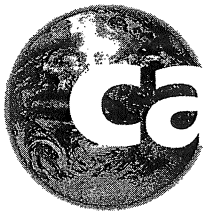


Brownfield Cleanup Program
Remedial Investigation (RI) Work Plan
"CLUB EAST"
421-433 E. 13th St. & 420 E. 14th St., New York, NY 10009

June 2005

Prepared for:

13TH AND 14TH STREET REALTY, LLC
P.O. Box 1073
New York, NY 10276

Prepared by:

CA RICH CONSULTANTS, INC.
17 Dupont Street
Plainview, NY 11803
(516) 576-8844

CA RICH
ENVIRONMENTAL SPECIALISTS

June 28, 2005

New York State Department of
Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7020

Attention: Kelly Lewandowski
Chief, Site Control Section

Re: **Brownfield Cleanup Program**
Remedial Investigation Work Plan
"Club East"
421-433 E. 13th St. & 420 E. 14th St.
New York, New York

Dear Ms. Lewandowski:

Attached is a Remedial Investigation (RI) Work Plan for the above-referenced project. As per our telephone call with Mr. Robert Cozzy, we are submitting this document to the NYSDEC along with the BCP Application and an Interim Remedial Measures (IRM) Work Plan for review and acceptance into the Brownfield Cleanup Program. As requested, complete copies of the BCP Application, this RI Work Plan and the IRM Work Plan have been sent to the addressees named below and we have included a digital CD of the same for your convenience.

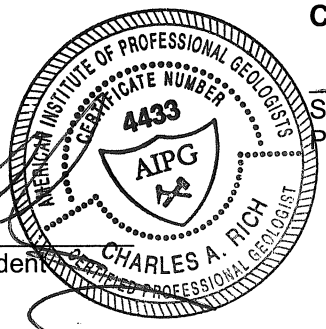
We look forward to moving ahead with the necessary remedial investigation activities under the Brownfield Program. If you have questions or need any additional detail regarding this Plan or the BCP Application, please do not hesitate to call us, immediately.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

Stephen Malinowski
Project Manager

Reviewed by:



Charles A. Rich, President
Attachments

cc: Robert Cozzy, - NYSDEC Albany (4 copies)
Robert Kaliner, 13th and 14th Street Realty, LLC.
Jeff Laccetti - NYSDOH
Rosalie Rusinko, Esq. – NYSDEC
Lawrence P. Schnapf, Esq.
Daniel C. Walsh Ph.D.

TABLE OF CONTENTS

Note: Copies of previous investigation reports are included in attachment 3 of the BCP Application for this Site.

Remedial Investigation Work Plan
"CLUB EAST"
13TH & 14TH STREET REALTY, LLC
421-433 E. 13th St. & 420 E. 14th St., New York, NY 10009

1.0 INTRODUCTION

The following Remedial Investigation Work Plan was prepared by CA Rich Consultants, Inc. (CA RICH) of Plainview, NY on behalf of 13th & 14th Street Realty, LLC (also called "Club East", or the "Site" or "Property"), the prospective purchaser Contract Vendee, and Brownfield Volunteer relative to a planned residential redevelopment and improvement of 421-433 East 13th St. and 420 East 14th St. in Manhattan. The Volunteer wishes to enter into a BCP Agreement with NYSDEC to perform testing and remedial activities at the above-captioned Property (the Site). This Remedial Investigation Work Plan (RIWP) is based upon the guidelines set forth in Section 3 of NYSDEC's Draft Brownfield Cleanup Program Guide dated May 2004, NYSDEC's DER-10 Technical Guidance for Site Investigations and Remediation, as well as discussions between CA RICH and NYSDEC representatives. For the purposes of this RIWP, the contaminants of concern are perchloroethene (a.k.a. PCE or tetrachloroethene) and its degradation products. This volatile organic compound (VOC) is a residual contaminant allegedly attributable to discharges from a former dry cleaning operation on the 427 East 13th St. portion of the Property.

This Work Plan is purposely designed to accompany the Brownfield Cleanup Program Application for this Site. It addresses the remaining remedial investigation to be completed as a follow-up investigation and updating assessment based upon the results already reported from two earlier Phase II studies by others on the Property - along with CA RICHs recently collected waste characterization, soil boring and uppermost groundwater quality test data. To summarize, the Property has been impacted with perchloroethylene contamination of the soil and groundwater as reflected by testing data collected thus far. Elevated concentrations of PCE occur in the soil and uppermost groundwater within the unconsolidated soil/fill deposits beneath the Property. The depth to groundwater is approximately 13 feet below street grade. The horizontal direction of groundwater flow is assumed eastward at this time with eventual groundwater discharge into the East River. The distance from the Site to the East River is about 2,500 feet.

Previous assessments and investigations have already been performed at this Site for environmental due diligence purposes. The following list identifies earlier studies and copies of these reports are included in Attachment 3 of the BCP Application.

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

The purpose of this RIWP is to outline the scope and protocol to be followed in the further investigation of groundwater impacts identified in the previous investigations and evaluate potential off-site soil vapor issues for inclusion in the requisite qualitative exposure assessment presenting a plan to:

1. Properly characterize the nature and extent of identified on-site groundwater contaminants; and,
2. Produce data of sufficient quantity and quality to support the development of an acceptable Remedial Work Plan for on-site groundwater issues.

2.0 PHYSICAL SITE CHARACTERISTICS

2.1 Site History/Description

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

The property consists of approximately 16,827 square feet of land occupied by adjoining one-story, two-story and three-story buildings. 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, Commercial (Local Retail) District. The Site buildings are currently occupied by East Side Lumber, Personal Touch Valet, LaChapelle Photo Studio, White Express Cleaning and a vacant grocery store. A Lease Termination Notice was sent to all tenants by the current Property Owner requesting that they vacate the premises by June 30, 2005

The existing buildings comprise most of the Property and were built between 1903 and 1920. Previous occupants include a church, wagon builder, and a dry cleaning facility. The 1944 through 1996 Sanborn Maps show that the 431-433 13th Street part of the site (easternmost) was occupied by the New York City Department of Sanitation with wood and oil storage. The building located at 427 E13th 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". A Site Plan is included as Figure 2.

2.2 Surrounding Land Use

Abutting the Site to the east is a one-story U.S. Post Office distribution facility, which has been shown on the Sanborn maps since 1950. Abutting the Site to the west is the Immaculate Conception School also shown on the Sanborn maps since 1985. Abutting the rear of the Site to the north on E. 14th St. are four-story residential apartment buildings, with retail stores at street level. Also to the north, across E. 14th Street is a one-story grocery store – "Associated Supermarket". The surrounding area land use 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 10-15 feet above mean sea level. The geology in the area of the Site, as obtained from the City of New York Department of General Services, Subsurface Exploration Section (see Phase I Report) consists of unconsolidated clay, sand and gravel. The underlying buried bedrock is Manhattan Schist.

Site specific work conducted to date suggests that the uppermost groundwater surface under unconfined conditions (i.e. the water table) is encountered at a depth of approximately 12-13 feet below land surface within the unconsolidated glacial sediments. Although no site-specific groundwater flow information has been developed to date, it is anticipated that shallow groundwater flow underlying the Property will generally mirror local topographic relief. Based on the relatively flat topography, the general horizontal regional direction of groundwater flow can be inferred to be east-southeast toward the East River.

Actual groundwater flow direction can only be determined by measurement and analysis of well water levels from properly surveyed monitoring wells. Based upon the Property's proximity to East River, it is anticipated that the Property is located in an area of groundwater discharge as opposed to a deep recharge area. Underlying groundwater is not used for potable supply purposes, as such, no potable resources appear to be threatened by local groundwater contamination.

2.4 Evaluation of Previous Soil & Groundwater Sample Analyses

As outlined in Section 1.0, a series of previous environmental assessments and investigations were performed by others on the subject Property. Copies of the historical environmental documentation are included in Attachment 3 of the BCP Application. Most notably, two Phase II Investigations were conducted in 2005. These are identified as 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 presently-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 E. 13th St.) was found to contain elevated levels of PCE above NYSDEC TAGM 4046.

The PCE concentrations in soil underlying the Site as tested in the EBI study in April ranged in concentration from 52 parts per billion (ppb) up to 6,920 ppb. Groundwater occurs at 13-15 feet below street grade and the groundwater samples that were collected with these soil samples ranged in PCE concentration from non-detected up to as much as 12,600 ppb (12.6 ppm). It was concluded that the PCE soil contamination was attributable to the former dry cleaning operations and a spill was reported to the NYSDEC (NYSDEC Spill #0501135). The reported Spill was subsequently Closed-out on May 3, 2005 because it was not associated with a petroleum discharge. According to the NYSDEC, this inactive Spill Case has been moved from NYSDEC's Spills Group to the Division of Hazardous Waste and is awaiting possible reassignment.

Based upon the earlier documented information, during the week of June 5, 2005, CA RICH on behalf of the interests of the Applicant, mobilized a Geoprobe test drilling rig to further investigate, confirm, and expand the Phase II test data collected earlier by EBI and Soil Mechanics. The primary purpose of this additional soil testing work was to test impacted soil on-site for Waste Characterization disposal-related characteristics in order to determine how the soil will be handled with respect to the planned full-scale soil excavation for the new building foundation. It includes soil removal and regulated off-site transport & disposal of these materials as either hazardous or non-hazardous soil. The test results were forwarded to several qualified disposal facilities and Waste Brokers for review and potential acceptance. A copy of the composite soil sample test results and additional VOC tests results are included in Appendix A of the IRM Work Plan for this Site.

The PCE concentrations in the soil underlying the Site tested recently (June '05) by CA RICH ranged from non-detect to only 170 ppb, much lower than the EBI results. Based on our review of these newer results and the boring logs included in EBI's Report it appears that the most elevated samples may have been collected from soil below the groundwater interface. The results of recent groundwater tests collected from 1-inch diameter micro-wells installed on the Property indicate that the presumed upgradient location (MCW-3) does not contain PCE. However, the shallow groundwater beneath the "Rear Yard" (MCW-1) contains 4,100 ppb of PCE and the presumed downgradient location (to the east-southeast) contains 42 ppb of PCE. The results for

a deeper sample collected from 12-17 feet below street level in the "Rear Yard" indicate that the levels of PCE drop to 140 ppb. The NYSDEC groundwater standard for PCE is 5 ppb. A test boring location map with associated 'box plot' PCE concentrations is presented in Figures 3 and 4. The associated lab reports are included as Appendix B of the IRM Work Plan for this Site.

3.0 INVESTIGATION

3.1 Objectives

The goal of the Investigation phase of this project is to:

1) Determine the nature and extent of groundwater contamination at the Site; and
2) Obtain the necessary information needed to design and implement a remediation program to address on-site groundwater and potential soil vapor issues for this Site compatible with Site preparation and redevelopment.

We propose to use the data developed by EBI and the more recent additional data developed by CA RICH as a point of departure and to expand upon the available information. The scope of the investigation will include installation and sampling of monitoring wells and off-site soil gas. A utility mark-out will be requested prior to performing the subsurface investigation.

3.2 Installation, Sampling and Analysis of Permanent Groundwater Monitoring Wells

One water table monitoring well will be installed in the sidewalk in the westernmost front of the Property on the E. 13th Street sidewalk to potentially serve as an apparent upgradient groundwater testing location. The redevelopment plan is not expected to extend excavation into the sidewalk area on either E. 13th or E. 14th Streets, although there may be a few areas where excavation and/or associated shoring activities may necessitate cutting into certain parts of the sidewalk areas by 4-5 feet or so. None of the redevelopment-related excavation will extend to street curbs thus presumably preserving any monitoring wells installed directly in the sidewalk. A second additional water table monitoring well will be installed along the easternmost sidewalk fronting the Property on E. 13th Street. A third monitoring well upgradient or laterally sidegradient of the impacted area on-site may be appropriate on the E. 14th Street sidewalk.

These three monitoring wells will be properly surveyed and comparative well water levels measured in them so that they can be utilized to interpret the configuration and horizontal direction of groundwater flow. Groundwater samples collected from these wells will be analyzed and used to evaluate the horizontal extent of elevated PCE dissolved in the uppermost groundwater, and to monitor the effectiveness of the remediation and dewatering program once it is placed into operation. These two-inch diameter PVC wells will be standard monitoring wells installed flush to grade, using 0.020-inch slotted (20 slot) pipe and No. 1 sand as provided by the Jesse Morie Company. These water table wells will have a 15-foot long screen set at least 10 feet into the encountered water table.

In the event of a possible 30-foot deep excavation for construction purposes, deeper perimeter monitoring wells may be added to the Site to monitor any planned future long-term PCE remedial activity in the groundwater ongoing beneath the new building (for example, a potential 'built-in' air sparging & perimeter SVE system with vapor barrier as part of building design, if needed).

In the event of PCE-contaminated groundwater occurring at depth, a temporary multi-depth monitoring well cluster (couplet) may be installed in the rear yard and/or permanently installed downgradient of the Rear Yard area. The purpose of this well cluster/couplet is to delineate the vertical extent of PCE contamination in the groundwater and provide sufficient subsurface groundwater PCE profiling information to facilitate design of a planned short-term (pre-construction) and/or long-term (post construction) groundwater remediation system, as necessary.

A hollow stem auger drill rig will be mobilized to the Site. After the 4-inch diameter augers described above are removed from the ground, 6-inch diameter hollow stem augers equipped with a bottom plug will be advanced. A couplet of two, 2-inch diameter wells will be installed within the 6-inch augers. The well couplet will be installed with screened settings set at 15 to 30 feet and 30 to 45 feet.

These two-inch diameter PVC wells will be installed using 0.020-inch slotted (20 slot) pipe and No. 1 sand as provided by the Jesse Morie Company. Seals will be placed between the screens by pumping a thick bentonite slurry into the bottom of the augers using a side-discharging tremie line. The deeper of the two wells will be completed with drill cuttings placed above the upper bentonite seal and will be furnished with locking caps and a bolting, flush-mounted cover.

Each of the wells will be developed using a small-diameter, submersible pump. After the installation of all the wells is completed, the elevations of the top of the well casings will be surveyed by a NYS-Licensed Surveyor to the nearest 0.01 of a foot. The depth to water will be measured and a water table elevation contour map will be prepared.

Approximately one to two weeks after the development of the wells, we will return to collect groundwater samples. A volume of at least three times the volume of the well will be removed from each well using a low flow rate submersible pump. A sample of the groundwater will then be collected directly from the pump discharge using laboratory-issued 40 mil vials. Water samples from each well will be analyzed for halogenated VOCs using USEPA Method 8260 and NYSDEC ASP Category B deliverables. During this initial round of sampling the following samples will be collected for QA/AC purposes in accordance with the attached Quality Assurance Project Plan (QAPP): 1 trip blank, 1 field blank, 1 duplicate sample, 1 matrix spike and 1 matrix spike duplicate. The groundwater laboratory data will be reviewed by a qualified Data Validator and a Data Usability Summary Report (DUSR) will be prepared.

All excess drill cuttings and purge water will be drummed and sampled for proper off-site disposal. CA RICH will contact the NYCDEP to arrange for permission to discharge this purge water, and later to discharge construction-related dewatered groundwater (pending analyses and any necessary pre-treatment) to the municipal sewer. The Department will evaluate if additional groundwater sampling is required after reviewing the analytical data.

3.3 Soil Vapor Intrusion Sampling

CA RICH will collect off-site soil vapor samples beneath the sidewalk. At the present time, it is envisioned that one soil vapor sample will be collected in a downgradient direction on the northern sidewalk of E. 13th Street and a second soil vapor sample will be collected on the southern sidewalk of E13th Street (across the street) directly opposite the site. In addition, one ambient outdoor (rooftop) air sample will be collected by Summa canister as a background sample. No samples will be collected within the buildings on-site as it is anticipated that they will be demolished in the near future. The soil vapor samples and the rooftop ambient air sample will be analyzed for PCE and reported with a detection limit of 5 ug/m^3. Sampling will be conducted in accordance with NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (Public Comment Draft February 2005).

3.4 Sampling QA/QC Protocol

All on-site sampling equipment will be decontaminated between each use in the following manner: laboratory grade detergent and fresh water wash using scrub brush, followed by two fresh water and final air dry. Decontaminated sampling equipment will then be wrapped in clean (unused) aluminum foil pending use for sample collection. The submersible pump used for groundwater sample collection will be decontaminated between sample collection by passing the detergent and water mixture through the pump, followed by two fresh water rinses. Gloves worn for sample handling will be discarded between sample collections.

Dedicated, new polyethylene tubing will be used at each well location for purging and sampling. Samples will be packaged in laboratory-issued sample containers by CA RICH personnel and stored on ice pending same day or overnight shipment to CA RICH's subcontracted State-Certified laboratory. Groundwater samples will be collected directly from the decontaminated sampling pump into laboratory-issued 40-milliliter VOC vials. The vials will be filled completely and checked to ensure no air bubbles are present. Additional field and laboratory QA/QC protocol is included in the attached QAPP (Appendix B).

3.5 Health & Safety

A site-specific Health and Safety Plan (HASP) has been prepared for the field portion of the Remedial Investigation. The HASP will cover all activities in the 'investigation area', as well as emergency procedures and available emergency services in proximity to the Site. The Hasp is included as Appendix C.

3.4 Remedial Investigation Report

Once the laboratory results are obtained, an Investigation Report will be prepared. At a minimum, the Investigation Report will include the following items:

- A description of the work performed;
- Boring logs for the soil borings;
- Well construction details;
- Laboratory summary tables and maps;
- An off-site Qualitative Exposure Assessment (see Appendix C);
- A Data Usability Summary Report including the laboratory data;
- A water table map; and
- Recommendations for the incorporating a vapor barrier and groundwater treatment system into the Site redevelopment plans.

3.5 Community Relations

A detailed mailing list or contact list of nearby residents, business, public officials and citizen groups is included as Attachment 6 of the BCP Application. We will update this list as needed to include any other interested parties.

4.0 CONCEPTUAL INTERIM REMEDIAL MEASURE DESIGN

Since time is of the essence in this Project, and in an effort to expedite requisite NYSDEC review of the BCP Application, the conceptual remediation proposed for this site is offered in two phases. To do so, the Applicant intentionally includes a separate "Interim Remedial Measures Work Plan" in addition to the "Remedial Investigation Work Plan" described herein, for separate review by NYSDEC and NYSDOH, as part of its completed BCP Application. It is hoped that the work involved in both interrelated Work Plans, subject to NYSDEC review and approvals, may be expedited in this fashion.

In short, the Applicants planned Brownfield Redevelopment Plan is to first demolish and remove the existing structures so that the site can be properly prepared for excavation and shoring as needed. At this time, construction-related excavation is planned to advance to either only 15-foot depths just below the water table that occurs at 12 feet below street grade to enable new construction of a one-level basement, or down to a possible 30-foot depth or so to enable new construction of a two-level deep basement. The new residential building will have a basement or basement plus underground parking and will total 100,000 square feet in size – consisting of five or six stories.

It is anticipated that all of the PCE-impacted soil on-site (as well as any related impacted construction debris) will be excavated and removed as part of the IRM activities. The second phase of remediation will address impacted groundwater. At this time, it is not known whether, and to what extent, groundwater remediation will be required but it is anticipated that some remediation of groundwater is, indeed necessary, given the elevated concentrations already detected.

During Site redevelopment, removal of significant quantities of groundwater may be necessary for construction of the planned underground garage. Prior to dewatering activities, groundwater samples will be collected and analyzed to obtain a NYCDEP discharge permit. Based upon the documented levels of CVOCs in on-site groundwater, some form of groundwater treatment (e.g. air stripping and/or carbon filtration) will likely be necessary. As such, the construction-related dewatering operation will act as a temporary pump & treat system for groundwater remediation. Following complete removal of the source soils and cessation of the dewatering, should residual groundwater contamination be present, additional groundwater treatment using other conventional methods (e.g. air sparging/SVE or chemical oxidation) may be applied to achieve acceptable CVOC levels.

5.0 SCHEDULE

The following Schedule is provided for this Brownfield Project.

Plans	Schedule
BCP Application including:	
Submission of Investigation Work Plan Submission of Interim Remedial Measures Work Plan Citizen Participation (CP) Contact List	June 2005
NYSDEC Eligibility Determination & Execute BCP Agreement	August 2005
Interim Remedial Measure	30 days after DEC approval or
IRM Reporting	30-90 days after Soil Removal
Site Investigation Activities	
CP Plan Installation of monitoring wells and collection of subsurface soil and soil vapor samples	30 days after DEC approval
Collection and analysis of groundwater samples	60 days after DEC approval
Report Preparation	
Preparation of Investigation Report & Qualitative Exposure Assessment Preparation of Alternatives Analysis & Remedial Action Report EC/IC's and OM&M NYSDEC Remedy Selection & COC	180+ days after DEC approval

6.0 REFERENCES

1. Airtek March 1, 2004; Phase I Environmental Site Assessment of 421-433 East 13th Street and 420 East 14th Street, New York, New York 10009

2. Soil Mechanics, Phase II Investigation

3. Enviro Business, Inc., Phase II Investigation

4. H.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.

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

6. NYSDEC, October 22, 1993, Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values.

Figures

APPROX. SCALE (ft.)

0 2,000 4,000

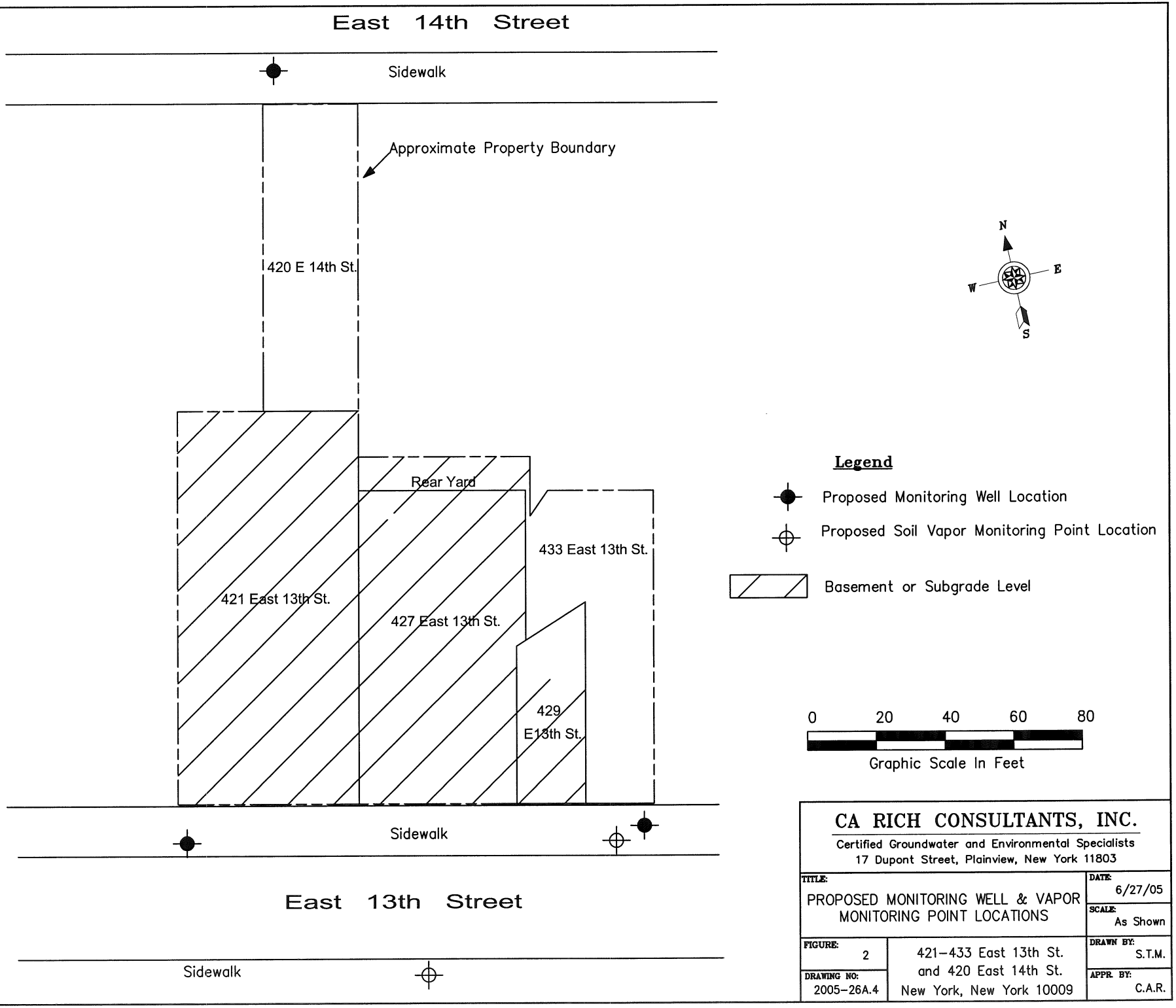
N

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

CA RICH CONSULTANTS, INC.

Certified Ground Water and Environmental Specialists
17 Dupont Street, Plainview, NY 11803

TITLE: **PROPERTY LOCATION MAP**	*DATE:* **6/16/05**
	SCALE: **AS SHOWN**
FIGURE: **1**	**CLUB EAST** **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.**

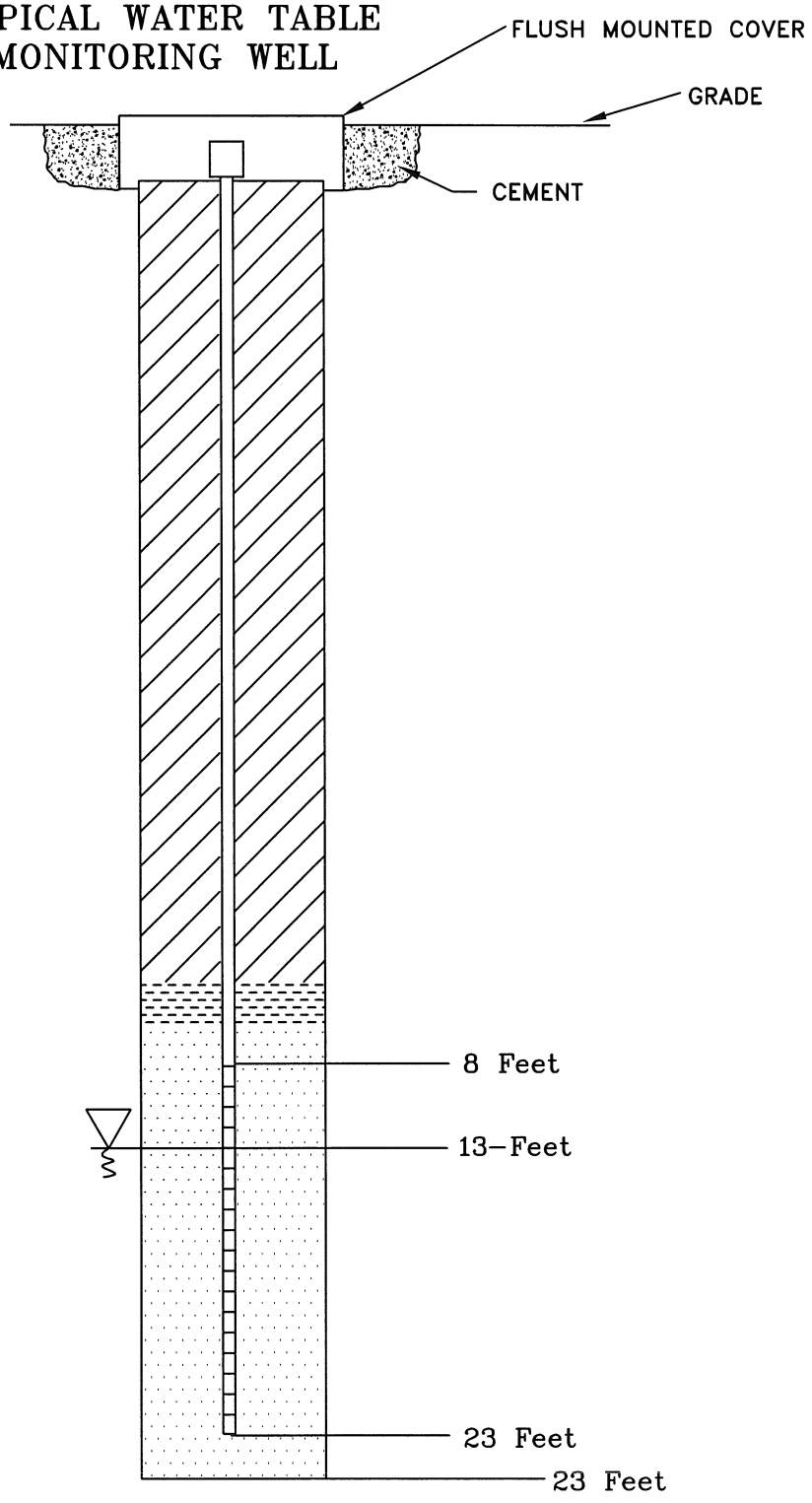


CA RICH CONSULTANTS, INC.

Certified Groundwater and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

TITLE: PROPOSED MONITORING WELL & VAPOR MONITORING POINT LOCATIONS		DATE: 6/27/05
		SCALE: As Shown
FIGURE: 2	421–433 East 13th St. and 420 East 14th St. New York, New York 10009	DRAWN BY: S.T.M.
DRAWING NO: 2005-26A.4		APPR. BY: C.A.R.

TYPICAL WATER TABLE MONITORING WELL



LEGEND

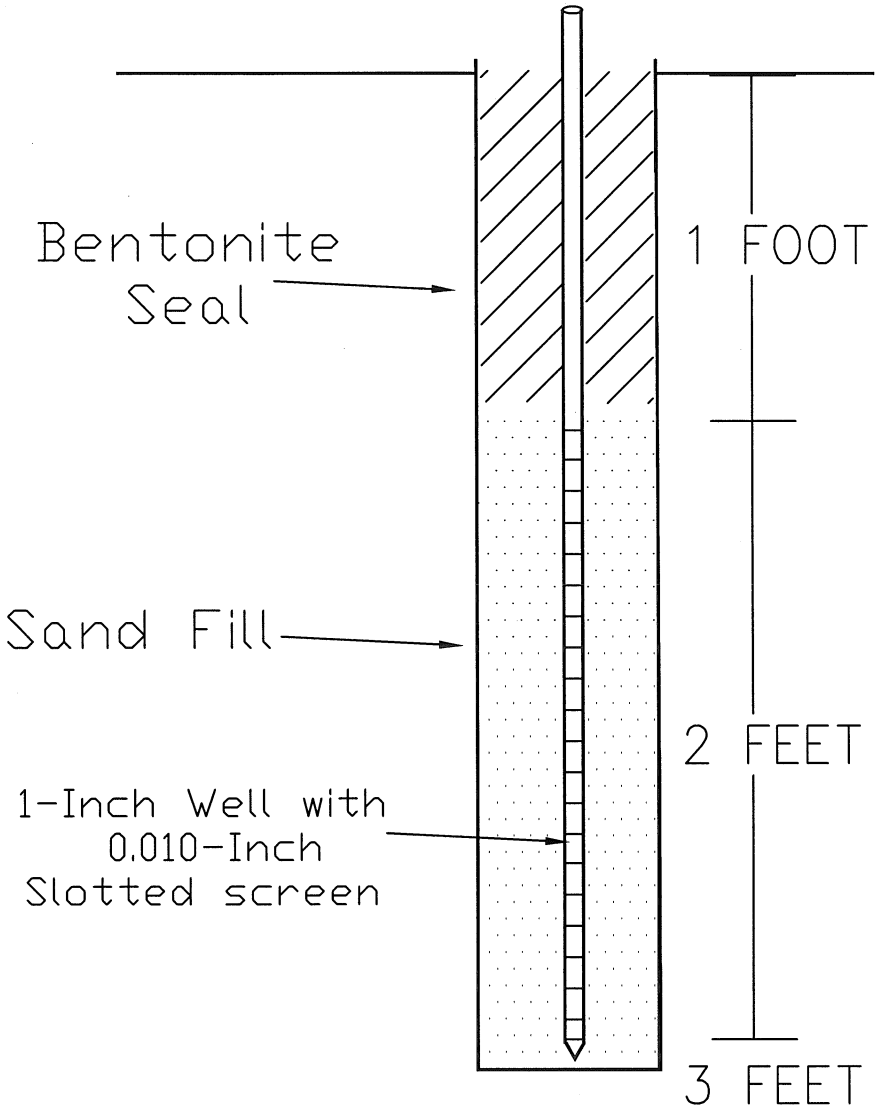
- Bentonite Seal
- #2 Morie Sand
- Drill Cuttings
- Approximate Water Table Surface

CA RICH CONSULTANTS, INC.

Certified Groundwater and Environmental Specialists
17 Dupont Street, Plainview, New York 11803

TITLE: PROPOSED CONSTRUCTION DETAILS FOR GROUNDWATER MONITORING WELLS		DATE: 6/27/05
		SCALE: Not to Scale
FIGURE: 3	CLUB EAST EAST 13TH & EAST 14TH ST. NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2005-25a		APPR. BY: R.J.I.

Typical Soil
Vapor Monitoring Point



CA RICH CONSULTANTS, INC.		
Certified Groundwater and Environmental Specialists 17 Dupont Street, Plainview, NY 11803		
TITLE: CONSTRUCTION DETAILS FOR PROPOSED SOIL VAPOR POINTS		DATE: 6/27/05
		SCALE: Not To Scale
FIGURE: 4	CLUB EAST EAST 13TH & EAST 14TH ST. NEW YORK, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 2005-25A		APPR. BY: R.J.I.

Appendix A

Quality Assurance Project Plan

Quality Assurance Project Plan

1.1 Introduction - The following Quality Assurance Project Plan ("QAPP") has been prepared specifically for the Investigation Work Plan and Interim Remedial Measure ("IRM") Work Plan at 421-433 East 13th Street and 420 East 14th Street located in New York, New York. This Plan was prepared and approved as stated below.

Prepared by: _____ Date: 6/27/05
Deborah Shapiro, Project Environmental Scientist

Approved by: _____ Date: 6/27/05
Stephen Malinowski, Project Manger

1.2 QAPP - Table of Contents

The following elements are included in this QAPP:

Title Page and Introduction

Table of Contents

Project Description

Project Organization

Quality Assurance Objectives for Data Measurements

Sampling Procedure

Sample and Document Custody Procedures

Calibration Procedures and Frequency

Analytical Procedures

Data Reduction, Validation and Reporting

Internal Quality Control Checks

Performance and System Audits

Preventive Maintenance

Data Measurement Assessment Procedures

Corrective Action

Quality Assurance Reports and Management

1.3 Project Description - The Investigation Work Plan and IRM Work Plan subject to this QAPP have been prepared to address the following issues:

- Determine the nature and extent of the contamination at the subject Property;
- Obtain the necessary information needed to design an Interim Remedial Program for the Site; and,
- Implement an Interim Remedial Program for the Site compatible with demolition, site preparation, and redevelopment.

The investigative methods that will be used include Hollow Stem Auger drilling, including split spoon sampling and monitoring well installation, and monitoring well sampling. These are described in detail in the Investigation Work Plan and IRM Work Plan.

1.4 Project Organization – Mr. Stephen Malinowski will serve as the Project Manager (PM) and will be responsible for the overall scheduling and performance of all the NYSDEC-approved investigative and IRM activities.

Mr. Jason Cooper will serve as the Quality Assurance Officer (QAO) for this project. His duties will include:

- Review of laboratory data packages
- Interface with laboratory
- Performance of Field Audits

Experienced CA RICH staff will perform and/or oversee completion of all of the field activities described in the Investigation Work Plan and IRM Work Plan.

1.5 Quality Assurance Objectives and Data Measurement – There are two sources of data collection methodology that will provide data information during this Remedial Investigation and IRM.

Field Screening - Organic vapor readings will be recorded from the head space of soil samples. This data is intended to be used only as a screening tool. To meet these goals, clean sampling tools will be used for each head space measurement and the PID will be calibrated at the beginning of each screening day on-site.

Chemical Analysis – All environmental samples will delivered to a New York State-Certified laboratory contracted to CA RICH for chemical analysis of volatile organic compounds (VOCs). This data is intended to determine the nature and extent of contamination in soil and groundwater. The laboratory will follow the NYSDEC – Analytical Services Protocol dated 1995. All samples will be analyzed for VOCs (Halogenated only) using USEPA Method 8021 and NYSDEC ASP Category B deliverables. All samples will be placed in iced-filled coolers and delivered to the laboratory by CA RICH within 48 hours of collection.

Quality assurance objectives are generally defined in terms of five parameters:

- **Representativeness -** Representativeness is the degree to which sampling data accurately and precisely represents site conditions, and is dependent on sampling and analytical variability. The Investigation Work Plan and IRM Work Plan have been designed to assess the presence of the constituents in the target media at the time of sampling. The Plans

present the rationale for sample quantities and location. The Work Plans also present field sampling methodologies and laboratory analytical methodologies.

The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data. Further discussion of QC checks is presented in Section 1.11.

- **Comparability** - Comparability is the degree of confidence with which one data set can be compared to another data set. Comparability between this investigation and IRM, and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the QAPP; the Investigation Work Plan and IRM Work Plan; the NYSDEC ASP analytical methods (1995) with NYSDEC ASP QA/QC requirements (1995); and through use of QA/QC procedures and appropriately trained personnel.

- **Completeness -** Completeness is defined as a measure of the amount of valid data obtained from an event and/or remedial action compared to the amount that was expected to be obtained under normal conditions. This will be determined upon assessment of the analytical results, as discussed in Section 1.12.

- **Precision -** Precision is the measure of reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the objectives of the Work Plans. To maximize precision, sampling and analytical procedures will be followed. All work for the investigation phase of this project will adhere to established protocols presented in the QAPP, Investigation Work Plan, and IRM Work Plan. Checks for analytical precision will include the analysis of matrix spike duplicated, laboratory duplicates, and field duplicates. Checks for field measurement precision will include obtaining duplicate field measurements. Further discussion of precision QC checks is provided in Section 1.11.

- **Accuracy** - Accuracy is the deviation of a measurement from the true value of a known standard. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, internal standards, matrix spikes, blank spikes, and surrogates (system monitoring compounds) will be used to assess the accuracy of the laboratory analytical data. Further discussion of these QC samples is provided in Section 1.11.

1.6 Sampling Procedures - The sampling procedures that will be employed are discussed in detail in the Investigation Work Plan and IRM Work Plan.

1.7 Sample and Document Custody Procedures

- **General** - The Chain-of-Custody program allows for the tracing of possession and handling of the sample from its time of collection through its chemical analysis in the laboratory. The chain-of-custody program at this site will include:

  - Sample labels
  - Chain-of-Custody records
  - Field records

- **Sample Labels** - To prevent misidentification of samples, a label will be affixed to the sample container and will contain the following information:

  - Site Name
  - Sample identification number
  - Date and time of collection
  - Name of Sampler
  - Preservation (if any)
  - Type of analysis to be conducted.

- **Chain-of-Custody Records** - To establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record (sample attached) will be filled out and will accompany samples at all times. The record will contain the following information:

  - Project name:
  - Printed name and signature of samplers
  - Sample number
  - Date and time of collection
  - Sampling location
  - Number of containers for each sample
  - Signature of individuals involved in sample transfer (when relinquishing and accepting samples)
  - Inclusive dates and times of possession.

- **Field Records** - Field records will be maintained during each sampling effort in a logbook. All aspects of sample collection, handling and visual observations will be recorded. All sample collection equipment, field analytical equipment and equipment utilized to make physical measurements will be identified in the field logbook.

  All calculations, results and calibration data for field sampling, field analytical and field physical measurement equipment will also be recorded in the field logbook. Entries will be dated and initialed. Entries will be made in ink, and will be legible.

1.8 Calibration Procedures and Frequency - The contracted laboratory will follow the NYSDEC Category-B requirements for equipment calibration procedures and frequency.

The QA Officer will be responsible for ensuring that the Field PID is calibrated at the beginning of each day of field sampling using calibration gas supplied by the manufacturer. A log of the meter calibration will be kept in the filed logbook.

1.9 Analytical Procedures - All laboratory analysis will be for VOCs (Halogenated only) via EPA Method 8021 and will follow NYSDEC ASP (1995) protocols with Category B deliverables. The following samples will be collected for QA/QC purposes: 1 trip blank, 1 field blank, 1 duplicate samples, 1 matrix spike, and 1 matrix spike duplicate. A qualified data validator will review the laboratory data and a Data Usability Summary Report (DUSR) will be prepared.

1.10 Data Reduction, Validation and Reporting

- **Field Data** - All field data recorded in logbooks or on log sheets will be evaluated in the Office and transferred to word processor text by field personnel or clerical staff. PID readings will be included on the logs. The QAO and/or PM will review this data for accuracy and completeness. Typed boring logs will be prepared for all borings and monitoring wells.

- **Laboratory Data** - The laboratory will transfer the instrument readings to laboratory report forms. Ms. Renee Cohen will perform independent data validation of all analytical data using NYSDEC DUSR protocols.

  The data validator will provide CA RICH with a Data Validation Summary Report. The QAO will review the summary report as well as other field data and prepare a Data Usability Report. Both the Data Validation Summary Report and the Data Usability Report will be provided to NYSDEC.

  CA RICH will prepare summary tables of the validated analytical data using computer spreadsheet software. The data entries will be reviewed using the red check-green check method. All entries will be reviewed and entry errors will be marked in red ink. Once these entries are corrected, the printouts will be marked with green ink and placed in the project file.

1.11 Internal Quality Control Checks

Both field and laboratory quality control checks are proposed for this project. In the event that there are any deviations from these checks, the Project Manager and Quality Assurance Officer will be notified. The proposed field and laboratory control checks are discussed below.

Field Quality Control Checks

- **Field Measurements -** To verify the quality of data collected using field instrumentation, at least one duplicate measurement will be obtained per day and reported for all field analytical measurements.

- **Sample Containers -** Certified-clean sample containers will be supplied by the contracted laboratory.

- **Field Duplicates** – Field duplicates will be collected to check reproducibility of the sampling methods. Field duplicates will be prepared as discussed in the Investigation Work Plan and IRM Work Plan. In general, field duplicates will be analyzed at a five percent frequency (every 20 samples).

- **Field Rinse Blanks** – Field rinse blanks are used to monitor the cleanliness of the sampling equipment and the effectiveness of the cleaning procedures. Field rinse blanks will be prepared and submitted for analysis during this investigation. Field rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory), which has been routed through a cleaned sampling device.

- **Trip Blanks** – Trip blanks will be used to assess whether site samples have been exposed to non-site-related volatile constituents during storage and transport. Trip blanks will be analyzed at a frequency of once per day, and will be analyzed for volatile organic constituents. A trip blank will consist of a container filled with analyte-free water (supplied by the laboratory), which remains unopened with field samples throughout the sampling event. Trip blanks will only be analyzed for volatile organic constituents.

1.12 Performance and Systems Audits

Performance and systems audits will be completed in the field and the laboratory during the remedial action phase of this project as described below.

- **Field Audits –** CA RICH's Project Manager and Quality Assurance Officer will monitor field performance and field meter calibrations to verify that measurements are taken according to established protocols. The Project Manager will review all field logs. In addition, the Project Manager and the Quality Assurance Officer will review the field rinse and trip blank data to identify potential deficiencies in field sampling and cleaning procedures.

- **Laboratory Audits** – The contracted laboratory will perform internal audits consistent with NYSDEC ASP (1995).

1.13 Preventive Maintenance

Preventive maintenance schedules have been developed for both field and laboratory instruments. A summary of the maintenance activities to be performed is presented below.

- **Field Instruments and Equipment -** Prior to any field sampling, each piece of field equipment will be inspected to assure it is operational. If the equipment is not operational, it must be serviced prior to use. All meters which require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, it is the responsibility of the field personnel to follow the maintenance schedule and arrange for prompt service.

- **Laboratory Instruments and Equipment -** The laboratory will document Laboratory instrument and equipment procedures. Documentation includes details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (which will include information regarding the repair and the individual who performed the repair).

  Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call from the manufacturer.

1.14 Data Assessment Procedures

The analytical data generated during the Investigation Work Plan and IRM Work Plan will be evaluated with respect to precision, accuracy, and completeness. The procedures utilized when assessing data precision, accuracy, and completeness are presented below.

- **Data Precision Assessment Procedures -** Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system including sampling, handling, shipping, storage, preparation and analysis.

  Laboratory data precision for organic analyses will be monitored through the use of matrix spike duplicate sample analyses. For other parameters, laboratory data precision will be monitored through the use of field duplicates and/or laboratory duplicates.

The precision of data will be measured by calculation of the standard deviation (SD) and the coefficient of variation (CV) of duplicate sample sets. The SD and CV are calculated for duplicate sample sets by:

$$SD = (A-B)/1.414$$
$$CV = SD/((A+B)/2) = 1.414(A-B)/(A+B)$$

Where:

A = Analytical result from one of two duplicate measurements
B = Analytical result from the second measurement.

Where appropriate, A and B may be either the raw measurement or an appropriate mathematical transformation of the raw measurement (e.g., the logarithm of the concentration of a substance).

Alternately, the relative percent difference (RPD) can be calculated by the following equation:

$$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

$$RPD = 1.414\ (CV)(100)$$

- **Data Accuracy Assessment Procedures -** The accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters, and adherence to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs.

  Laboratory accuracy will be assessed via the use of matrix spikes, surrogate spikes, and internal standards. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated as a percent recovery as follows:

$$Accuracy = \frac{A-X}{B} \times 100$$

  Where:

  A = Value measured in spiked sample or standard
  X = Value measured in original sample
  B = True value of amount added to sample or true value of standard

  This formula is derived under the assumption of constant accuracy over the original and spiked measurements. If any accuracy calculated by this formula is outside of the acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for matrix spike recoveries and surrogate recovery objectives are identified in the NYSDEC, ASP (1995).

- **Data Completeness Assessment Procedures -** Completeness of a field or laboratory data set will be calculated by comparing the number of samples collected or analyzed to the proposed number.

$$\text{Completeness} = \frac{\text{No. Valid Samples Collected or Analyzed}}{\text{No. Proposed Samples Collected or Analyzed}} \times 100$$

As general guidelines, overall project completeness is expected to be at least 90 percent. The assessment of completeness will require professional judgment to determine data usability for intended purposes.

1.15 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPP, or the Investigation Work Plan and IRM Work Plan. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for this project are described below.

- **Field Procedures** - When conducting the investigative fieldwork, if a condition is noted that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause and corrective action implemented will be documented as a memo to the project file and reported to the Project Manager.

  Examples of situations, which would require corrective actions, are provided below:

  - Protocols as defined by the QAPP, the Investigation Work Plan and IRM Work Plan have not been followed;
  - Equipment is not in proper working order or properly calibrated;
  - QC requirements have not been met; and
  - Issues resulting from performance or systems audits.

  Project field personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

- **Laboratory Procedures -** In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause and corrective action to be taken will be documented, and reported to the Quality Assurance Officer.

  Corrective action may be initiated, at a minimum, under the following conditions:

  - Specific laboratory analytical protocols have not been followed;
  - Predetermined data acceptance standards are not obtained;
  - Equipment is not in proper working order or calibrated;
  - Sample and test results are not completely traceable;
  - QC requirements have not been met; and
  - Issues resulting from performance or systems audits.

  Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

1.16 Quality Assurance Reports and Management

- **Internal Reporting -** The analytical laboratory will submit analytical reports using NYSDEC ASP (1995), Category B requirements. The analytical reports will be submitted to the data validator for review. Supporting data (i.e., historic data, related field or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The Quality Assurance Officer will incorporate results of data validation reports (if any) and assessments of data usability into a summary report. This report will be filed in the project file and will include the following:

    - Assessment of data accuracy, precision, and completeness for field & laboratory data;
    - Results of the performance and systems audits;
    - Significant QA/AC problems, solutions, corrections, and potential consequences;
    - Analytical data validation report; and
    - Data usability report.

- **Reporting** - The Investigation Report and IRM Report will contain a separate QA/QC section summarizing the quality of data collected and/or used as appropriate to the project DQOs. The Quality Assurance Officer will prepare the QA/QC summaries using reports and memoranda documenting the data assessment and validation.

CHAIN OF CUSTODY

ACCUTEST Laboratories

2235 Route 130, Dayton NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job #

Client / Reporting Information

Company Name

Address

City State Zip

Project Contact E-mail

Phone #

Sampler's Name

Project Information

Project Name

Street

City State

Project #

Fax #

Client Purchase Order #

Requested Analysis

624 ☐ 8021 ☐ 602 ☐ PAUG ☐ PALG ☐
8260 ☐ BTEX ☐ 624 ☐ MTBE ☐ TBA ☐ NAP ☐
8260 ☐ 624 ☐ TCL ☐ PPL ☐ +10 ☐ +15 ☐ STARS ☐ MTBE ☐
TBA ☐ NAP ☐
8270 ☐ 625 ☐ TCL ☐ PPL ☐ PAH ☐ PADF ☐ STARS ☐ +TICs ☐
ABN ☐ BN ☐

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe

LAB USE ONLY

Accutest Sample #	Field ID / Point of Collection	SUMMA # / MEOH Vial #	Collection Date	Collection Time	Sampled By	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE

Turnaround Time (Business Days)

- ☐ Std. 15 Business Days
- ☐ 10 Day *RUSH*
- ☐ 5 Day *RUSH*
- ☐ 3 Day *EMERGENCY*
- ☐ 2 Day *EMERGENCY*
- ☐ 1 Day *EMERGENCY*
- ☐ Other

Approved By: / Date:

Emergency & Rush T/A data available VIA LabLink

Data Deliverable Information

- ☐ Commercial "A"
- ☐ Commercial "B"
- ☐ NJ Reduced
- ☐ NJ Full
- ☐ Other _____
- ☐ FULL CLP
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format _____

Commercial "A" = Results Only

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
1		1	2		2
Relinquished by:	Date Time:	Received by:	Relinquished by:	Date Time:	Received by:
3		3	4		4
Relinquished by:	Date Time:	Received by:	Custody Seal #	Preserved where applicable ☐	On Ice ☐	Cooler Temp.
5		5				

Appendix B

Health & Safety & Community Air Monitoring Plan

HEALTH AND SAFETY PLAN
&
COMMUNITY AIR MONITORING PLAN

FOR THE
INVESTIGATION WORK PLAN
AND
INTERIM REMEDIAL MEASURES WORK PLAN
AT
"Club East"
421-433 East 13th Street and 420 East 14th Street
New York, New York

1.0 INTRODUCTION

This Health and Safety Plan (HASP) is developed for implementation during the planned investigation and IRM activities at "Club East", 421-433 E. 13th Street 420 E. 14th Street, New York, New York (the Site). The HASP is to be enforced by the Project Health and Safety Manager and on-site Health & Safety Coordinator (HSC). The on-site HSC will interface with the Project Manager and is vested with the authority to make field decisions including the termination of on-site activities if an imminent health and safety hazard, condition or related concern arises. Information and protocol in the HASP is applicable to all on-site personnel who will be entering the work zone.

2.0 POTENTIAL HAZARDS

2.1 Chemical Hazards

On-site testing performed to date indicates the primary class of compounds detected in soils and groundwater underlying the Site to be chlorinated volatile organic compounds (VOCs) and, in particular perchloroethene (PCE).

The organic chemicals listed above 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)*. These compounds are suspected to be carcinogenic with chronic exposure.

Physical properties and additional toxicological information is included in Appendix A.

2.2 Other Health and Safety Risks

The **HASP** addresses the environmentally-related chemical hazards identified on the Site. Normal physical hazards associated with using drilling equipment and hand tools as well as hazards associated with adverse climatic conditions (heat & cold) also exist and represent a certain degree of risk to be assumed by on-site personnel.

Certain provisions in this Plan, specifically the use of personnel protective equipment, may tend to increase the risk of physical injury, as well as susceptibility to cold or heat stress. This is primarily due to restrictions in dexterity, hearing, sight, and normal body heat transfer inherent in the use of protective gear.

3.0 RISK MANAGEMENT

3.1 Work / Exclusion Zones

For each proposed investigation and IRM activity dealing with soils containing elevated levels of PCE (eg. monitoring wells, sampling locations, excavation, de-watering), a work / exclusion zone will be established within a radius of approximately 25 feet surrounding the activity. Access to this area will be limited to properly trained, properly protected personnel directly involved with the on-site activities. Enforcement of the work / exclusion zone boundaries is the responsibility of the on-site Health and Safety Coordinator.

3.2 Personnel Protection

Health & Safety regulatory personnel have developed different levels of personnel protection to deal with differing degrees of potential risks of exposure to chemical constituents. The levels are designated as **A, B, C,** and **D** and ranked according to the amount of personnel protection afforded by each level. Level **A** is the highest level of protection and Level **D** is the lowest level of protection as described below.

A – Fully encapsulating suit, SCBA, hard hat, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

B – One-piece, hooded chemical-resistant splash suit, SCBA, hard hat, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

C – One-piece, hooded chemical-resistant splash suit, hard hat, canister equipped face mask, chemcial-resistant steel-toed boots, boot covers, inner and outer gloves.

D – Work clothes, hard hat (optional), work boots/shoes, gloves (as needed).

The different levels are primarily dependent upon the degree of respiratory protection necessary, in conjunction with appropriate protective clothing. Levels of protection mandate a degree of respiratory protection. However, flexibility exists within the lower levels (B, C, and D) concerning proper protective clothing.

The four levels of protection were developed for utilization in situations which involve suspected or known atmospheric and/or environmental hazards including airborne contamination and skin-affecting substances.

It is anticipated that all of the investigation work will be performed using Level D protection (no respiratory protection with protective clothing requirements limited to long sleeved shirts, long pants or coveralls, work gloves and steel-toe leather work boots).

Level D may be modified by the HSC to include protective clothing or equipment (Saran-coated disposable coveralls or PVC splash suits, safety glasses, hard hat with face shield, and chemically resistant boots) based upon physical hazards, skin contact concerns, and real-time monitoring.

Real-time air monitoring for total airborne organics using either an OVA or an HNU will determine if and when an upgrade from Level D to a higher level of respiratory protection is warranted. Decisions for an upgrade from Level D to higher levels of protection, mitigative actions, and/or suspension of work are the responsibility of the Project Manager and/or the designated on-site Health & Safety Coordinator.

3.3 Air Monitoring

The Health & Safety Coordinator or his properly trained assignee will conduct "Real Time" air monitoring for total organic vapor and total particulates. 'Real-time' monitoring refers to the utilization of instrumentation, which yields immediate measurements. The utilization of real time monitoring helps determine immediate or long-term risks to on-site personnel and the general public, the appropriate level of personnel respiratory protection necessary, and actions to mitigate the recognized hazard. Air monitoring will be conducted in accordance with NYSDOH's Community Air Monitoring Program.

3.3.1. Particulate Monitoring

a. Instrumentation

Dust particulates in air will be monitored using a light scattering technique MINIRAM Model PDM-3 Miniature Real-time Aerosol Monitor (MINIRAM) or equivalent. The MINIRAM is capable of measuring airborne dust particles within the range of 10 to 100,000 micrograms per cubic meter ($\mu g/m^3$).

b. Application

Dust monitoring will occur at regular intervals excavation work activities. Monitoring will be conducted in upgradient and downgradient locations, relative to prevailing wind direction) along the perimeter of the work zone. The HSC or his designee will perform monitoring. As outlined in the NYSDOH Community Air Monitoring Plan, if particluate levels in the downwind location are 150 mg/m^3 greater than those measured in the upwind location, dust suppression techniques shall be employed.

3.3.2 Organic Vapor

a. Instrumentation

Real-time monitoring for total organic vapor (TOV) utilizes either a photo-ionization detector (PID) or flame ionization detector (FID). The appropriate PID is an intrinsically safe HNU Systems Model PI-101 Photoionization detector (HNU) or MiniRae™ Photoionization detector or equivalent, which is factory, calibrated to benzene. The appropriate FID is a Foxboro model 128 Organic vapor Analyzer (OVA) or equivalent, which is factory calibrated to methane.

b. Application

Organic vapor monitoring is performed as outlined in the NYSDOH Community Air Monitoring Plan. Specifically, monitoring shall be conducted at the downwind perimeter of the work zone periodically during work activities. If TOV levels exceed 5 parts per million (ppm) above established pre-work background levels, work activities will be halted and monitoring will be continued under the provision of a Vapor Emission Response Plan (as outlined in the Community Air Monitoring Plan).

3.4 Worker Training

Personnel overseeing the excavation of the contaminated soil will be trained, fit-tested, and medically certified (OSHA 29 CFR 1910. 134). This includes the Health & Safety Coordinator or his/her properly trained assignee.

Prior to any work, all workers involved with the project should be aware of the potential chemical, physical and biological hazards discussed in this document, as well as the general safety practices outlined below. A safety briefing by the on-site HSC and/or assistant designee shall take place at the outset of work activities.

The HSC will be available to address project-related health & safety issues a site worker (such as an equipment operator or laborer) may have regarding the site conditions. Once an issue is brought to the HCS's attention, he or she will evaluate the issue and apply the procedures outlined in this Health & Safety Plan.

3.5 General Safety Practices

All project personnel shall follow the following safety practices:

1. Avoid unnecessary skin exposure to subsurface materials. Long-sleeved shirts tucked into long pants (or coveralls), work gloves, and steel-toe leather work boots are required unless modified gear is approved by the HSC. Remove any excess residual soil from clothes prior to leaving the site.

2. No eating, drinking, gum or tobacco chewing, or smoking allowed in designated work areas. Thoroughly wash hands prior to these activities outside the work area. Avoid sitting on the ground during breaks or while eating and drinking. Thoroughly wash all exposed body areas at the end of the workday.

3. Some symptoms of acute exposure include: nausea, dizziness, light-headedness, impaired coordination, headache, blurred vision, and nose/throat/eye irritation. If these symptoms are experienced or strong odor is detected, leave the work area and immediately report the incident to the on-site HSC.

3.6 Enforcement

Enforcement of the Site Safety Plan will be the responsibility of the HSC. The Coordinator should be on-site on a full-time basis and perform or directly oversee all aspects of Project Health & Safety operations including: air monitoring; environmental mitigation; personnel respiratory and skin protection; general safety practices; documentation; emergency procedures and protocol; and reporting and recordkeeping as described below.

3.7 Reporting and Recordkeeping

Incidents involving injury, symptoms of exposure, discovery of contained (potentially hazardous) materials, or unsafe work practices and/or conditions should be immediately reported to the HSC.

A log book must be maintained on-site to document all aspects of **HASP** enforcement. The log is paginated and dated with entries made on a daily basis in waterproof ink, initialed by the HSC or designee. Log entries should include date and time of instrument monitoring, instrument type, measurement method, test results, calibration and maintenance information, as well as appropriate mitigative actions responding to detections. Miscellaneous information to be logged may include weather conditions, reported complaints or symptoms, regulatory inspections, and reasons to upgrade personnel protection above the normal specification (Level D).

4.0 EMERGENCIES

4.1 EMERGENCY RESPONSE SERVICES

(1)	**HOSPITAL** Beth Israel Medical Center 10 Union Square East, New York, NY (See Figure 1 for Map Route)	**(212) 844-8000**
(2)	**AMBULANCE**	**911**
(3)	**FIRE DEPARTMENT** **HAZARDOUS MATERIAL**	**911**
(4)	**POLICE DEPARTMENT**	**911**
(5)	**POISON CONTROL CENTER**	**(800) 222-1222**

The preceding list and associated attached map (Figure 1) illustrating the fastest route to the nearest hospital must be conspicuously posted in areas of worker congregation and adjacent to all on-site telephones (if any).

4.2 EMERGENCY PROCEDURES

4.2.1 Contact or Exposure to Suspected Hazardous Materials

In the event of a fire, chemical discharge, medical emergency, workers are instructed to immediately notify the HSC and proper emergency services (posted). Should physical contact with unknown or questionable materials occur, immediately wash the affected body areas with clean water and notify the HSC. Anyone experiencing symptoms of exposure should exit the work area, notify the HSC, and seek medical attention.

4.2.2 Personnel Decontamination, First Aid, and Fire Protection

The first step in the treatment of skin exposure to most chemicals is to rinse the affected area with water. For this reason, adequate amounts of potable water and soap are maintained on-site in a clearly designated and readily-accessible location. Portable emergency eyewash stations and a first aid kit must be made available and maintained in the same locations as the potable water. Fire extinguishers are also to be maintained on-site in designated locations. All on-site personnel are to be made aware of the locations of the above-mentioned on-site Health & Safety accommodations during the initial Health and Safety briefing.

4.2.3 Ingress/egress

Clear paths of ingress/egress to work zones and site entrances/exits must be maintained at all times. Unauthorized personnel are restricted from accessing the site.

5.0 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring, for volatile compounds and particulate levels at the perimeter of the work area is necessary. This plan includes the following:

- Volatile organic compounds must be monitored at the downwind perimeter of the work area on a continuous basis. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

- Particulates should be continuously monitored upwind, downwind and within the work area at temporary particulate monitoring stations during excavation activities. If the downwind particulate level is 150 $\mu g/m^3$ greater than the upwind particulate level, then dust suppression techniques must be employed. All readings must be recorded and be available for State (DEC & DOH) personnel to review.

Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater than 5 ppm over background but less than 25 ppm over background at the perimeter of the work area, activities can resume provided:

- The organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the Safety Officer will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

Major Vapor Emission

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and, if organic vapor levels are approaching 5 ppm above background for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect;

However, the Major Vapor Emission Response Plan shall be immediately placed into effect if organic vapor levels are greater than 10 ppm above background.

Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the Health and Safety Plan of the Work Plan will go into effect.

2. The local police authorities will immediately be contacted by the Safety Officer and advised of the situation.

3. Frequent air monitoring will be conducted at 30 minutes intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer.

6.0 HEALTH AND SAFETY PLAN REFERENCES

1. American Conference Governmental Industrial Hygienists, 1989; Threshold Limit Values And Biological Exposure Indices, 111 Pp.

2. Geoenvironmental Consultants, Inc.; 1987; Safety & Operations At Hazardous Materials Sites

3. NIOSH Guide To Chemical Hazards, 1985, US Department Of Health And Human Services, Centers For Disease Control

4. US Department Of Labor Occupational Safety & Health Administration, 1989; Hazardous Waste Operations And Emergency Response Interim Final Rule, 29 CFR Part 1910

5. Sax, N. I. Dangerous Properties Of Industrial Materials; © 1984

Figure 1
Hospital Location & Directions

Yahoo! Driving Directions

Starting from: A 421 E 13th St, New York, NY 10009-3421

Arriving at: B 10 Union Sq E, New York, NY 10003-3314

Distance: 0.5 miles **Approximate Travel Time:** 1 min

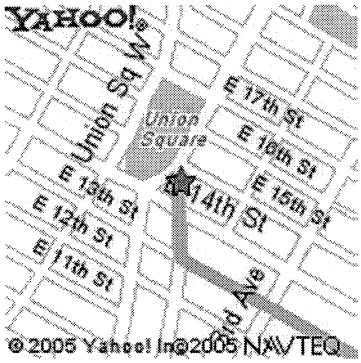
Your Directions

1.	Start at **421 E 13TH ST, NEW YORK** going toward **1ST AVE** - go **0.4** mi
2.	Turn R on **4TH AVE** - go **0.1** mi
3.	**4TH AVE** becomes **UNION SQ E** - go < **0.1** mi
4.	Arrive at **10 UNION SQ E, NEW YORK**

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route

Your Destination



Address:
10 Union Sq E
New York, NY 10003-3314

Yahoo! Driving Directions

Starting from: A 421 E 13th St, New York, NY 10009-3421

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Your Full Route

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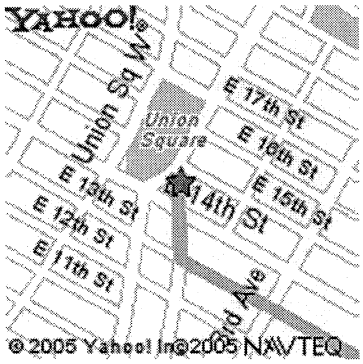

Address:
10 Union Sq E
New York, NY 10003-3314

NIOSH Pocket Guide to Chemical Hazards

Tetrachloroethylene	**CAS** 127-18-4
$Cl_2C=CCl_2$	**RTECS** KX3850000
Synonyms & Trade Names Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene	**DOT ID & Guide** 1897 160

Exposure Limits	NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A
	OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours)

IDLH Ca [150 ppm] See: 127184	**Conversion** 1 ppm = 6.78 mg/m^3

Physical Description
Colorless liquid with a mild, chloroform-like odor.

MW: 165.8	BP: 250°F	FRZ: -2°F	Sol: 0.02%
VP: 14 mmHg	IP: 9.32 eV		Sp.Gr: 1.62
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities
Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Measurement Methods
NIOSH 1003; OSHA 1001
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: No recommendation Provide: Eyewash, Quick drench	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver tumors]

See also: INTRODUCTION See ICSC CARD: 0076 See MEDICAL TESTS: 0179

Appendix C

NYSDEC Qualitative Exposure Assessment

APPENDIX 3B

New York State Department of Health
Qualitative Human Health Exposure Assessment

A qualitative exposure assessment consists of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, evaluating contaminant fate and transport.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (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.

The source of contamination is the source of contaminant release to the environment (any waste disposal area or point of discharge); if the original source is unknown, it is the environmental medium (soil, air, biota, water) at the point of exposure. Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (i.e., ingestion, inhalation, dermal absorption). The receptor population is the people who are or may be exposed to contaminants at a point of exposure.

An exposure pathway is 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 is not 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.

To perform a qualitative exposure assessment, site conditions are characterized to evaluate whether a site poses an existing or potential hazard to the exposed or potentially exposed population. Site characterization involves a review of sampling data for environmental media (e.g., soil, surface water, groundwater, air), both on-site and off-site, and an evaluation of the physical conditions of the contaminant sources or physical hazards near the site which may pose an additional health risk to the community.

Site contaminants are reviewed, and those selected for further evaluation are identified based upon consideration of the following factors:

Concentrations of contaminants in environmental media both on-site and off-site;

Field data quality, laboratory data quality and sampling design; and,

Comparison of on-site and off-site contaminant concentrations in environmental media with typical background levels

November 9, 2000

APPENDIX 3C

Fish and Wildlife Resources Impact Analysis Decision Key

		If YES Go to:	If NO Go to:
1.	Is the site or area of concern a discharge or spill event?	13.	2.
2.	Is the site or area of concern a point source of contamination to the groundwater which will be prevented from discharging to surface water? Soil contamination is not widespread, or if widespread, is confined under buildings and paved areas.	13.	3
3.	Is the site and all adjacent property a developed area with buildings, paved surfaces and little or no vegetation?	4.	9.
4.	Does the site contain habitat of an endangered, threatened or special concern species?	Section 3.10.1	5.
5.	Has the contamination gone off site?	6.	14.
6.	Is there any discharge or erosion of contamination to surface water or the potential for discharge or erosion of contamination?	7.	14.
7.	Are the site contaminants PCBs, pesticides or other persistent, bioaccumulable substances?	Section 3.10.1	8.
8.	Does contamination exist at concentrations that could exceed SCGs or be toxic to aquatic life if discharged to surface water?	Section 3.10.1	14.
9.	Does the site or any adjacent or downgradient property contain any of the following resources? a. Any endangered, threatened or special concern species or rare plants or their habitat b. Any NYSDEC designated significant habitats or rare NYS Ecological Communities c. Tidal or freshwater wetlands d. Stream, creek or river e. Pond, lake, lagoon f. Drainage ditch or channel g. Other surface water feature h. Other marine or freshwater habitat i. Forest j. Grassland or grassy field k. Parkland or woodland l. Shrubby area m. Urban wildlife habitat n. Other terrestrial habitat	11.	10.
10.	Is the lack of resources due to the contamination?	Section 3.10.1	14.
11.	Is the contamination a localized source which has not migrated and will not migrate from the source to impact any on-site or off-site resources?	14.	12.
12.	Does the site have widespread soil contamination that is not confined under and around buildings or paved areas?	Section 3.10.1	13.
13.	Does the contamination at the site or area of concern have the potential to migrate to, erode into or otherwise impact any on-site or off-site habitat of endangered, threatened or special concern species or other fish and wildlife resource? (See #9 for list of potential resources. Contact NYSDEC for information regarding endangered species.)	Section 3.10.1	14.
14.	No Fish and Wildlife Resources Impact Analysis needed.		

Appendix D

Citizen Participation Contact List

Brownfield Cleanup Program (BCP) Application
Contact List for
13th and 14th Street Realty, LLC
421-433 East 13th Street and 420 East 14th Street
New York, NY 10009-3421

County Government Contacts

Hon. Michael R. Bloomberg
Mayor
City of New York
City Hall
New York, NY 10007

Amanda Burden
Chair, Department of City Planning
City of New York
22 Reade Street
New York, NY 10007

Daniel L. Doctoroff
Deputy Mayor for Economic Development
and Rebuilding
City of New York
City Hall
New York, NY 10007

Hon. Margarita Lopez
Council Member, District 2
New York City Council
237 First Avenue, Suite 405
New York, NY 10003

Hon. C. Virginia Fields
Manhattan Borough President
Municipal Building
19th Floor South
New York, NY 10007

Betsy Gotbaum
Public Advocate
City of New York
Municipal Building
15th Floor North
New York, NY 10007

William C. Thompson
City Comptroller
City of New York
One Centre Street, Room 530
Municipal Building
New York, NY 10007

Hon. Steven Sanders
State Assembly, District 74
201 East 16th Street
4th Floor
New York, NY 10003

Martin Connor
State Senate, District 25
250 Broadway, Suite 2011
New York, NY 10007

Carolyn Maloney
U.S. Representative, District 14
1651 3rd Avenue, Suite 311
New York, NY 10128-3679

Brownfield Cleanup Program (BCP) Application
Contact List for
13th and 14th Street Realty, LLC
421-433 East 13th Street and 420 East 14th Street
New York, NY 10009-3421

Local Media

The Villager
487 Greenwich Street, Suite 6A
New York, NY 10013

Town & Village Newspaper
30 East 23rd Street
New York, NY 10010

Water Resources

NYCDEP
Bureau of Water Supply
59-17 Junction Boulevard
Flushing, New York 11373

Community Representatives

Susan Stetzer
District Manager
Manhattan Community Board 3
59 East 4th Street
New York, NY 10003

Al Doyle
Stuyvesant Town Tenants Association
525 East 14th Street
New York, NY 10009

Karen H. Shaw
Executive Director
Union Square Partnership
4 Irving Place, Room 1148-S
New York, NY 10003

Toni Carlina
District Manager
Manhattan Community Board 6
866 UN Plaza, Suite 308
New York, NY 10017

Evelyn T. Strouse
Union Square Community Coalition
P.O. Box 314
Cooper Station
New York, NY 10276

Document Repository

Susan Stetzer
District Manager
Manhattan Community Board 3
59 East 4th Street
New York, NY 10003

Brownfield Cleanup Program (BCP) Application
Contact List for
13th and 14th Street Realty, LLC
421-433 East 13th Street and 420 East 14th Street
New York, NY 10009-3421

Property Occupants

Best Instrument Rental Services
431 East 13th Street
New York, NY 10009

Antoinette Aurell
421 East 13th Street
New York, NY 10009

City Equities Management Corp.
429 East 13th Street
New York, NY 10009

David La Chapelle, Inc.
427 East 13th Street
New York, NY 10009

East Side Lumber
421 East 13th Street
New York, NY 10009

Qualimax, Inc.
433 East 13th Street
New York, NY 10009

Adjacent Property Owners/Occupants

Church of the Immaculate Conception
414 East 14th Street
New York, NY 10009

United States Post Office
Peter Stuyvesant Station
432 East 14th Street
New York, NY 10009

Nearest School

East Side Community High School
420 East 12th Street
New York, NY 10009

Church of Immaculate Conception
414 East 14th Street
New York, NY 10009

P.S. 019 Asher Levy School
Mr. Ivan Kushner, Principal
185 1st Avenue
New York, NY 10003

Nearest Daycare Facility

Village Child Development Center
334 East 14th Street
New York, NY 10009

Other Interested Parties

Jonathon Merrill
Time Equities, Inc.
55 Fifth Avenue 15th Floor
New York, NY 10003