely on the information reported in this document. Future investigative Site information or changing future land use, not available to CA RICH at the time of this Assessment, may result in a modification to the conclusions and recommendations stated above. CA RICH has no interest other than professional in this assignment and neither its performance, nor compensation for same, is contingent upon the findings, conclusions and recommendations represented herein.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Three main conclusions can be drawn from the remedial investigation work completed at this construction redevelopment site which lead to two primary recommendations as follows:

8.1 Conclusions

- The accomplished removal of all of the on-Site soils to as much as 5-feet into the shallow water table, and as a result, the virtual elimination of all of the vadose zone beneath the building site-wide effectively eliminates any potential source or exposure pathway to future building occupants from historical residual contamination that was formerly attributable to the former presence of impacted Site soils and fill materials;

- The installation of the combined water/vapor barrier beneath and throughout the new building foundation effectively prevents the potential for the migration of surrounding uppermost groundwater and/or any potential for off-gassing vapor from this groundwater from accumulating within, or migrating up into, the future basement interior; and

- Given the above protective measures, the vapor barrier eliminates all exposure pathways except: 1) on-Site construction or utility workers conducting construction or utility-related activities underneath the vapor barrier who could come into contact with residual contaminated groundwater and/or soil within the saturated zone; and 2) off-Site adult and child residents, and commercial and construction workers could be susceptible to contamination from subsurface vapor intrusion attributable to VOCs being emitted from any degraded shallow groundwater movement away from the Site.

8.2 Recommendations

- To confirm as-built vapor barrier effectiveness, we recommend that air quality samples be collected from the building interior (basement level) and analyzed for VOCs once construction is complete. This recommended air sampling is being incorporated into a Remedial Action Plan currently being prepared for this Site.

- It is also recommended that NYSDEC conduct an off-Site investigation to address the off-Site potential Exposure Pathways (see Section 7.5) discussed in **Exposure Assessment** (see Section **7.0**).

9.0 REFERENCES

1. Langan Engineering & Environmental Services, P.C., August 19, 2005; Geotechnical Engineering Study 421-433 East 13th Street, New York, New York.

2. Airtek Environmental Corp., March 1, 2004; Phase I Environmental Site Assessment.

3. Soil Mechanics Environmental Services, January 10, 2005; Phase II Investigation 427 East 13th Street, New York, New York.

4. Enviro Business, Inc., April 27, 2005; Phase II Investigation.

5. T. Buxton, J. Soren, A. Posner and P. Shernoff, (1981), Reconnaissance of Ground-Water Resources of Kings and Queens Counties, NY, USGS Open File Report 81-1186.

6. NYSDEC, January 24, 1994, Department's Technical And Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels.

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8. New York State Department of Environmental Conservation (NYSDEC), Draft DER-10 Technical Guidance for Site Investigation and Remediation; December 2002.

9. NYSDEC, Spill Response Guidance Manual, Section 1.6-13 to Section 1.6-32, Corrective Action-Exposure and Risk Assessment; January 1990.

10. NYSDEC, Draft 6 NYCRR Part 375 Environmental Remediation Program; November 2005.

TABLES

TABLE 1

Volatile Organic Compounds in Groundwater
Club East (BCP Site #C231048)
13th and 14th Street Realty, LLC
421-433 E. 13th St. & 420 E. 14th St., New York, New York

Sample ID	MW-1	MW-2	MW-3S	MW-3D	MW-3X	MW-4	MW-5	Field Blank	Trip Blank	*NYSDEC
Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Water	Water	TOGS
Date Sampled	2/7/2006	2/7/2006	2/7/2006	2/7/2006	2/7/2006	2/7/2006	2/7/2006	2/7/2006	2/7/2006	Standards and
Screened Interval (ft below land surface)	8 to 23	8 to 23	4 to 14	26 to 36	4 to 14	3.5 to 23.5	4.75 to 24.75			Guidelines
Depth Below Sidewalk Elevation	8 to 23	8 to 23	15 to 25	37 to 47	15 to 25	14.5 to 34.5	15.75 to 35.75			
Volatile Organic Compounds (USEPA Method 8260)										
Parameters	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Vinyl Chloride	ND	ND	**120**	**6.9**	**120**	1.9 J	**4.4 J**	ND	ND	2
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
1,1 Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	NGV
Acetone	ND	ND	17	ND	17	3.4 J	ND	1.5 J	ND	50
Methylene Chloride	ND	ND	1.0 JB	ND	0.98 JB	0.43 JB	0.43 JB	0.41 J	0.75 J	5
trans-1,2-Dichloroethene	ND	ND	1.7 J	ND	1.8 J	ND	ND	ND	ND	5
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
cis-1,2 Dichloroethene	ND	4.3	**270**	**21**	**270**	1.8 J	**37**	ND	ND	5
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chloroform	ND	ND	5.3 J	ND	5.1	1.6 J	ND	ND	ND	7
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Benzene	ND	ND	ND	ND	ND	0.79 J	ND	ND	ND	1
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6
Trichloroethene	ND	1.5	**23**	2.3 J	**24**	ND	**44 H**	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4
4-Methyl-2-pentanone (MIBK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	NGV
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Tetrachloroethene (PCE)	**11**	**27**	**92**	**17**	**92**	ND	**170**	ND	ND	5
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	50
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	5
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	5

Notes:

ND - Compound was analyzed for but not detected.

All concentrations are reported in micrograms per liter (ug/L) or parts per billion.

Bold value and box indicates an exceedance of NYSDEC TOGS.

NGV - No Given Value

J - Estimated Value

B - Analyte Detected in Method Blank

H - Alternate Peak Selection Upon Analytical Review

** NYSDEC Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations TOGS 1.1.1 June 1998*

***Sample MW-3X is a duplicate of sample MW-3S.*

Prepared By CA RICH CONSULTANTS, INC.

4/5/2006

TABLE 2

SUMMARY OF WATER LEVEL MEASUREMENTS AND ELEVATIONS

13th and 14th Street Realty, LLC.

421 - 433 East 13th Street and 420 East 14th Street

New York, New York

Monitoring	Depth of Well	Screen Length	Diameter	Relative Casing	February 1, 2006	
Well ID	From Sidewalk Grade in Feet	In Feet	Inches	Elevation (Ft.)	DTW	GW Elevation
MW-3S	25	10	2	14.06	7.73	6.33
MW-4	34.5	20	2	11.88	5.45	6.43
MW-5	35.75	20	2	10.74	5.16	5.58

Notes:

* Elevation survey performed on February 16 and 17, 2006 to relative site datum.

DTW - Depth to Water.

NA - Not Available, Wels MW-1 and MW-2 could not be surveyed due to site obstructions.

FIGURES

APPROX. SCALE (ft.)

0 2,000 4,000

N

Adapted from USGS 1969-1979 (photorevised) Brooklyn Quadrangle Map.

CA RICH CONSULTANTS, INC.

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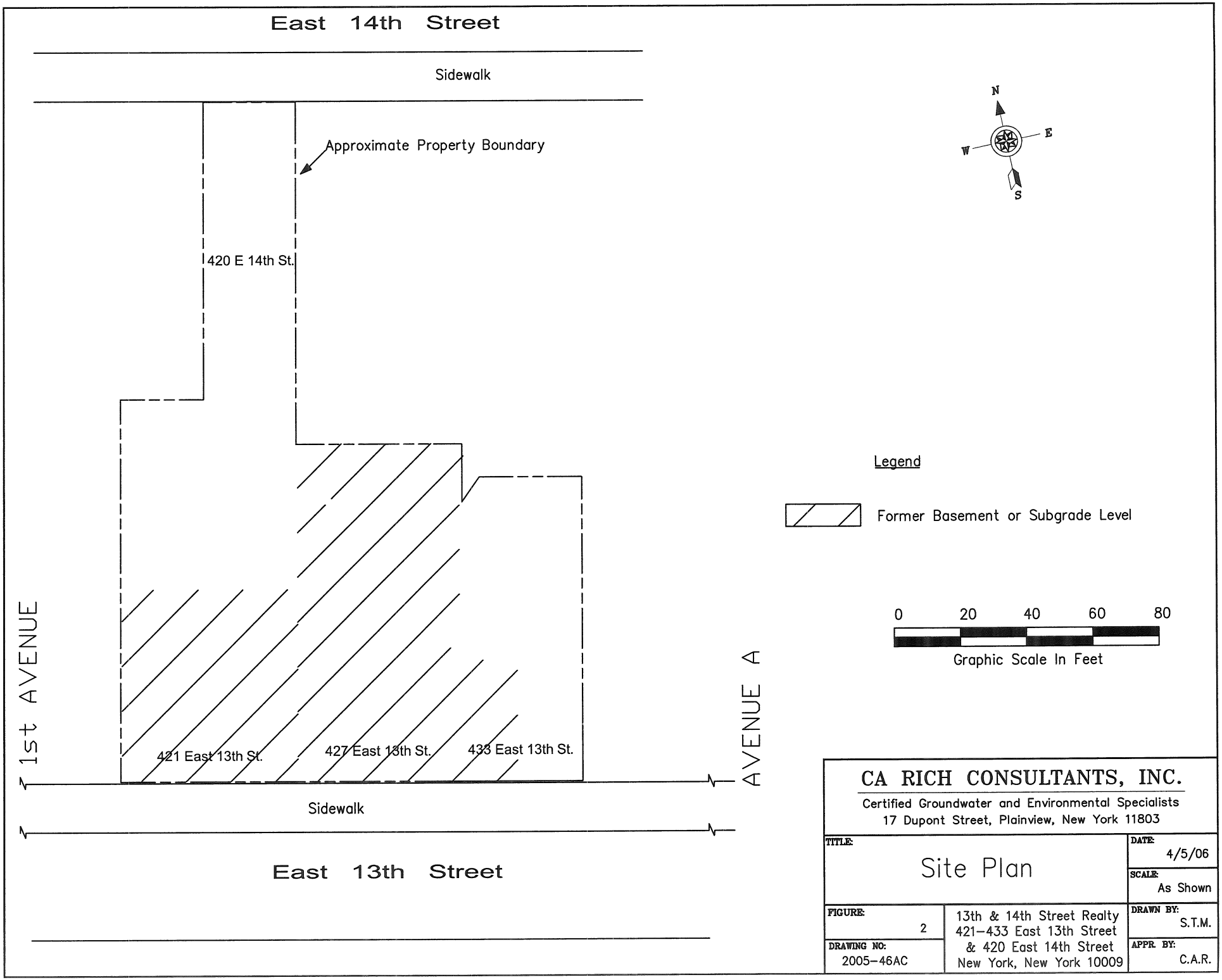
17 Dupont Street, Plainview, NY 11803

TITLE: **PROPERTY LOCATION MAP**	DATE: 4/7/06
	SCALE: AS SHOWN
FIGURE: 1	**13th and 14th Street Realty** **421-433 East 13th Street** **and 420 East 14th Street** **New York, NY 10009**
DRAWING:	DRAWN BY: S.T.M.
	APPR. BY: C.A.R.



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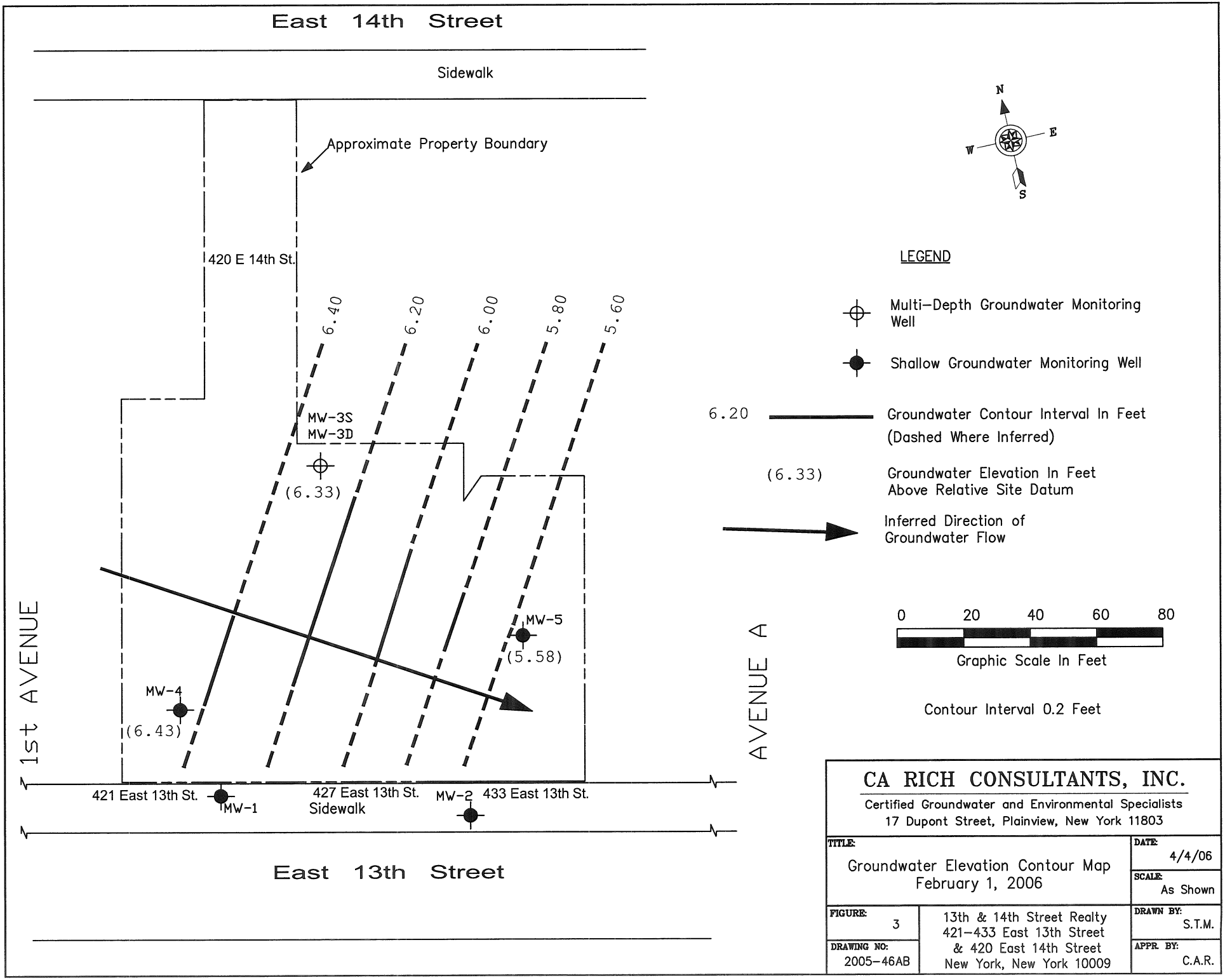
17 Dupont Street, Plainview, New York 11803

TITLE: Site Plan		DATE: 4/5/06
		SCALE: As Shown
FIGURE: 2	13th & 14th Street Realty 421–433 East 13th Street & 420 East 14th Street New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2005–46AC		APPR. BY: C.A.R.



CA RICH CONSULTANTS, INC.
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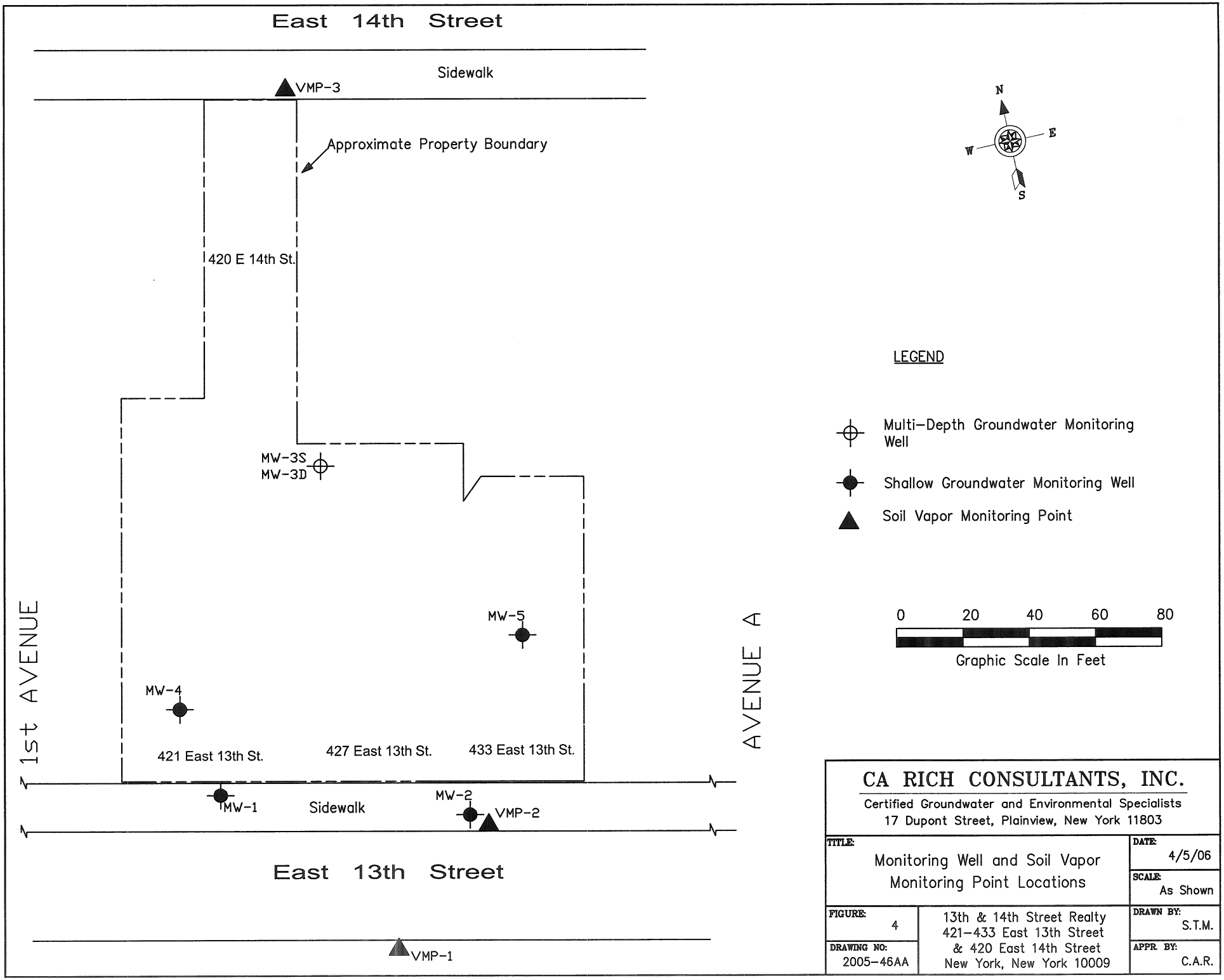
17 Dupont Street, Plainview, New York 11803

TITLE: Groundwater Elevation Contour Map February 1, 2006		DATE: 4/4/06
		SCALE: As Shown
FIGURE: 3	13th & 14th Street Realty 421-433 East 13th Street & 420 East 14th Street New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2005-46AB		APPR. BY: C.A.R.



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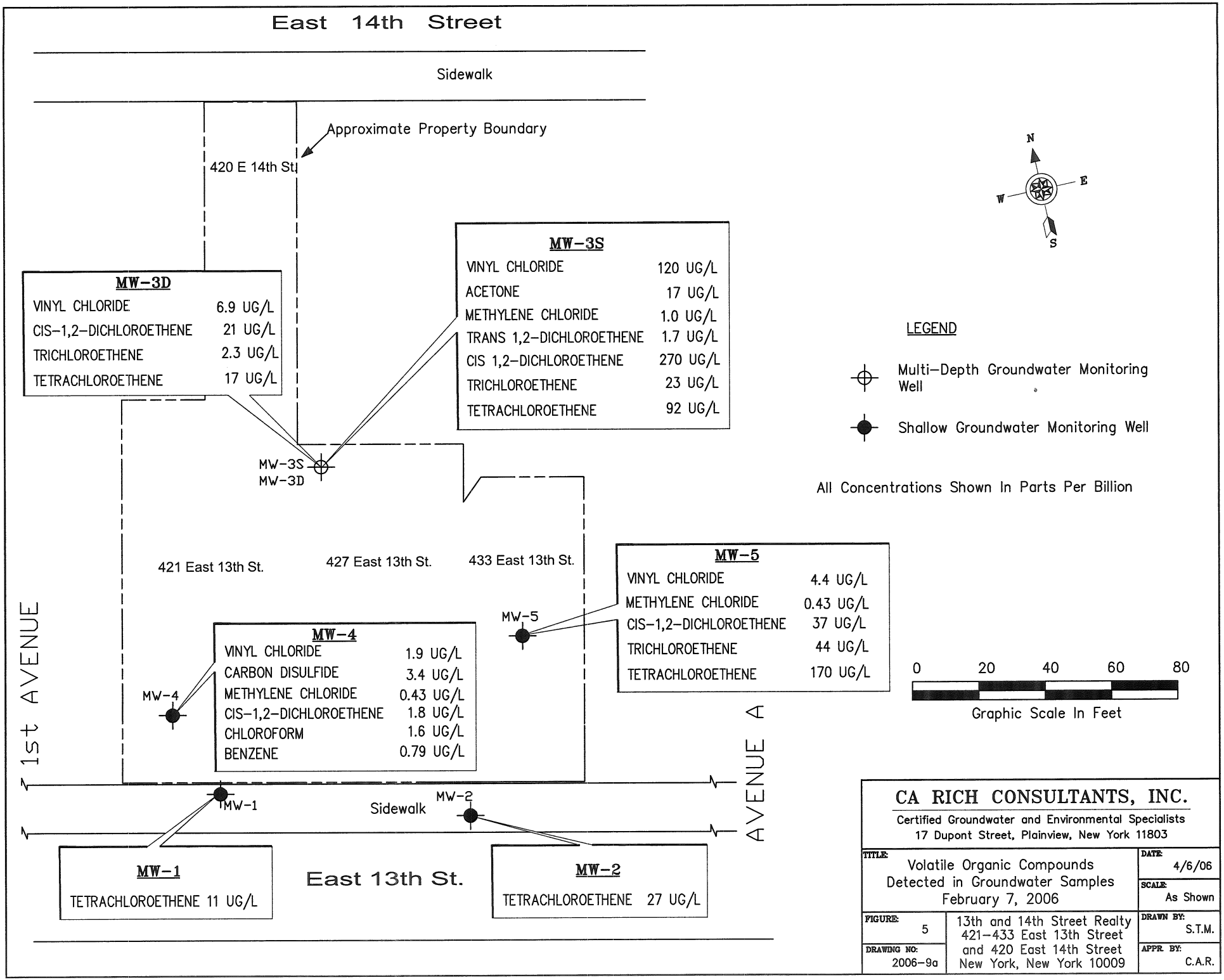
17 Dupont Street, Plainview, New York 11803

TITLE: Monitoring Well and Soil Vapor Monitoring Point Locations		DATE: 4/5/06
		SCALE: As Shown
FIGURE: 4	13th & 14th Street Realty 421–433 East 13th Street & 420 East 14th Street New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2005–46AA		APPR. BY: C.A.R.



CA RICH CONSULTANTS, INC.
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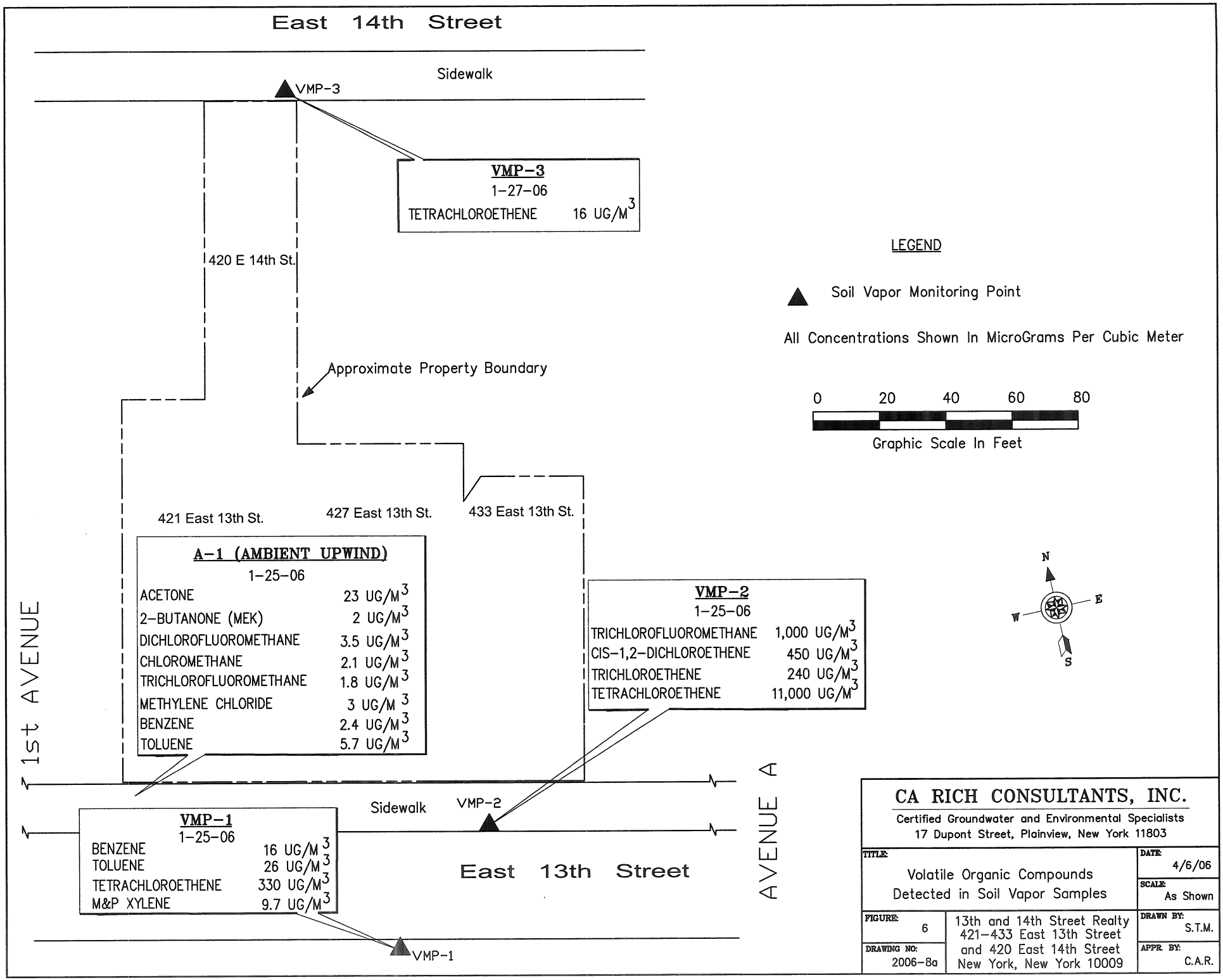
17 Dupont Street, Plainview, New York 11803

TITLE: Volatile Organic Compounds Detected in Groundwater Samples February 7, 2006		DATE: 4/6/06
		SCALE: As Shown
FIGURE: 5	13th and 14th Street Realty 421-433 East 13th Street and 420 East 14th Street New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2006-9a		APPR. BY: C.A.R.



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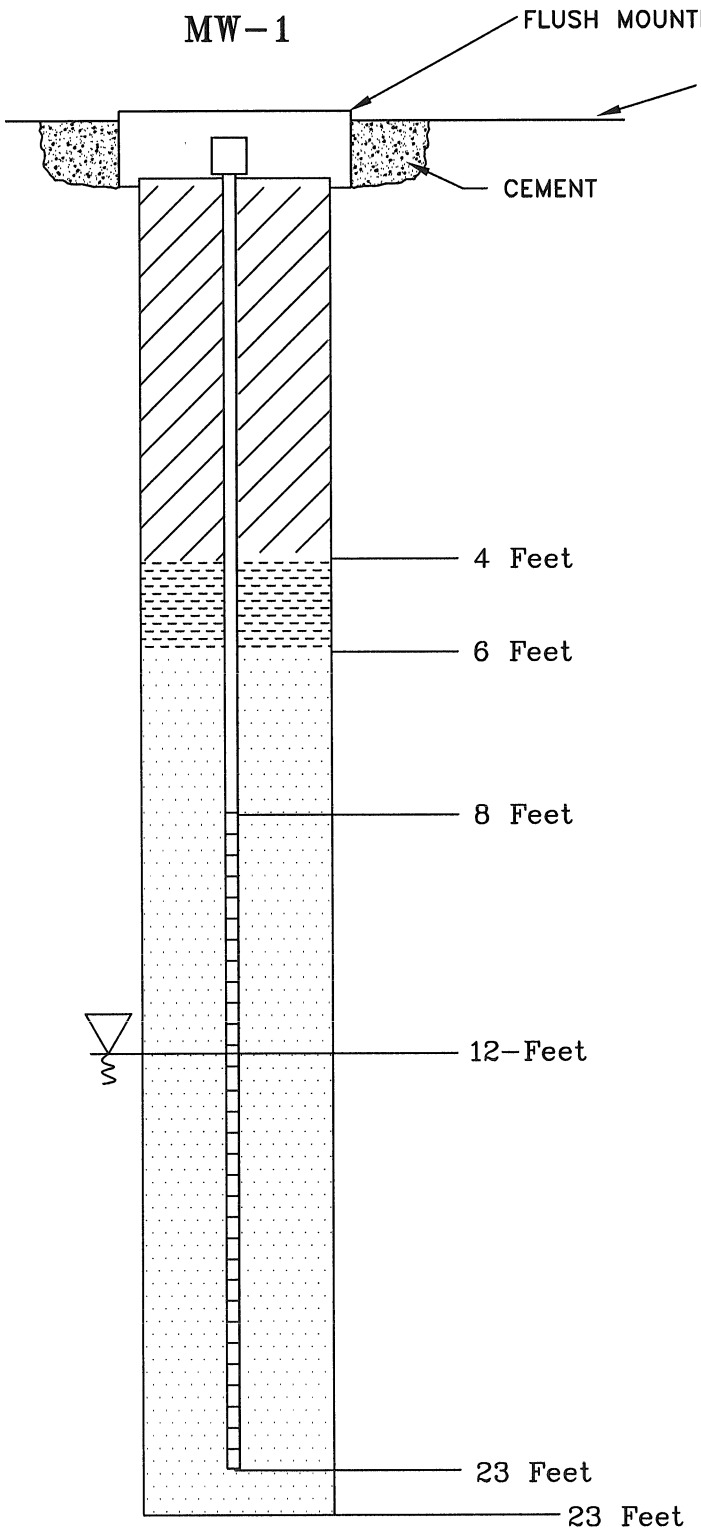
17 Dupont Street, Plainview, New York 11803

TITLE: Volatile Organic Compounds Detected in Soil Vapor Samples		DATE: 4/6/06
		SCALE: As Shown
FIGURE: 6	13th and 14th Street Realty 421-433 East 13th Street and 420 East 14th Street New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2006-8a		APPR. BY: C.A.R.



DRILLING SUMMARY

Drilling Co.: Aquifer Drilling & Testing
Drill Rig Make/Model: Davy Kent Track Rig
Borehole Diameters: 6 5/8 inches
Total Depth: 23 Feet
Geologist: Deborah Shapiro

WELL DESIGN

Casing Material: Sch. 40 PVC
Screen Material: Sch. 40 PVC
Slot Size: 20 (0.020) inches
Diameter: 2 inches
Sand Pack: #2 W.G. Filpro Sand

WELL DEVELOPMENT

Method: Whale Pump
Static Depth to Water: 11.40 Feet
Pumping Rate: 0.85 Gal./Min.
Volume Pumped: 54 Gallons

TIME LOG

	Started	Completed
Drilling:	1/24/06 10:53 am	1/24/06 2:05 pm
Installation:	1/24/06 2:15 pm	1/24/06 2:40 pm
Development:	1/26/06 8:46 am	1/26/06 9:49 am

LEGEND

- Bentonite Seal
- #2 Morie Sand
- Drill Cuttings
- Approximate Water Table Surface

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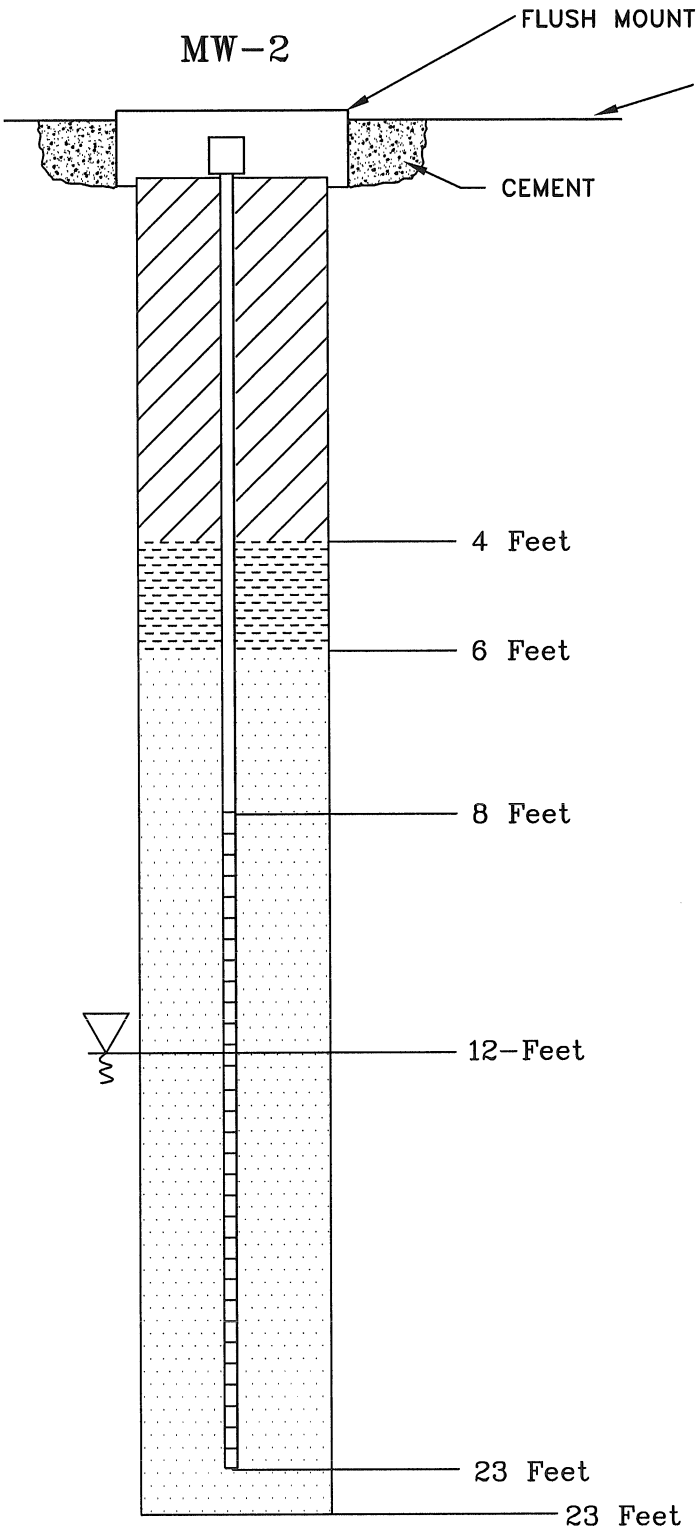
17 Dupont Street, Plainview, New York 11803

TITLE: CONSTRUCTION DETAILS FOR MONITORING WELL MW-1		DATE: 4/6/06
		SCALE: Not to Scale
FIGURE: 7	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2006-2a		APPR. BY: C.A.R.



DRILLING SUMMARY

Drilling Co.: Aquifer Drilling & Testing
Drill Rig Make/Model: Davy Kent Track Rig
Borehole Diameters: 6 5/8 inches
Total Depth: 23 Feet
Geologist: Michael Yager

WELL DESIGN

Casing Material: Sch. 40 PVC
Screen Material: Sch. 40 PVC
Slot Size: 20 (0.020) inches
Diameter: 2 inches
Sand Pack: #2 W.G. Filpro Sand

WELL DEVELOPMENT

Method: Whale Pump
Static Depth to Water: 11.60 Feet
Pumping Rate: 0.85 Gal./Min.
Volume Pumped: 52 Gallons

TIME LOG

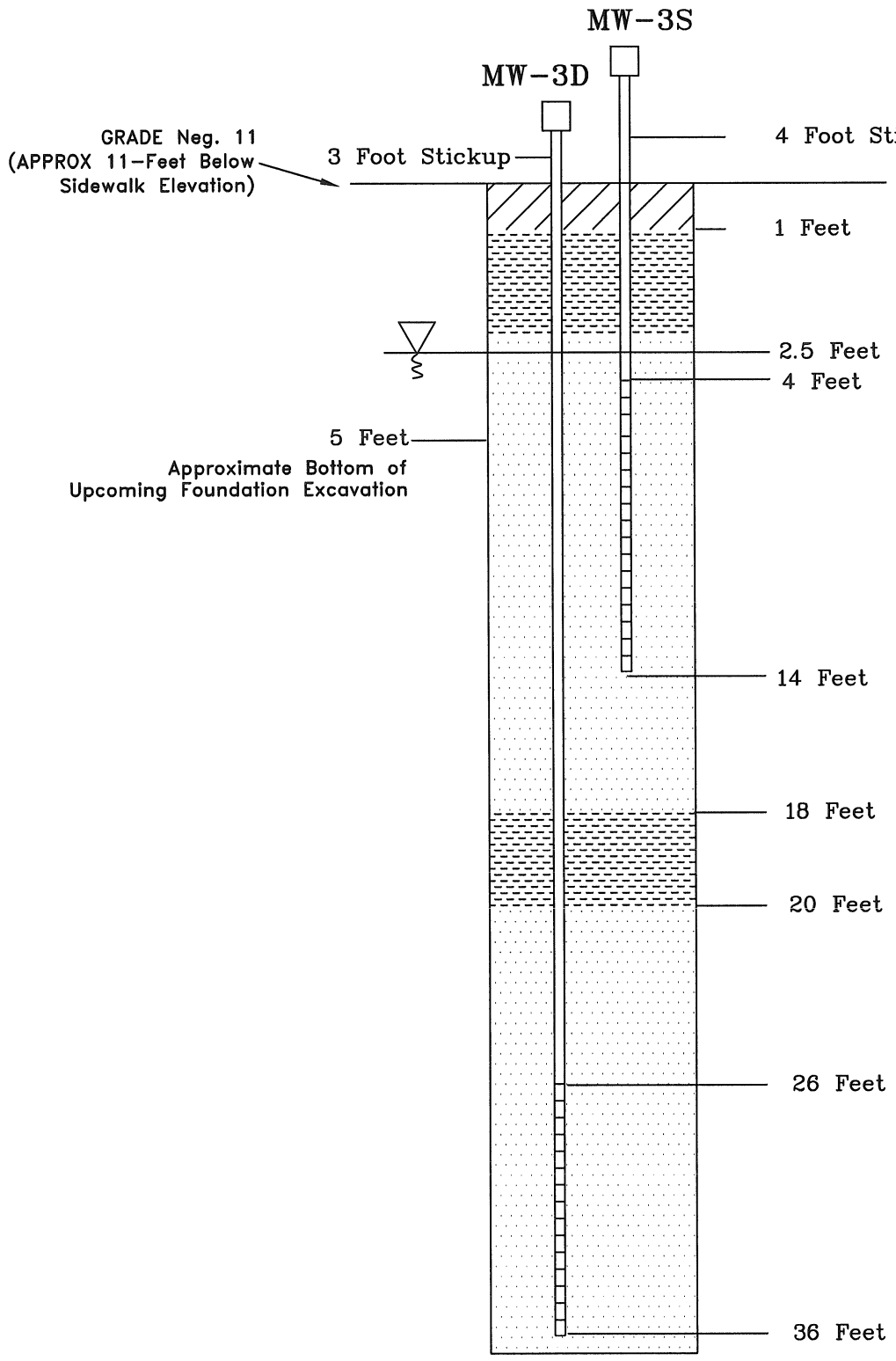
	Started	Completed
Drilling:	1/24/06 3:55 pm	1/25/06 9:30 am
Installation:	1/25/06 9:30 am	1/25/06 10:45 am
Development:	1/26/06 8:46 am	1/26/06 9:49 am

LEGEND

- Bentonite Seal
- #2 Morie Sand
- Drill Cuttings
- Approximate Water Table Surface

CA RICH CONSULTANTS, INC.
Certified Groundwater and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

TITLE: CONSTRUCTION DETAILS FOR MONITORING WELL MW-2		DATE: 4/6/06
		SCALE: Not to Scale
FIGURE: 8	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2006-3a		APPR. BY: C.A.R.



DRILLING SUMMARY

Drilling Co.: Aquifer Drilling & Testing

Drill Rig Make/Model: Davy Kent Track Rig 527

Borehole Diameters: 6 5/8 inches

Total Depth: 36.5 Feet

Geologists: Michael Yager and Stephen Malinowski

WELL DESIGN

Casing Material: Sch. 40 PVC

Screen Material: Sch. 40 PVC

Slot Size: 20 (0.020) inches

Diameter: 2 inches

Sand Pack: #2 W.G. Filpro Sand

WELL DEVELOPMENT

MW-3S (Shallow)

Method: Whale Pump

Static Depth to Water: 7.33 Feet From Top of Pipe

Pumping Rate: 0.85 Gal./Min.

Volume Pumped: 35 Gallons

MW-3D (Deep)

Method: Grundfros Redi Flow 2

Static Depth to Water: 6.87 Feet From Top of Pipe

Pumping Rate: 1.6 Gal./Min.

Volume Pumped: 210 Gallons

TIME LOG

	Started	Completed
Drilling:	1/25/06 1:30 pm	1/26/06 10:21 am
Installation:	1/26/06 10:21 am	1/26/06 12:50 pm
Development:	1/27/06 9:25 am	1/27/06 2:30 pm

LEGEND

- Bentonite Seal
- #2 Morie Sand
- Approximate Water Table Surface
- Drill Cutting

Note: Wells Extend Out of The Current Surface Into A 12-Inch Diameter Steel Pipe that extends 4.5-Feet In The Ground.

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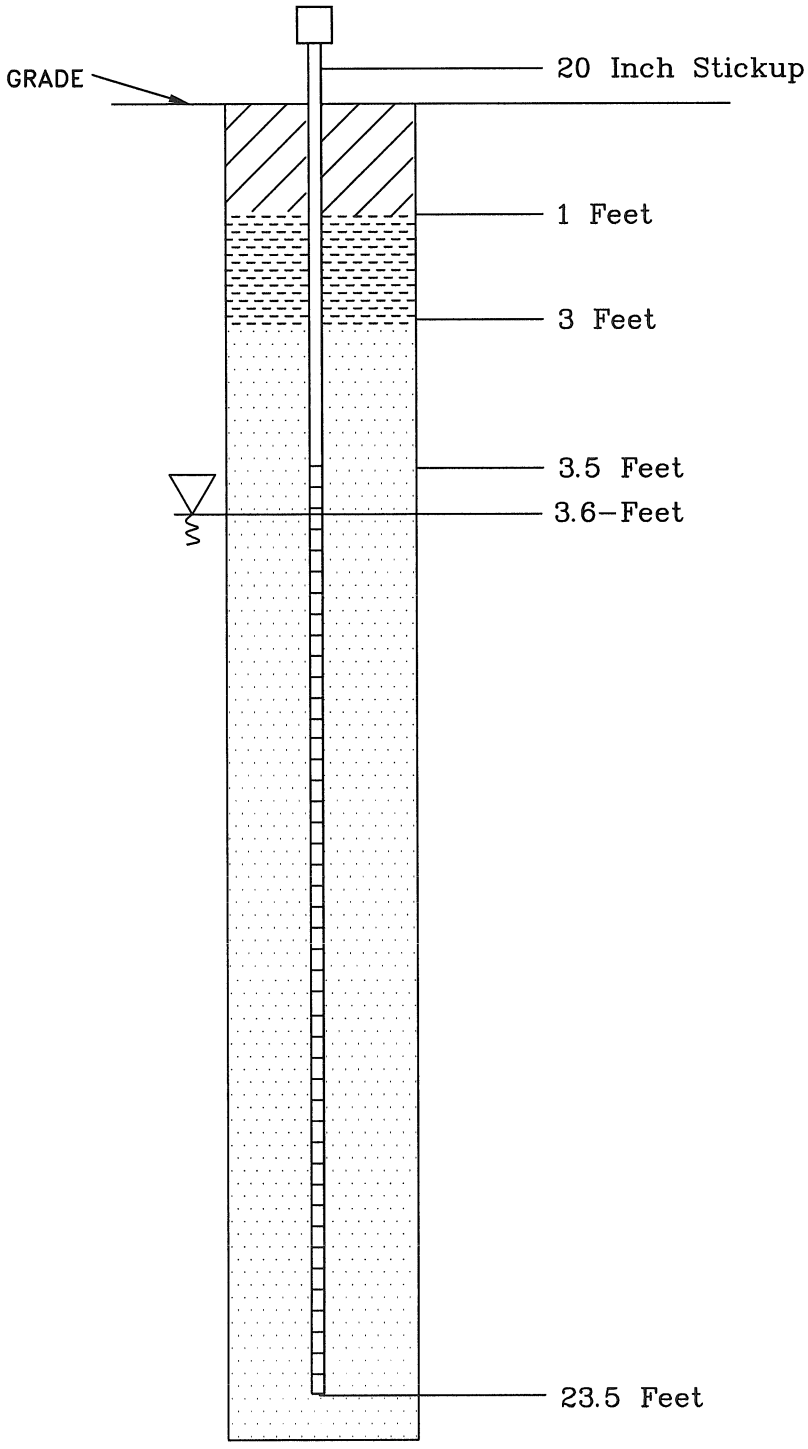
TITLE: CONSTRUCTION DETAILS FOR MULTI-DEPTH GROUNDWATER MONITORING WELL MW-3S & MW-3D		DATE: 4/6/06
		SCALE: Not to Scale
FIGURE: 9	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2005-6a		APPR. BY: C.A.R.

MONITORING WELL MW-4



DRILLING SUMMARY

Drilling Co.: Aquifer Drilling & Testing
Drill Rig Make/Model: Davy Kent Track Rig 527
Borehole Diameters: 6 5/8 inches
Total Depth: 23 Feet
Geologist: Stephen Malinowski

WELL DESIGN

Casing Material: Sch. 40 PVC
Screen Material: Sch. 40 PVC
Slot Size: 20 (0.020) inches
Diameter: 2 inches
Sand Pack: #2 W.G. Filpro Sand

WELL DEVELOPMENT

Method: Whale Pump
Static Depth to Water: 5.45 Feet From Top of Pipe
Pumping Rate: 0.85 Gal./Min.
Volume Pumped: 33 Gallons

TIME LOG

	Started	Completed
Drilling:	1/26/06 1:30 pm	1/26/06 2:22 pm
Installation:	1/26/06 2:22 pm	1/26/06 2:45 pm
Development:	1/27/06 10:15 am	1/27/06 10:49 am

LEGEND

- Bentonite Seal
- #2 Morie Sand
- Drill Cuttings
- Approximate Water Table Surface

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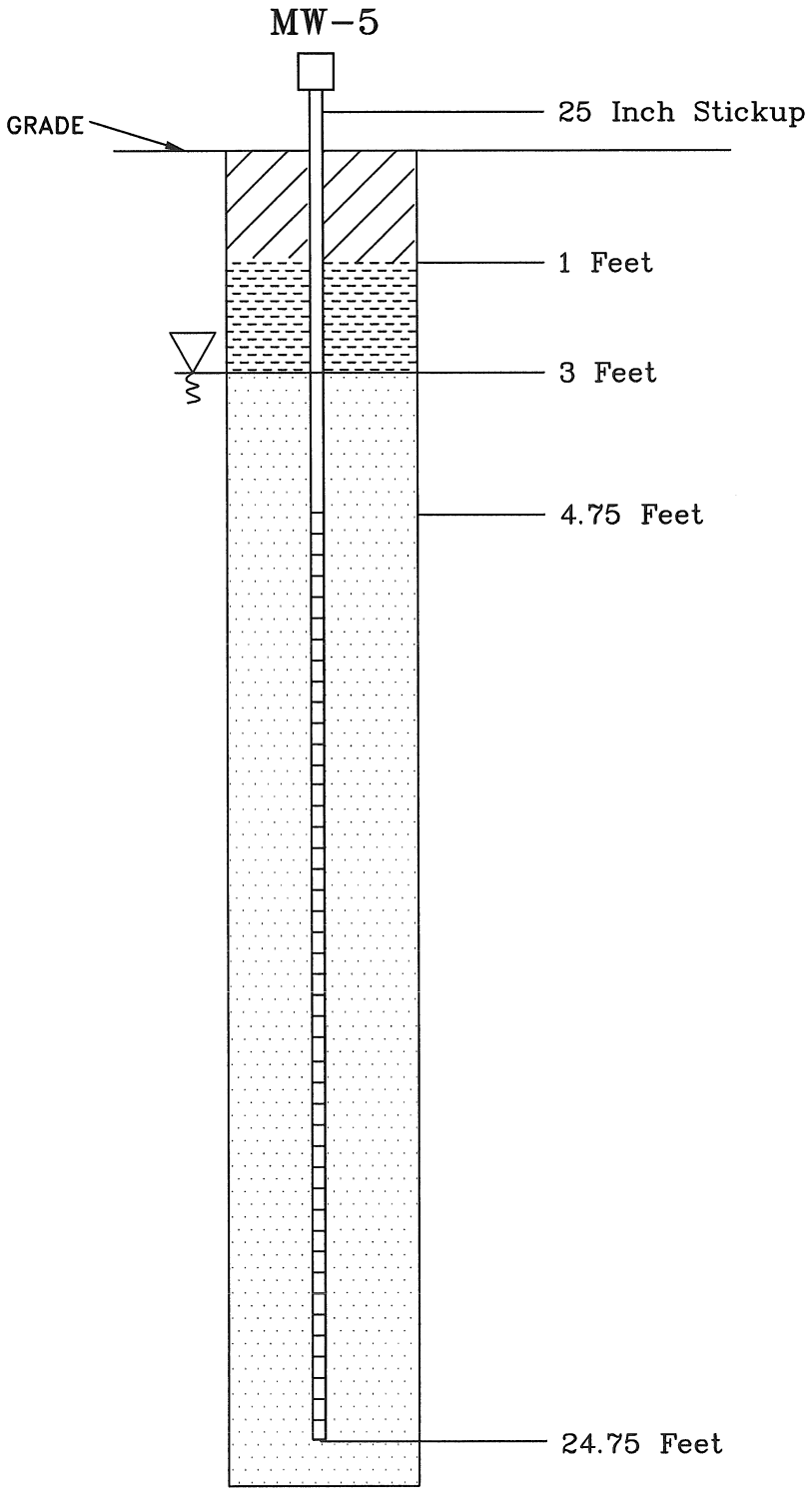
TITLE: CONSTRUCTION DETAILS FOR MONITORING WELL MW-4		DATE: 4/6/06
		SCALE: Not to Scale
FIGURE: 10	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2006-4a		APPR. BY: C.A.R.



DRILLING SUMMARY

Drilling Co.: Aquifer Drilling & Testing
Drill Rig Make/Model: Davy Kent Track Rig 527
Borehole Diameters: 6 5/8 inches
Total Depth: 24.75 Feet
Geologist: Stephen Malinowski

WELL DESIGN

Casing Material: Sch. 40 PVC
Screen Material: Sch. 40 PVC
Slot Size: 20 (0.020) inches
Diameter: 2 inches
Sand Pack: #2 W.G. Filpro Sand

WELL DEVELOPMENT

Method: Whale Pump
Static Depth to Water: 5.16 Feet From Top Of Pipe
Pumping Rate: 0.85 Gal./Min.
Volume Pumped: 62 Gallons

TIME LOG

	Started	Completed
Drilling:	1/26/06 3:00 pm	1/26/06 3:48 pm
Installation:	1/26/06 3:48 pm	1/26/06 4:35 pm
Development:	1/27/06 11:09 am	1/27/06 12:21 pm

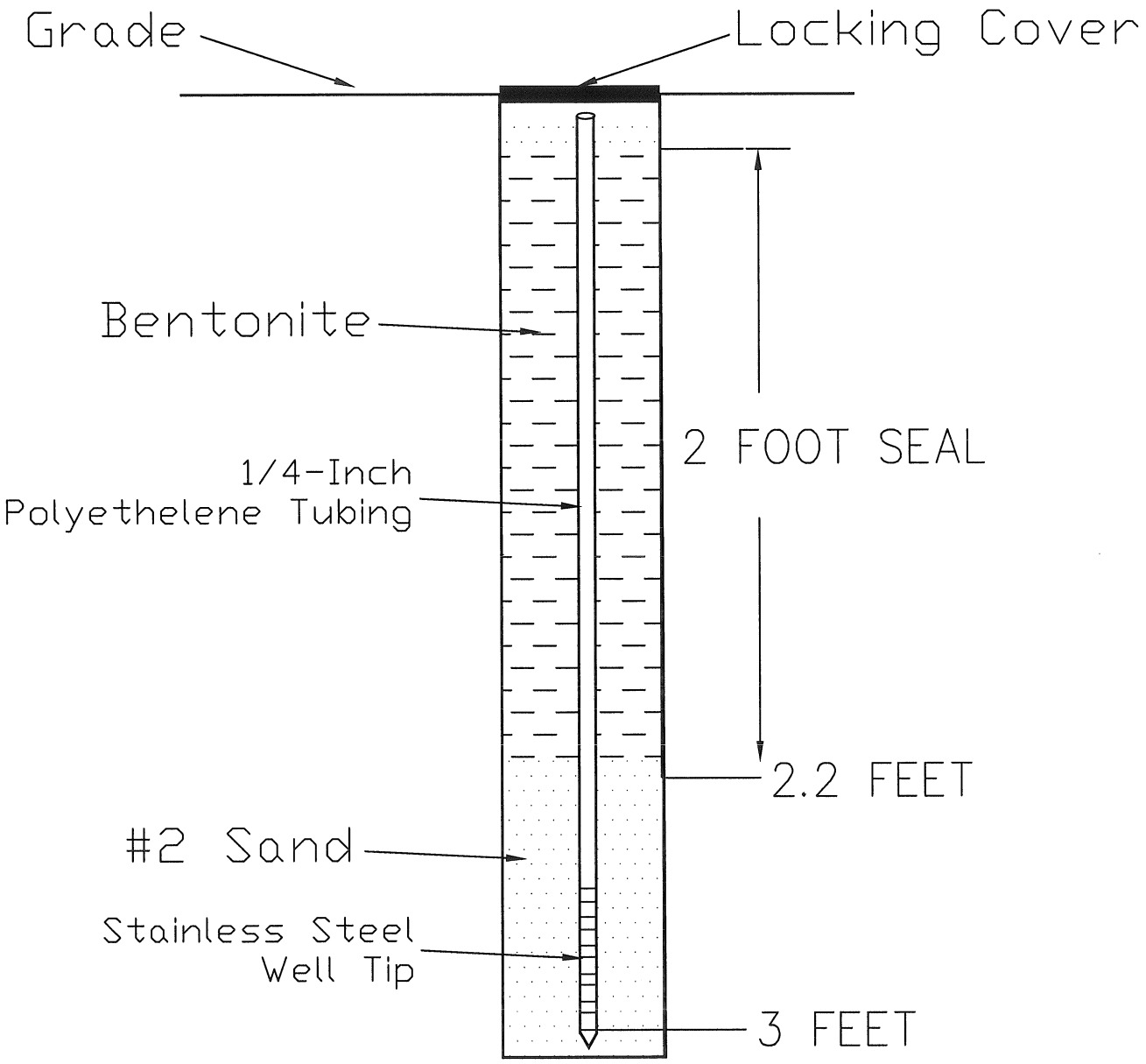
LEGEND

- Bentonite Seal
- #2 Morie Sand
- Drill Cuttings
- Approximate Water Table Surface

CA RICH CONSULTANTS, INC.
Certified Groundwater and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

TITLE: CONSTRUCTION DETAILS FOR MONITORING WELL MW-5		DATE: 4/6/06
		SCALE: Not to Scale
FIGURE: 11	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2006-5a		APPR. BY: C.A.R.

VMP-1, VMP-2 & VMP-3

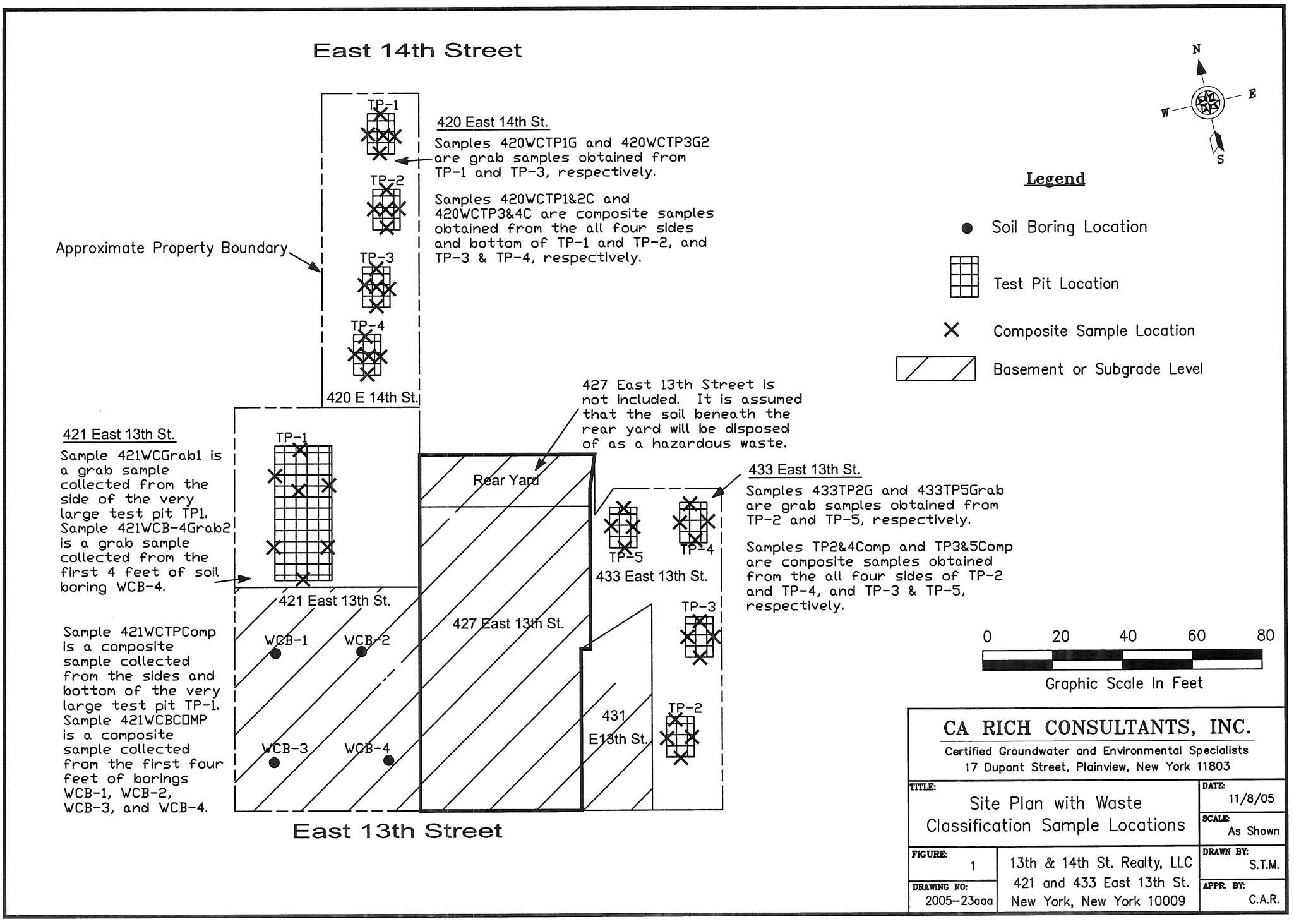


CA RICH CONSULTANTS, INC.		
Certified Groundwater and Environmental Specialists 17 Dupont Street, Plainview, NY 11803		
TITLE: CONSTRUCTION DETAILS FOR SOIL VAPOR POINTS VMP-1, VMP-2, & VMP-3		DATE: 4/6/06 SCALE: Not To Scale
FIGURE: 12	13TH & 14TH STREET REALTY 421-433 EAST 13TH STREET & 420 EAST 14TH STREET NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2005-24A		APPR. BY: C.A.R.

APPENDIX A

WASTE CLASSIFICATION RESULTS FROM SOIL TEST PITS

Test Pit Soil Results for 433 East 13th Street



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17 Dupont Street, Plainview, New York 11803

TITLE: Site Plan with Waste Classification Sample Locations	DATE: 11/8/05
	SCALE: As Shown
FIGURE: 1	DRAWN BY: S.T.M.
DRAWING NO: 2005-23aaa	APPR. BY: C.A.R.

13th & 14th St. Realty, LLC
421 and 433 East 13th St.
New York, New York 10009