Remedial Investigation Work Plan
Former Belle Cleaners Site
38-40 Purchase Street
Rye, New York
Site Number 3-60-086

March 2014

Prepared for Submittal to
The New York State Department of Environmental Conservation

on Behalf of:
38-40 Purchase Corp.

Prepared by:

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

March 4, 2014

NYSDEC
Division of Environmental Remediation
Remedial Bureau C, 11th Floor
625 Broadway, Albany, NY 12233-7014

Attn.: William Wu
Environmental Engineer 1

Re: Remedial Investigation Work Plan
Former Belle Cleaners
38-40 Purchase Street, Rye, New York
Site Number 3-60-086

Dear Mr. Wu:

Attached please find our Remedial Investigation Work Plan (RIWP) for the above referenced site. If there are any questions regarding this Work Plan, please do not hesitate to call our office.

Respectfully Submitted,

CA RICH CONSULTANTS, INC.

Richard J. Izzo, CPG
Sr. Associate

cc: James Kim, Esq.
Rosalie Rusinko, Esq.
Kevin Ryan, Esq.

Attachments

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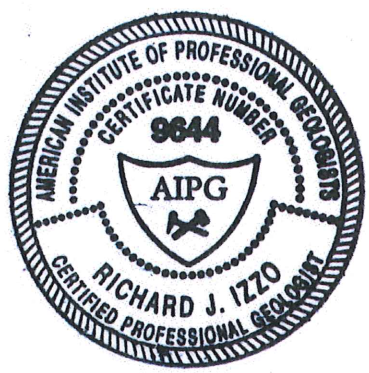
Remedial Investigation Work Plan
Former Belle Cleaners
38-40 Purchase Street, Rye, New York
Site Number 3-60-086

CERTIFICATION

I, Richard J. Izzo, certify that I am currently a Qualified Environmental Professional as defined in 6NYCRR Part 375 and that this Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

CPG # 9644	March 4, 2014	
Certification	Date	Signature



CPG STAMP

Remedial Investigation Work Plan
Former Belle Cleaners
38-40 Purchase Street, Rye, New York
Site Number 3-60-086

1.0 INTRODUCTION & PURPOSE

This Remedial Investigation Work Plan (RIWP) has been developed by CA RICH Consultants, Inc. (CA RICH) on behalf of 38-40 Purchase Corp. in support of the Brownfield Cleanup Program (BCP) Application. The Application and this RIWP are being submitted concurrently. This RIWP and the associated BCP Application are submitted in response to the findings of the approved Site Characterization Report (SCR) dated December 31, 2012 (Ref.2). The SCR was submitted in response to the requirements of the Order on Consent (Index No. W3-1081-05-10) executed March 1, 2006 as administered by the New York State Department of Environmental Conservation (NYSDEC). The proposed testing set forth in this RIWP is based upon the results of the SCR as well as discussions between CA RICH, 38-40 Purchase Corp. (and their Counsel) and NYSDEC representatives at our joint Pre-Application meeting on October 23, 2013. For the purposes of this RIWP, the contaminants of concern are perchloroethene (a.k.a. PCE or tetrachloroethene) and its degradation products.

Environmental conditions at and emanating from the subject property have been documented in the following reports which have all been previously submitted to NYSDEC:

- *Phase I Environmental Site Assessment, Survey for Asbestos Containing Materials, and Phase II Site Investigation; proposed Commerce Bank Site, Smith Street and Purchase Street, Rye, Westchester County, New York;* prepared by Whitestone Associates, Inc.; dated October 8, 2004 (Ref.4).

- *Summary Report, Environmental Testing in response to Reported Release (Spill No. 0406235), Belle Cleaners and Laundry, 40 Purchase Street, Rye, NY 10580*; prepared by CA Rich Consultants, Inc.; dated February 24, 2005 (Ref. 3).

- *Site Characterization Report, Former Belle Cleaners, 40 Purchase Street, Rye, NY; dated December 31, 2012* (Ref 2).*

**formerly entitled Remedial Investigation Report*

The purpose of this RIWP is to outline the scope and protocol to be followed in the further investigation of the nature and extent of soil, groundwater and air quality impacts identified in the previous investigations.

2.0 SITE HISTORY & DESCRIPTION

2.1 Site History/Description

The subject Property located at 40 Purchase Street, Rye, NY was utilized as a dry cleaning facility from the late 1940s until approximately 2006 when the existing 1-story building was completely renovated and converted for use as a bank. The property is currently the location of an active TD Bank branch that occupies the entire ground floor and utilizes the basement for maintenance supplies and an electrical/utility room. The on-site dry cleaning business was operated from 1984 through 2005 by West Turnpike Cleaners, Inc.. 38-40 Purchase Street Corp. purchased the property in 2002. In addition, the southern portion of the building was divided from the main portion and utilized as a separate retail store that most recently (up until the recent building renovation) was occupied by a nail salon.

The footprint of the building along with a small rear driveway comprises the entire property that is approximately 5,000 square feet in area. The building is located at 40 Purchase Street on the southeast corner of Purchase Street and Smith Street in Rye, Westchester County, NY. A Site Location Map (USGS Topoghraphic Quadrangle) is included as Figure 1.

According to information gathered in the Phase I ESA, the former on-site building was constructed in between 1887 and 1892 with occupancy by the C.H. Walker Carriage Facility. The earliest on-site listing for a dry cleaners is 1947 and a dry cleaning facility has been reported on-site from that time until the recent renovation and occupation by TD Bank in 2006.

The Property has always been serviced by public water and public sewers. The former dry cleaning facility and the separate retail store were heated with oil stored in three 275-gallon aboveground storage tanks. These tanks were removed by TD Bank during site renovation activities.

2.2 Surrounding Land Use

The former Belle Cleaners site is located along Purchase Street, the main commercial shopping area within the City of Rye. Adjoining properties include retail and commercial buildings to the north, south and west, and a parking lot to the east.

2.3 Physical/ Hydrogeologic Setting

According to the USGS Mamaroneck Topographic Quadrangle Map, the Property is located at an elevation of 30 feet above mean sea level. Local topography slopes gradually toward Blind Brook located approximately 500 feet to the southeast of the Property.

The Property is underlain by glacial till characterized as a poorly sorted mixture of clay, silt sand, gravel, cobbles and boulders of Pleistocene age. This thin veneer of till is expected to be less than 20 feet in thickness and rests unconformably on Ordovician age crystalline bedrock of the Hartland Formation which includes basal amphibolite and pelitic 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 ten 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. As such, groundwater is expected to flow to the southwest with eventual discharge into Blind Brook which is a Class SC stream, discharging approximately 2 miles southeast of the site into the tidal areas of Milton Harbor and the Long Island Sound. Based upon the Property's proximity to Blind Brook and Long Island Sound, 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 in Rye, as such, no potable resources appear to be threatened by local groundwater contamination.

2.4 Evaluation of Previous Soil, Groundwater & Soil Vapor/Air Sample Analyses

As outlined in Section 1.0, a series of previous investigations were performed at this site. Copies of these reports were previously submitted. The scope and findings the previous investigations are outlined below:

1. Phase II ESA (Whitestone Associates, October 04)

   Scope:

   Installation of 5 shallow soil borings within the rear driveway area with collection and chemical analysis of four soil samples and one groundwater sample for volatile organic compounds VOCs and semi-volatile organic compounds (SVOCs). Analytical detections in excess of limitation standards/guidelines are presented on Figure 2. Original laboratory data tables are included in Appendix A

   Findings:

   Soils from sample 7166-B4 collected at the water table (9 feet below grade) contained two semi-volatile compounds in excess of NYSDEC soil cleanup objectives. Additional SVOCs and the chlorinated VOC tetrachloroethylene (PCE) were also detected, but at concentrations below cleanup guidelines.

   Groundwater from 7166-B1 detected the presence of PCE at a concentration of 134 micrograms per liter (ug/l). This is in excess of the NYSDEC groundwater quality standard of 5 ug/L. Additional VOCs including trichloroethylene (TCE) vinyl chloride, and benzene were also detected in excess of groundwater quality standards.

2. Environmental Testing in response to Reported Release (CA RICH February 05)

   Scope:

   Installation of four Geoprobe soil borings and four microwells with collection of soil and groundwater samples from beneath the on-site building. Also included collection of two indoor air samples within the two separate on-site basements along with the installation of two temporary soil vapor well points and collection of two sub-slab vapor samples.

   Findings:

   Results of this Phase II investigation indicate the presence of low levels of volatile organic compounds (VOCs) in sub-slab soil gas and groundwater underlying the building at concentrations and an areal extent indicative of residual impacts from low-level historical releases or waste handling practices. No indoor air quality impacts or soil impacts at or above limitation standards were observed. Analytical detections in sub-slab vapor and ambient air as well as groundwater results in excess of limitation standards are presented on Figure 3. Original soil, vapor/air and groundwater data tables are included in Appendix A.

3. Site Characterization Report (CA RICH December 2012)

Scope:

Installation of three exterior Geoprobe soil borings and three interior (hammer-drill/hand auger) borings, two microwells with collection of soil and groundwater samples from the beneath the rear driveway and beneath the on-site building. Also included collection of three indoor air samples within on-site basement and one exterior air sample. It is noted that three temporary soil vapor well points were installed beneath the basement slab, however, collection of sub-slab vapor samples was not possible due to the presence of saturated conditions directly under the slab.

Findings:

Results of the most recent Site Characterization indicate the presence of volatile organic compounds (VOCs) in soils from soil boring SCB-7 (see Figure 4) beneath the basement. Specifically, PCE was detected in saturated soils directly beneath the building slab at a concentration of 2,570 micrograms per kilogram (ug/Kg). This concentration is in excess of NYSDEC Part 375 unrestricted soil cleanup objectives, but below commercial use cleanup objectives.

Groundwater quality impacts by PCE were also identified at two locations beneath the building slab. The most elevated was a concentration of 4,230 micrograms per liter (ug/l) in shallow microwell MW-2 (see Figure 4) beneath the basement floor. This concentration is in excess of NYSDEC groundwater quality standards.

Indoor air testing resulted in detections of PCE ranging from 38 to 53 micrograms per cubic meter (ug/m^3).

Analytical detections in soil & groundwater in excess of limitation standards are presented on Figure 4. Original soil, vapor/air and groundwater data tables are included in Appendix A.

3.0 Remedial Investigation

3.1 Purpose and Objectives

The Purpose of the remedial Investigation is to identify and investigate potentially contaminated areas of the Site and provide limited investigation of potential off-site impacts.

Data quality objectives include:

- defining the source area of elevated soil and groundwater VOC detections,
- development of site-specific hydrogeological information,
- identification of potential receptors and associated exposure pathways,
- documentation of off-site impacts (if any)

3.2 Field Sampling/Lab Analysis Plan

3.2.1 Soil Borings

A total of six interior soil borings are proposed for this investigation. The soil borings will be installed using a remote Geoprobe, direct push drilling system. Macro core samples will be collected continuously from immediately beneath the slab surface to the depth at which bedrock is encountered (anticipated to be 6-8 feet below the basement slab). These borings will be installed around and downgradient (presumed) of the soil boring and microwell locations that identified elevated soil/groundwater concentrations of PCE during the 2012 Site Characterization. The proposed boring locations are illustrated on Figure 5.

The geologic composition of these soil samples will be identified and logged as the borings are advanced. Boring logs will be prepared including the depth to bedrock. All soils will be screened with a photo-ionization detector (PID) and inspected for the presence of gross contamination and non-aqueous phase liquid (NAPL). If no visual NAPL contamination is apparent and there are no high PID readings, then one laboratory sample will be taken at the bottom of the boring, at the bedrock interface. If there is visual NAPL contamination, a sample will be taken one interval below the visual contamination for vertical delineation purposes. If there is a high PID reading, 2 laboratory samples will be taken, one at the highest PID reading, and one at an interval below the highest PID reading. Samples will be analyzed for halogenated volatile organic compounds (VOCs).

Soil samples will be collected and screened using a PID. The samples will be delivered to an ELAP-approved laboratory and analyzed for halogenated VOCs using U.S.EPA method 8260c and NYSDEC ASP category B deliverables.

During this sampling, the following samples will be collected for QA/QC purposes in accordance with Table Q-1 of the attached Quality Assurance Project Plan (QAPP Appendix B): 1 trip blank, 1 field blank, 1 duplicate sample, 1 matrix spike and 1 matrix spike duplicate.

3.2.2 Monitoring Well Installation and Groundwater Sampling/Analysis

Two one-inch diameter microwells will be installed in off-site, downgradient locations. These wells will be installed to the depth at which bedrock is encountered to provide permanent sampling points for repeatable monitoring downgradient of the Site. The wells will be located in agreed-upon locations and require permission from downgradient property owners and/or the City of Rye.

Prior to locating the wells, site-specific groundwater flow direction will be determined. The four pre-existing monitoring wells will be surveyed for elevation to the nearest 0.01 feet by a NY State Licensed surveyor, and depth to water measurements will be taken in the wells. These data will be used to develop a site-specific water table contour map detailing the direction of groundwater flow beneath the Site. The two off-site wells will then be located based upon the off-site groundwater flow direction inferred from the water table map. Based upon local topography and hydrology, it is anticipated that shallow groundwater flow is in a southwesterly direction with eventual discharge into Blind Brook. As such, potential locations for the two off-site wells include the parking area behind the buildings on the west side of Purchase Street (see Figure 6 which depicts the general area).

The one-inch diameter off-site PVC wells will be designated to augment the existing well network wells (MW-1, 2, 3a & 4a which were previously constructed and sampled). The wells will be installed using 0.010-inch slotted (10 slot) pre-pack well screens manufactured by Geoprobe. The wells will have 10-foot screens set at the bedrock interface. Each well will be constructed to industry standards and will be fitted with a bolt-down curb box or stand pipe (depending upon location).

Each of the wells will be developed using a perastaltic pump. After the installation of 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 installation of the wells is completed, we will return to sample the two newly installed off-site wells along with the four pre-existing on-site wells. A volume of at least three times the volume of the well will be removed from each well using a low flow rate perastaltic 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 U.S.EPA method 8260c and NYSDEC ASP category B deliverables. During this sampling the following samples will be collected for QA/AC purposes in accordance with Table Q-1 in the attached Quality Assurance Project Plan (QAPP): 1 trip blank, 1 field blank, 1 duplicate sample, 1 matrix spike and 1 matrix spike duplicate.

3.2.3 Off-Site Vapor Intrusion Testing

Vapor intrusion sampling is proposed in and below building foundations for the two properties immediately adjacent (south) of the Site. The owners/occupants of these off-site buildings will be contacted by CA RICH or jointly by CA RICH and NYSDEC Representatives to obtain permission to install sub-slab sampling points and perform vapor intrusion testing. Once permission is received, an initial site visit will be scheduled to locate appropriate testing locations in each of the off-site buildings/properties. The testing will then be performed in accordance with The New York State Department of Health "Guidance for Evaluating Soil Vapor Intrusion in the State of New York". Testing will include collection of one sub-slab sample and one indoor air sample (lowest elevation habitable space) at each of the off-site properties. In addition, one exterior background sample will be collected on the same day(s) that the vapor intrusion sampling is conducted. Concurrently, an updated on-site indoor air quality sample will also be collected from the basement of the TD Bank building.

The locations and occupants of the two properties are detailed on Figure 6. Prior to sampling, a product inventory will be completed in each of the indoor air sampling spaces.

One temporary sub-slab soil vapor point will be installed through the basement floor in each of the off-site locations. The soil vapor point will be installed using hand tools and will consist of a 3-inch long stainless steel screen connected to ¼-inch stainless steel tubing extended just below the concrete slab. The annular space around the stainless steel screen will be packed with coarse sand and finished with a bentonite or beeswax seal. Once all six points are installed, CA

RICH will return to collect a sub-slab soil vapor sample from each of the newly installed soil vapor points in accordance with NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006.

Prior to sampling, three volumes of soil gas will be purged from the soil vapor point using a calibrated air sampling pump. The purged sub-slab vapor will be collected in a Tedlar bag and released outside to prevent impacts to indoor air quality during sampling. During purging and sampling, the flow rate will not exceed 0.2 liters per minute. In addition, helium will be used as a tracer gas during purging to verify that ambient air is not infiltrating the sub-slab sampling assembly. At the same time, an indoor air sample will also be collected from inside the basement (or lowest elevation habitable space) of each building. In addition, one outdoor background (ambient) air sample will be collected. The indoor air, outdoor air and soil vapor samples will be collected via a SUMMA canister. The SUMMA canisters will be submitted to a NYSDOH-certified laboratory for analysis of VOCs via EPA method TO-15. All sampling will be performed over a 24-hour period.

3.2.6 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 rinses and final air dry. Decontaminated sampling equipment will then be wrapped in clean (unused) aluminum foil pending use for sample collection. The peristaltic 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. New, clean acetate macro core tube samplers will be used for collection of each Geoprobe soil sample. A new disposable sterile wooden tongue depressor will be used for each soil sample collection and discarded after each use.

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. Soil samples for volatile organic analyses will be packaged in 2-oz. volatile organics jars. Special care is taken to completely fill the jars so that no head space remains after they are sealed, thus minimizing the loss of volatile organic compounds present in the sample. 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).

3.3 Health & Safety

A site-specific Health and Safety Plan (HASP) has been prepared for the field portion of the Investigation (Appendix C). The HASP covers all activities in the 'investigation area', as well as emergency procedures and available emergency services in proximity to the Site. The HASP also includes a community air monitoring plan in accordance with NYSDOH guidelines.

3.4 Management of Investigation Derived Wastes

Soil from boreholes not converted to monitoring wells will be returned to their original location to within 4 inches of the surface and then patched with hydraulic cement. Soil from boreholes which are to be converted to monitoring wells will be placed in DOT-approved 55-gallon drums. Soil that exhibits gross contamination also not be returned to the borehole and will be placed in 55-gallon drums. All development water and purge water from the monitoring wells will be collected and placed into DOT-approved 55-gallon drums.

After the drilling phase of the investigation is completed and the monitoring wells have been sampled, a waste hauling contractor will be contacted. The drums will then be sampled and the samples will be analyzed as needed to arrange for disposal at a permitted facilty. The drums will then be shipped to a permitted disposal facility.

3.5 Remedial Investigation Report

Once the laboratory results are obtained, a Remedial Investigation Report will be prepared. The RI Report will include the following items:

- A description of the work performed;
- Boring logs for the Geoprobe soil borings;
- Well construction details;
- Laboratory summary tables
- Sample location maps
- A Data Usability Summary Report (DUSR)
- A water table map
- A Qualitative Exposure Assessment
- EDD submittals
- Conclusions

4.0 SCHEDULE

The following schedule has been developed for this project.

Plans

Submission of draft RIWP	March 4, 2014
NYSDEC approval of Work Plan	anticipate 45 days

Field Activities

Soil Borings, Well Installation	30 days after DEC approval
Collection and analysis of groundwater samples	45 days after DEC approval
Off-Site Vapor Intrusion Testing	45-60 days after DEC approval*

**pending receipt of access to off-site locations*

Report Preparation

Preparation of draft Remedial Investigation Report	90 days after DEC approval

5.0 PROJECT PERSONNEL

CA RICH project personnel for this Remedial Investigation are anticipated as follows:

- Project Manager: Richard J. Izzo, CPG
- Q.A. Officer: Jason Cooper, CPG
- Field Manager: Mike Yager
- Field Staff Tom Brown

Resumes of project personnel are included in Appendix D. Subcontractors anticipated to be used for this Remedial Investigation include:

Accutest Laboratories, Dayton NJ (laboratory)
Aarco Environmental Services, Lindenhurst, NY (driller)
Lori Beyer of L.A.B Validation Corp., (data validation/DUSR)
Ward Carpenter Engineering, White Plains, NY (surveying)

6.0 REFERENCES

1. E.S. Asselstine & I.G. Grossman, (1955), The Groundwater Resources of Westchester County, USGS Bulletin GW-35.

2. CA RICH Consultants, Inc.; (December 31, 2012); Site Characterization Report, Former Belle Cleaners, 40 Purchase Street, Rye, NY

3. CA Rich Consultants, Inc.; (February 24, 2005); Summary Report, Environmental Testing in response to Reported Release (Spill No. 0406235), Belle Cleaners and Laundry, 40 Purchase Street, Rye, NY 10580;

4. Whitestone Associates, Inc.; (October 8, 2004); Phase I Environmental Site Assessment, Survey for Asbestos Containing Materials, and Phase II Site Investigation; proposed Commerce Bank Site, Smith Street and Purchase Street, Rye, Westchester County, New York;

5. New York State Department of Health (2006) Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

6. United States Geological Survey (1979) Mamaroneck, NY, Topographic Quadrangle Map.

7. NYSDEC. 6 NYCRR Part 375 Environmental Remediation Programs, Environmental Remediation Programs, Subparts 375-1 to 375- 4 & 375-6. New York: Author, December 2006.

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

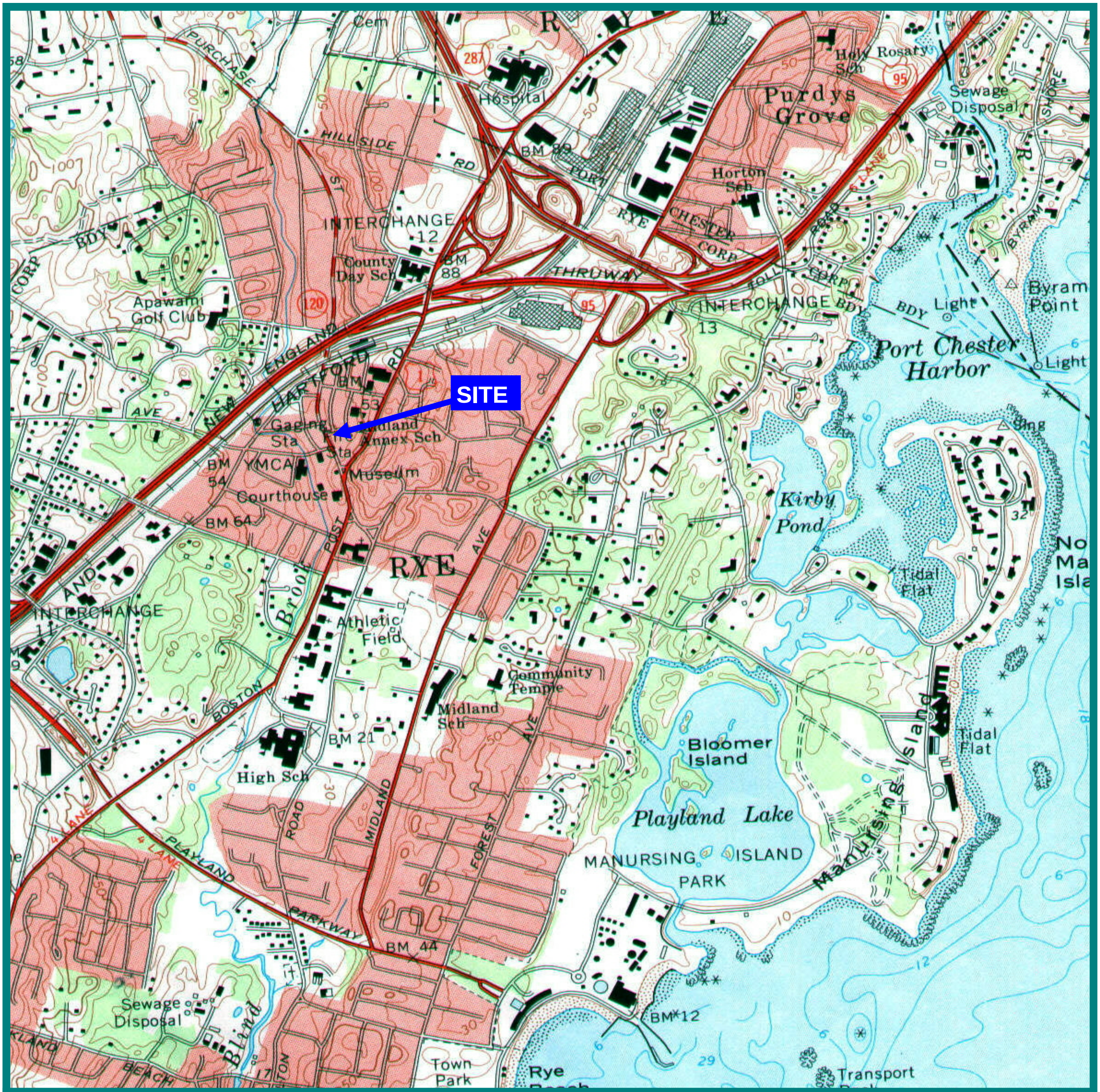
9. NYSDEC, (October 22, 1993), Technical and Operational Guidance Series (1.1.1)

10. NYSDEC Division of Environmental Remediation, (December 2002), Draft DER-10, Technical Guidance for Site Investigation and Remediation.

11. New York State Department of Health (February 2005) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (Public Comment Draft).

12. United States Geological Survey (1967) Mamaroneck, NY, Topographic Quadrangle Map.

FIGURES



APPROX. SCALE (ft.)

0 1,200 2,400

N

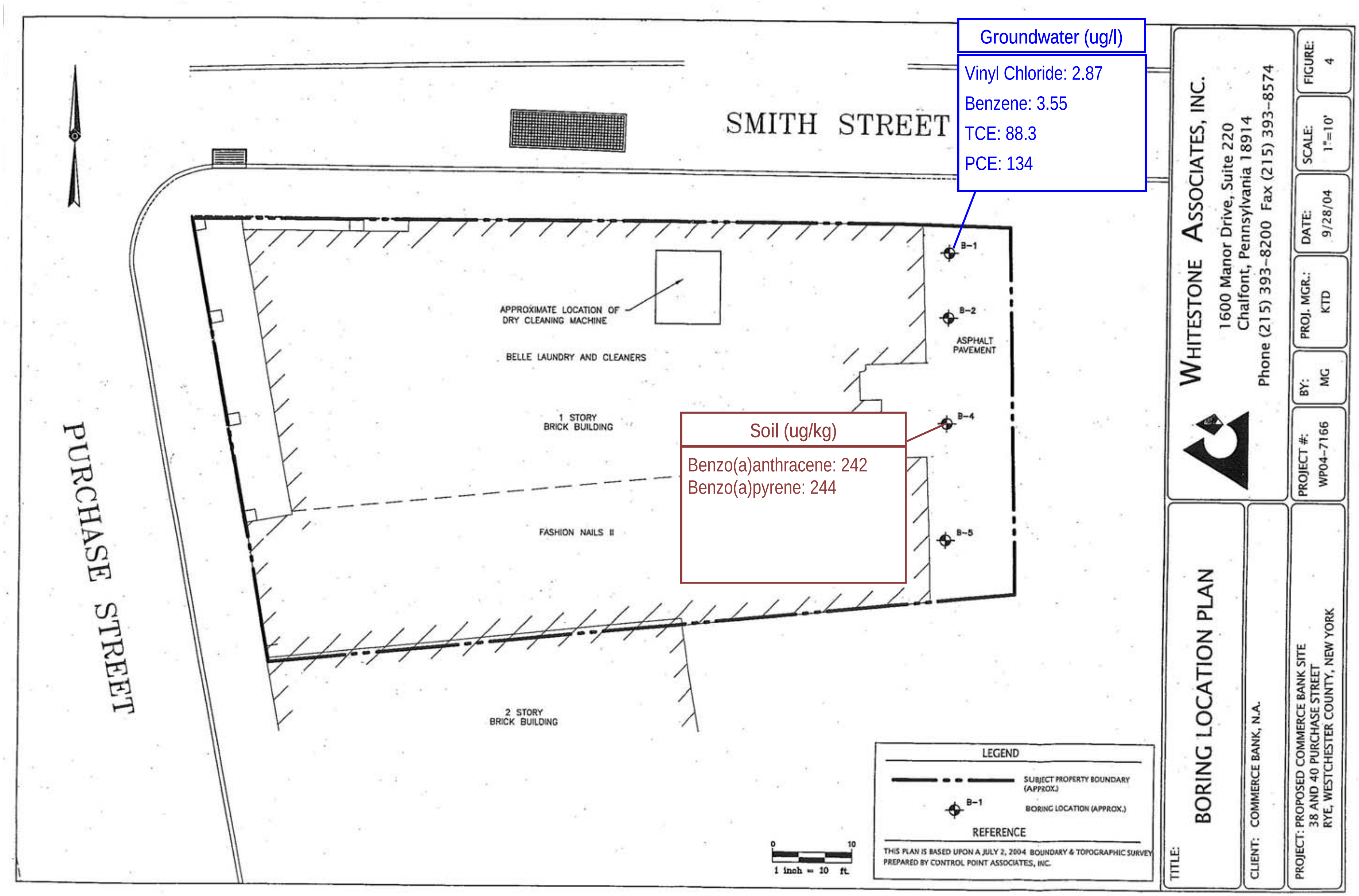
Adapted from USGS Mamaroneck Quadrangle Map (1975 photorevision)

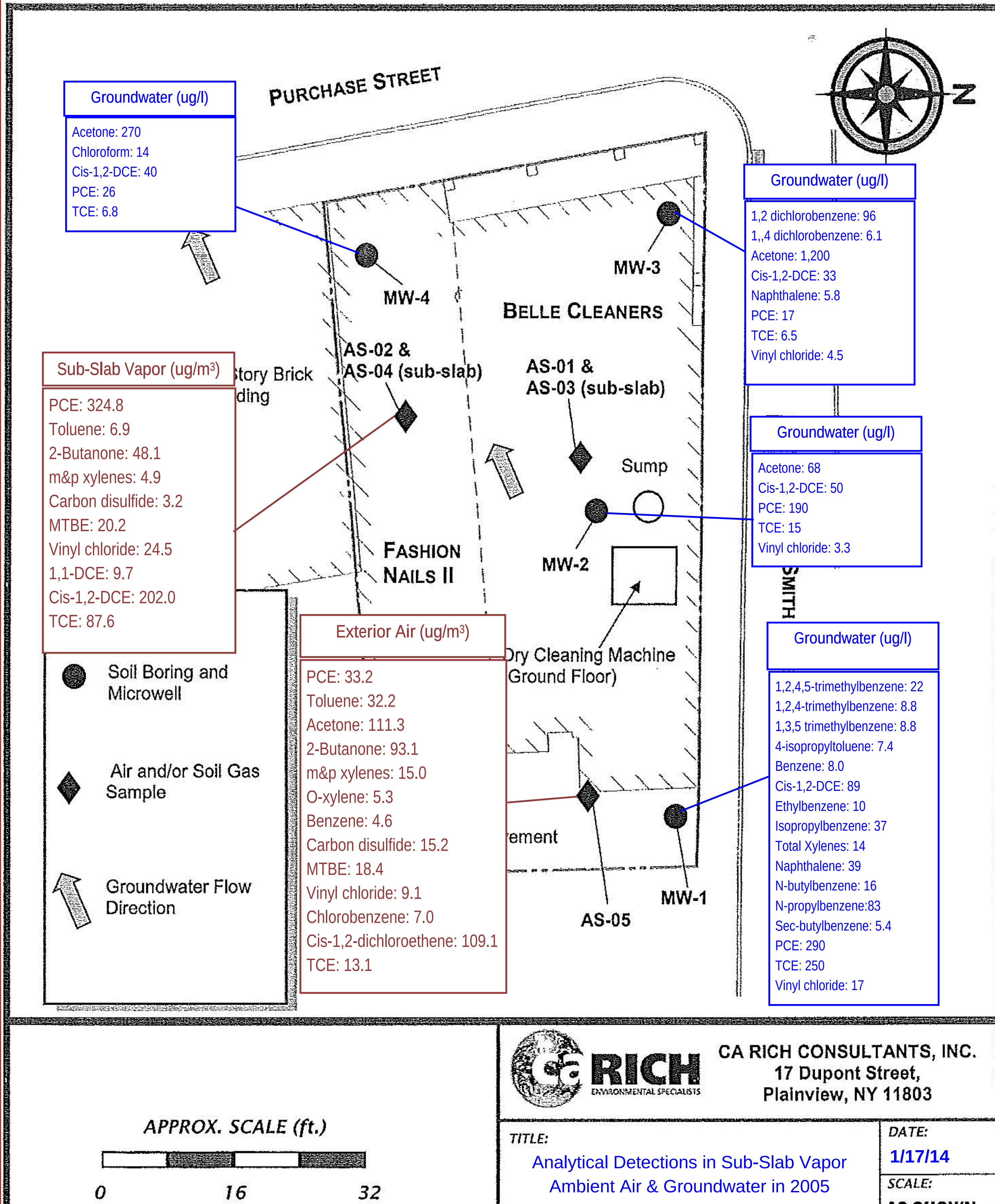
CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE:	SITE LOCATION MAP	DATE: 2/16/07
		SCALE: AS SHOWN
FIGURE: 1	Former Belle Cleaners 40 Purchase St. Rye, NY	DRAWN BY: STM
DRAWING:		APPR. BY: RJI

Figure 2

Analytical Results in Excess of Limitation Standards/Guidelines for Soil & Groundwater
Whitestone Phase II, 2004
Former Belle Cleaners Site
40 Purchase Street, Rye, NY

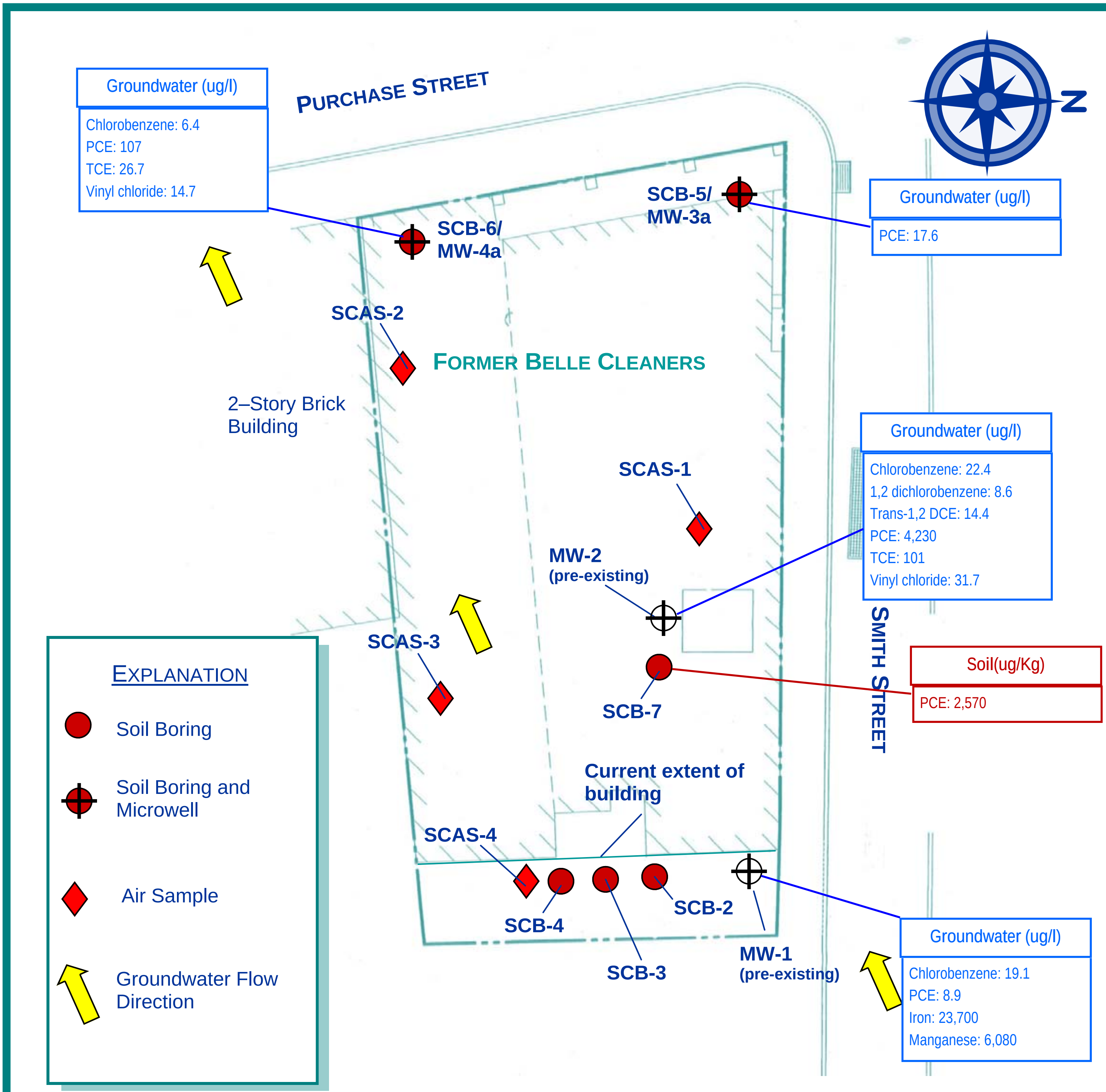




Adapted from Whitestone Associates, Inc. 9/28/04

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: Analytical Detections in Sub-Slab Vapor Ambient Air & Groundwater in 2005		*DATE:* 1/17/14 *SCALE:* AS SHOWN
FIGURE: 3 *DRAWING:*	**Belle Cleaners & Laundry** **Rye, NY**	*DRAWN BY:* JC *APPR. BY:* RJI



APPROX. SCALE (ft.)

0 16 32

Adapted from Whitestone Associates, Inc. 9/28/04

Modified 7/26/12

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE:
Analytical Detections in Soil & Groundwater in Excess of Limitation Standards in 2012

DATE: **1/17/14**

SCALE: **AS SHOWN**

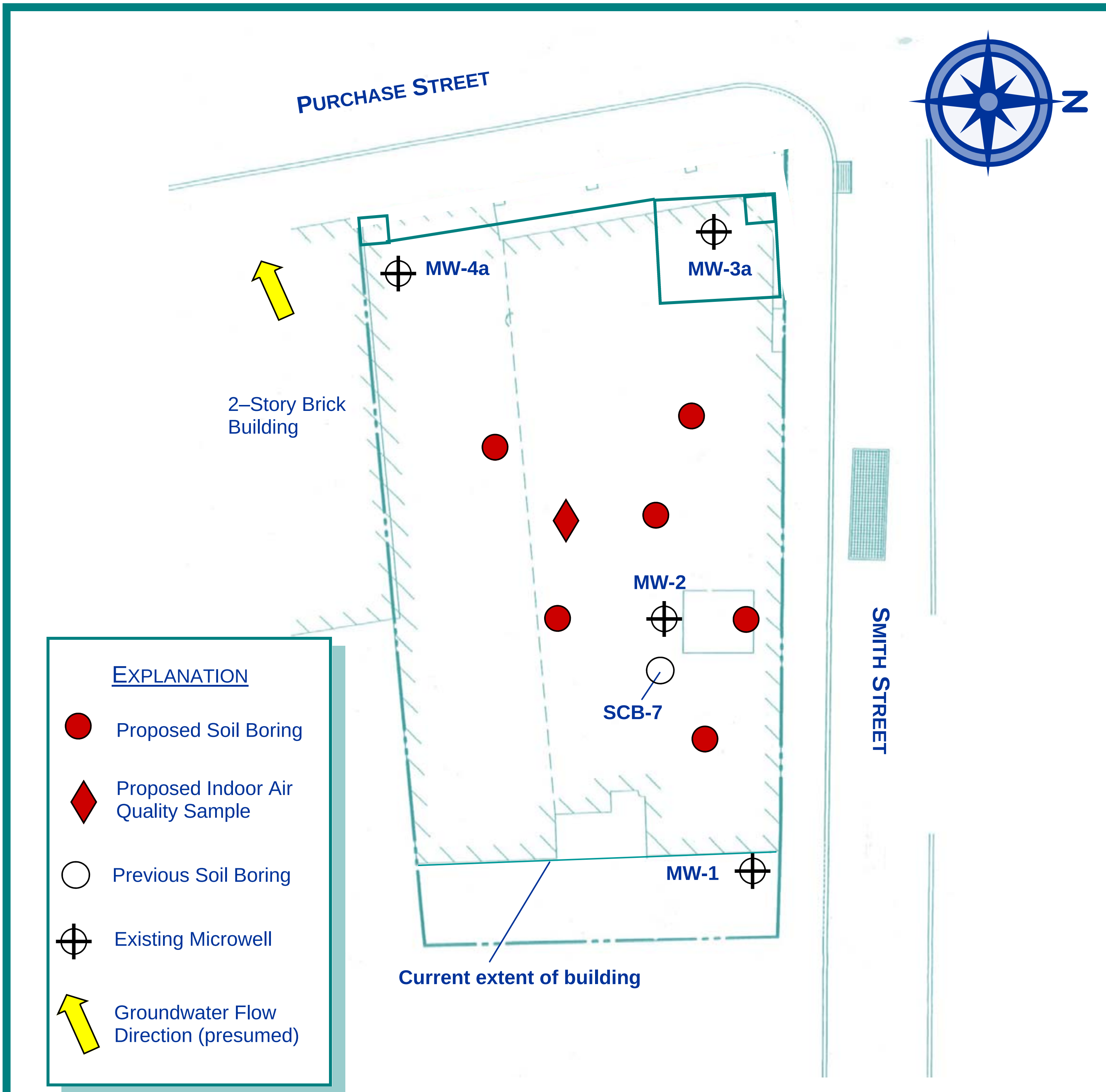
FIGURE: **4**

DRAWING:

Former Belle Cleaners
40 Purchase Street
Rye, NY

DRAWN BY: **JC**

APPR. BY: **RJI**



APPROX. SCALE (ft.)

0 *16* *32*

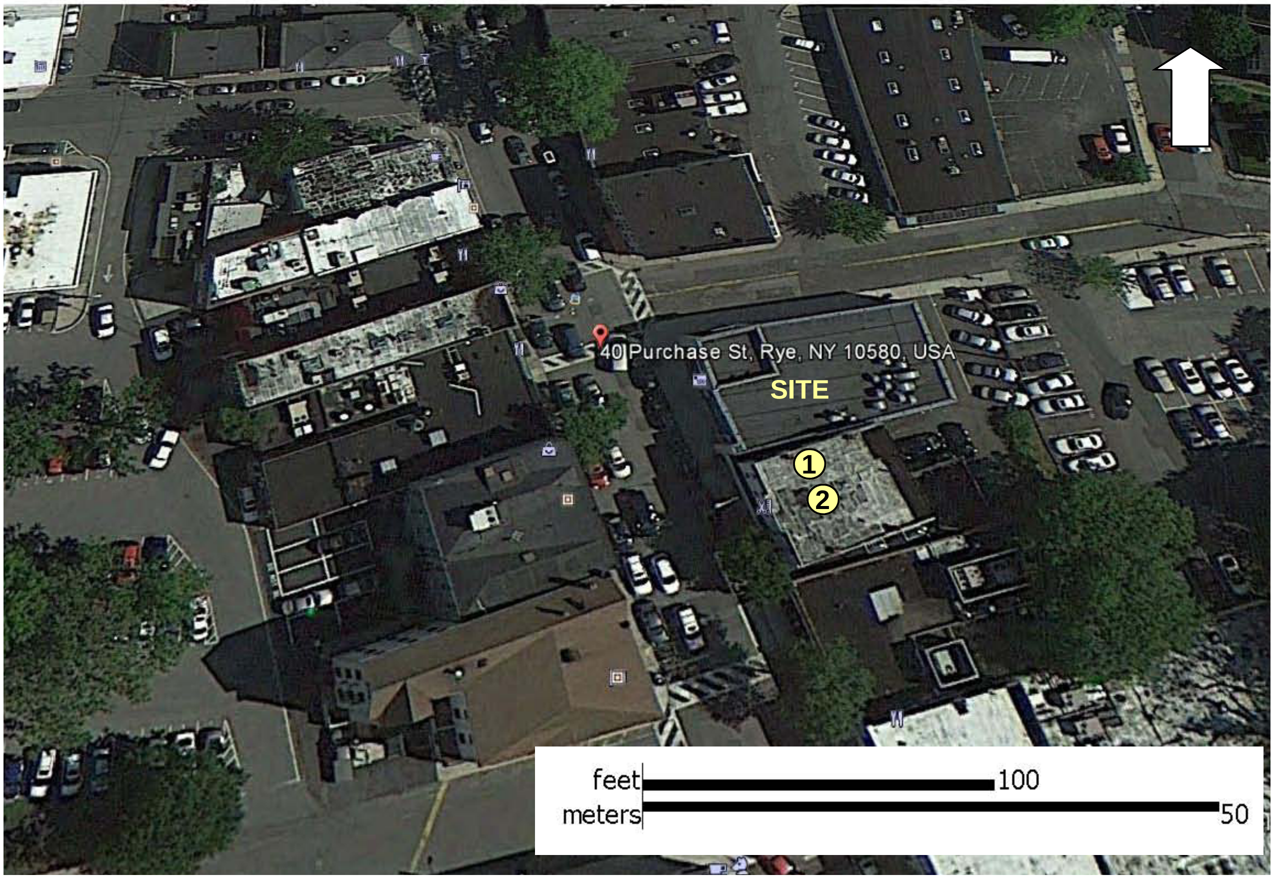
Adapted from Whitestone Associates, Inc. 9/28/04

CA RICH ENVIRONMENTAL SPECIALISTS

CA RICH CONSULTANTS, INC.
17 Dupont Street,
Plainview, NY 11803

TITLE: **Proposed Sampling Locations**	*DATE:* **2/26/14**
	SCALE: **AS SHOWN**
FIGURE: **5** *DRAWING:*	**Former Belle Cleaners** **40 Purchase Street** **Rye, NY**
DRAWN BY: **JC**	*APPR. BY:* **RJI**

FIGURE 6
Proposed Off-Site Vapor Intrusion Testing Locations
Former Belle Cleaners Site
40 Purchase Street, Rye, NY
March 2014



KEY

1. **Rye Decorators: 38 Purchase Street**
2. **Franks Barber Shop: 36 Purchase Street**

CA RICH
ENVIRONMENTAL SPECIALISTS

APPENDIX A
ANALYTICAL DATA TABLES FROM PREVIOUS SAMPLING

TABLE 1 SOIL BORING INSTALLATION & SAMPLING SUMMARY Proposed Commerce Bank Site Smith Street and Purchase Street Rye, Westchester County, New York				
Boring Number	**Soil Sample Intervals (fbgs)**	**Total Depth (fbgs)**	**Depth to Groundwater (fbgs)**	**Maximum PID Reading (ppm)**
7166-B1	10.0 to 10.5	12.0	9.0	54
7166-B2	10.5 to 11.0	12.0	9.0	0.0
7166-B4	8.5 to 9.0	12.0	9.0	0.0
7166-B5	11.5 to 12.0	12.0	9.0	20

NOTES:

PID Photoionization Detector
fbgs feet below ground surface
ppm parts per million

TABLE 2
SOIL SAMPLING & ANALYSES DATA SUMMARY
Proposed Commerce Bank Site
Smith Street and Purchase Street
Rye, Westchester County, New York

Sample Number	**VOCs Detected Above MDLs (ppm)**	**SVOCs Detected Above MDLs (ppm)**
7166-B1	ND	ND
7166-B2	ND	Phenanthrene- 0.181
7166-B4	Tetrachloroethene- 0.067	Phenanthrene- 0.144 Fluoranthene- 0.338 Pyrene- 0.281 **Benzo[a]anthracene- 0.242** Chrysene- 0.265 Benzo[b]fluoranthene- 0.228 Benzo[k]fluoranthene- 0.217 **Benzo[a]pyrene- 0.244** Ideno[1,2,3-cd]pyrene- 0.162 Benzo[g,h,i]perylene- 0.195
7166-B5	Ethylbenzene- 0.111 Total Xylenes- 0.163	ND

NOTES:

[BOLD]	Exceeds NYSDEC groundwater standard/criteria
VOCs	Volatile Organic Compounds
SVOCs	Semi-Volatile Organic Compounds
MDLs	Laboratory Method Detection Limits
ppm	parts per million
ND	Not detected above laboratory MDLs

TABLE 3 GROUNDWATER SAMPLING & ANALYSES DATA SUMMARY Proposed Commerce Bank Site Smith Street and Purchase Street Rye, Westchester County, New York	
Sample Number	**VOCs Detected Above MDLs (ppb)**
7166-B1-GW	Chloromethane- 6.04 **Vinyl Chloride- 2.87** Methyl-t-Butyl Ether (MTBE)- 0.357 **Benzene- 3.55** **Trichloroethene (TCE)- 88.3 D** Toluene- 0.445 **Tetrachloroethene- 134.0 D**

NOTES:

[BOLD]	Exceeds NYSDEC groundwater standard/criteria
VOCs	Volatile Organic Compounds
MDLs	Laboratory Method Detection Limits
ppb	parts per billion
D	The compound was reported from the Diluted analysis

Table 1

Summary of Analytical Detections in Soil Samples
Belle Cleaners
Rye, New York

Sample ID / Matrix / Date Sampled	MW-2	MW-3	NYSDEC
Matrix	Soil	Soil	TAGM
Date Sampled	1/21/2005	1/21/2005	#4046
Volatile Organic Compounds			
Method 8260			
Units	ug/Kg	ug/Kg	ug/Kg
Parameters			
1,2-Dichlorobenzene	ND	13	7,900
Chlorobenzene	ND	12	1,700
cis-1,2-Dichloroethene	25	ND	NGV
Trichloroethene	3.6 J	ND	700

Notes:

ND - Compound analyzed for but not detected
NGV - No given value
J - Estimated value of analyte detected below quantitation limits
All concentrations are reported in microgrmas per kilogram (ug/Kg) or parts per billion

TABLE 2

Summary of Analytical Detections for Indoor Air and Sub Slab Soil Vapor Samples
Belle Cleaners
Rye, New York

Sample ID	AS-01	AS-02	AS-03	AS-04	AS-05
Matrix	Air	Air	Air	Air	Air
Date Sampled	1/18/2005	1/18/2005	1/18/2005	1/18/2005	1/18/2005
Location	Basement 1-Air	Basement 2-Air	Basement 1-Sub Slab	Basement 2-Sub Slab	Exterior Ambient Air
Method					
EPA TO-15					
Parameters	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Tetrachloroethene (PCE)	< 6.9	< 6.9	< 6.9	324.8	33.2
Toluene	< 3.8	< 3.8	< 3.8	6.9	32.2
Dichlorodifluoromethane	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone	< 60.5	< 60.5	< 60.5	< 60.5	111.3
2-Butanone	< 7.5	< 7.5	< 7.5	48.1	93.1
m&p xylenes	< 4.4	< 4.4	< 4.4	4.9	15.0
o-xylene	< 4.4	< 4.4	< 4.4	< 4.4	5.3
1,2,4 trimethylbenzene	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
benzene	< 3.3	< 3.3	< 3.3	< 3.3	4.6
carbon disulfide	< 3.2	< 3.2	< 3.2	3.2	15.2
chloromethane	< 5.3	< 5.3	< 5.3	< 5.3	< 5.3
1,2 dichloroethane	< 4.1	< 4.1	< 4.1	< 4.1	< 4.1
ethylbenzene	< 4.4	< 4.4	< 4.4	< 4.4	< 4.4
methylene chloride	< 8.8	< 8.8	< 8.8	< 8.8	< 8.8
Trichlorofluoromethane	< 5.7	< 5.7	< 5.7	< 5.7	< 5.7
Methyl tert-butyl ether	< 9.2	< 9.2	< 9.2	20.2	18.4
Vinyl chloride	< 2.6	< 2.6	< 2.6	24.5	9.1
1,1-Dichloroethene	< 4.1	< 4.1	< 4.1	9.7	< 4.1
Chlorobenzene	< 4.7	< 4.7	< 4.7	< 4.7	7.0
cis-1,2-Dichloroethene	< 4.0	< 4.0	< 4.0	202.0	109.1
Trichloroethene	< 5.5	< 5.5	< 5.5	87.6	13.1

Notes:

Concentrations containing a "<" symbol are below the laboratory reporting limit

All concentrations are reported in micrograms per cubic meter (ug/m ^{3}

NA: not applicable

Users/Projects/Belle Cleaners/Table 1 IAQ testing

TABLE 3

Summary of Analytical Detections in Groundwater Samples

Belle Cleaners

Rye, New York

Sample ID	MW-1	MW-2	MW-3	MW-4	NYSDEC
Date Sampled	2/1/2005	2/1/2005	2/1/2005	2/1/2005	TOGS*
Volatile Organics					
Units	ug/L	ug/L	ug/L	ug/L	ug/L
1,2,4,5-Tetramethylbenzene	**22**	ND	1.8	ND	5
1,2,4-Trimethylbenzene	**8.8**	ND	ND	ND	5
1,2-Dichlorobenzene	ND	ND	**96**	2.6	3
1,3,5-Trimethylbenzene	**8.8**	ND	ND	ND	5
1,3-Dichlorobenzene	ND	ND	2.2	ND	3
1,4-Dichlorobenzene	ND	ND	**6.1**	ND	3
4-Isopropyltouene	**7.4**	ND	ND	ND	5
Acetone	ND	**68**	**1,200**	**270**	50
Benzene	**8.0**	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	3.2	50
Chloroform	ND	3.8	5.3	**14**	7
cis-1,2-Dichloroethene	**89**	**50**	**33**	**40**	5
Ethylbenzene	**10**	ND	ND	ND	5
Isopropylbenzene	**37**	ND	ND	ND	5
Total Xylene	**14**	ND	0.94	ND	5
Naphthalene	**39**	1.8	**5.8**	ND	5
N-Butylbenzene	**16**	ND	ND	ND	5
n-propylbenzene	**83**	1.0	ND	ND	5
p-Diethylbenzene	22	ND	0.93	ND	NG
p-Ethyltoluene	3.2	ND	ND	ND	NG
sec-Butylbenzene	**5.4**	ND	ND	ND	5
tert- Butylbenzene	1.4	ND	ND	ND	5
Tetrachloroethene	**290**	**190**	**17**	**26**	5
Toluene	4.5	ND	ND	ND	5
Trichloroethene	**250**	**15**	**6.5**	**6.8**	5
Vinyl Chloride	**17**	**3.3**	**4.5**	ND	2

Notes:

ND - Not Detected

NG - No Guidance is Reported.

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

** New York State Department of Environmental Conservation, Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values, October 1993 (Revised June 1998).*

Bolded Concentrations Indicate Values Above the NYSDEC TOG Standard

Table 1

Analytical Results for Volatile Organic Compounds In Soil Samples
Former Belle Cleaners
40 Purchase Street, Rye, New York

Sample ID	SCB-2 (20-22)	SCB-3 (20-21	SCB-4 (10-15)	SCB-5 (4-5) SS	SCB-6 (1.5-3.5) SS	SCB-7(SUB-SLAB)	SCB-XX	FB-4/26/12	TB-4/26/12	*Part 375	**Part 375
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Liquid	Liquid	**Unrestricted**	**Commercial**
Date Sampled	4/24/2012	4/24/2012	4/24/2012	4/26/2012	4/26/2012	4/24/2012	4/26/2012	4/26/2012	4/26/2012	**Use**	
Volatile Organic Compounds											
Units	ug/kg	ug/Kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/l	ug/l	ug/kg	ug/kg
Acetone	ND	ND	ND	ND	ND	37.1	ND	ND	ND	50	500,000
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	60	44,000
Bromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	120	500,000
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	760	22,000
Chlorobenzene	ND	ND	ND	ND	ND	1.2 J	ND	ND	ND	1,100	500,000
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	370	350,000
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Cyclohexane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	3.2 J	ND	ND	ND	1,100	500,000
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,400	280,000
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	0.66 J	ND	ND	ND	1,800	130,000
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	270	240,000
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	30,000
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	330	500,000
cis-1,2-Dichloroethene	ND	ND	ND	1.6 J	2.7 J	9.4	2.1 J	0.52 J	ND	250	500,000
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	190	500,000
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,4-Dioxane	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	130,000
Ethylbenzene	ND	ND	ND	ND	ND	0.28 J	ND	ND	ND	1,000	390,000
Freon 113	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Methyl Acetate	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Methylcyclohexane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Methyl Tert Butyl Ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	930	500,000
4-Methyl-2-pentanone(MIBK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Methylene chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	50	500,000
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Tetrachloroethene	ND	ND	ND	3.5 J	1.7 J	**2,570**	3.2 J	ND	ND	1,300	150,000
Toluene	0.50 J	ND	ND	ND	0.63 J	2	ND	ND	ND	700	500,000
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	680	500,000
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Trichloroethene	ND	ND	ND	1.0 J	1.1 J	24.9	1.2 J	ND	ND	470	200,000
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	NVG	NVG
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	13,000
m,p-Xylene	ND	ND	ND	ND	ND	0.69 J	ND	ND	ND	260	500,000
o-Xylene	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	260	500,000
Xylene (total)	ND	ND	ND	ND	ND	1.1 J	ND	ND	ND	260	500,000

Notes:
SCB-XX Sample is a duplicate of SCB-5
ug/Kg - micrograms per kilogram or parts per billion
ND - Not detected at or above laboratory detection limits
NVG - No Value Given
U- The analyte was analyzed for, but was not detected above the reported sample quanitation limit.
J - Estimated Value
R - The sample result is unreliable/unusable. The presence or absence of the analyte can not be verified.
FB - Field Blank
bold and boxed = concentration above Part 375 unrestricted use SCO

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives
***6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(b):Commercial Use Soil Cleanup Objectives

Table 2

Analytical Results for Semi-Volatile Organic Compounds In Soil Samples

Former Belle Cleaners

40 Purchase Street, Rye, New York

Sample ID	SCB-2 (20-22)	SCB-3 (20-21)	SCB-4 (19-15)	SCB-5 (4-5) SS	SCB-6 (1.5-3.5) SS	SCB-7 (SUB-SLAB)	SCB-XX	*Part 375	**Part 375
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Restricted	Commercial
Date Sampled	4/24/2012	4/24/2012	4/24/2012	4/26/2012	4/26/2012	4/24/2012	4/26/2012	Use	
Semi-Volatile Organic Compounds									
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
2-Chlorophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4-Chloro-3-methyl phenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4-Dichlorophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4-Dimethylphenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4-Dinitrophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4,6-Dinitro-o-cresol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2-Methylphenol	NA	NA	ND	ND	NA	NA	ND	330	500,000
3&4-Methylphenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2-Nitrophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4-Nitrophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Pentachlorophenol	NA	NA	ND	ND	NA	NA	ND	800	6,700
Phenol	NA	NA	ND	ND	NA	NA	ND	330	500,000
2,3,4,6-Tetrachlorophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4,5-Trichlorophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4,6-Trichlorophenol	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Acenaphthene	NA	NA	ND	ND	NA	NA	ND	20,000	500,000
Acenaphthylene	NA	NA	ND	ND	NA	NA	ND	100,000	500,000
Acetophenone	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Anthracene	NA	NA	ND	ND	NA	NA	ND	100,000	500,000
Atrazine	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Benzo(a)anthracene	NA	NA	52.3	23.1 J	NA	NA	22.0 J	1,000	5,600
Benzo(a)pyrene	NA	NA	54.7	16.2 J	NA	NA	ND	1,000	1,000
Benzo(b)fluoranthene	NA	NA	57.5	ND	NA	NA	ND	1,000	5,600
Benzo(g,h,i)perylene	NA	NA	41.8	ND	NA	NA	ND	100,000	500,000
Benzo(k)fluoranthene	NA	NA	37.1	ND	NA	NA	ND	800	56,000
4-Bromophenyl phenyl ether	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Butyl benzyl phthalate	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
1,1'-Biphenyl	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Benzaldehyde	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2-Chloronaphthalene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4-Chloroaniline	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Carbazole	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Caprolactam	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Chrysene	NA	NA	49.9	18.9 J	NA	NA	19.2 J	1,000	56,000
bis(2-Chloroethoxy)methane	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
bis(2-Chloroethyl)ether	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
bis(2-Chloroisopropyl)ether	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4-Chlorophenyl phenyl ether	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,4-Dinitrotoluene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2,6-Dinitrotoluene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
3,3'-Dichlorobenzidine	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Dibenzo(a,h)anthracene	NA	NA	ND	ND	NA	NA	ND	330	560
Dibenzofuran	NA	NA	ND	ND	NA	NA	ND	7,000	350,000
Di-n-butyl phthalate	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Di-n-octyl phthalate	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Diethyl phthalate	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Dimethyl phthalate	NA	NA	102	165	NA	NA	160	NVG	NVG
bis(2-Ethylhexyl)phthalate	NA	NA	ND	49.1 J	NA	NA	ND	NVG	NVG
Fluoranthene	NA	NA	65	31.6 J	NA	NA	33.3 J	100,000	500,000
Fluorene	NA	NA	ND	ND	NA	NA	ND	30,000	500,000
Hexachlorobenzene	NA	NA	ND	ND	NA	NA	ND	330	6,000
Hexachlorobutadiene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Hexachlorocyclopentadiene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Hexachloroethane	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Indeno(1,2,3-cd)pyrene	NA	NA	36	ND	NA	NA	ND	500	5,600
Isophorone	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2-Methylnaphthalene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
2-Nitroaniline	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
3-Nitroaniline	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
4-Nitroaniline	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Naphthalene	NA	NA	ND	ND	NA	NA	ND	12,000	500,000
Nitrobenzene	NA	NA	ND	ND	NA	NA	ND	NVG	69,000
N-Nitroso-di-n-propylamine	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
N-Nitrosodiphenylamine	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Phenanthrene	NA	NA	ND	ND	NA	NA	ND	100,000	500,000
Pyrene	NA	NA	78.9	34.3	NA	NA	35.5 J	100,000	500,000
1,2,4,5-Tetrachlorobenzene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG

SCB-XX - Sample is a duplicate of SCB-5
NA - No Analyzed
ND - Not detected at or above laboratory detection limits
NVG - No Value Given
J - Estimated Value
FB - Field Blank

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives
***6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(b):Commercial Use Soil Cleanup Objectives

Validated

TABLE 3

Analytical Results for Pesticides In Soil Samples
Former Belle Cleaners
40 Purchase Street, Rye, New York

Sample ID	SCB-2 (20-22)	SCB-3 (20-21)	SCB-4 (10-15)	SCB-5 (4-5) SS	SCB-6 (1.5-3.5) SS	SCB-7 (SUB-SLAB	SCB-XX	*Part 375	**Part 375
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Unrestricted	Commercial
Date Sampled	4/24/2012	4/24/2012	4/24/2012	4/26/2012	4/26/2012	4/24/2012	4/26/2012	Use	
Pesticides									
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Aldrin	NA	NA	ND	ND	NA	NA	ND	5	680
alpha-BHC	NA	NA	ND	ND	NA	NA	ND	20	3,400
beta-BHC	NA	NA	ND	ND	NA	NA	ND	36	3,000
delta-BHC	NA	NA	ND	ND	NA	NA	ND	40	500,000
gamma-BHC (Lindane)	NA	NA	ND	ND	NA	NA	ND	100	9,200
alpha-Chlordane	NA	NA	2	0.9	NA	NA	ND	94	24,000
gamma-Chlordane	NA	NA	1.8	0.91	NA	NA	ND	NVG	NVG
Dieldrin	NA	NA	ND	ND	NA	NA	ND	5	1,400
4,4'-DDD	NA	NA	ND	**20.3**	NA	NA	19.2	3	92,000
4,4'-DDE	NA	NA	ND	3.7	NA	NA	3.6	3	62,000
4,4'-DDT	NA	NA	ND	1.9	NA	NA	6.5 a	3	47,000
Endrin	NA	NA	ND	ND	NA	NA	ND	14	89,000
Endosulfan sulfate	NA	NA	ND	ND	NA	NA	ND	2,400	200,000
Endrin aldehyde	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Endosulfan-I	NA	NA	ND	ND	NA	NA	ND	2,400	200,000
Endosulfan-II	NA	NA	ND	ND	NA	NA	ND	2,400	200,000
Heptachlor	NA	NA	ND	ND	NA	NA	ND	42	15,000
Heptachlor epoxide	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Methoxychlor	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Endrin ketone	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Toxaphene	NA	NA	ND	ND	NA	NA	ND	NVG	NVG

Notes:

SCB-XX- Sample is a duplicate of SCB-5

a - Reported from a second signal for comfirmation

ug/Kg - micrograms per kilogram or parts per billion

ND - Not detected at or above laboratory detection limits

NVG - No Value Given

J - Estimated Value

FB - Field Blank

NA - Not Analyzed

bold & boxed = above Part 375 unrestricted use SCO

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives

***6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*

Table 375-6.8(b):Commercial Use Soil Cleanup Objectives

`

Validated

Table 4

Analytical Results for PCBs In Soil Samples

Former Belle Cleaners

40 Purchase Street, Rye, New York

Sample ID	**SCB-2 (20-22)**	**SCB-3 (20-21)**	**SCB-4 (10-15)**	**SCB-5 (4-5) SS**	**SCB-6 (1.5-3.5) SS**	**SCB-7 (SUB-SLAB**	**SCB-XX**	***Part 375**	****Part 375**
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Unrestricted	Commercial
Date Samples	4/24/2012	4/24/2012	4/24/2012	4/26/2012	4/26/2012	4/24/2012	4/26/2012	Use	Use
PCBs									
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Aroclor 1016	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1221	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1232	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1242	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1248	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1254	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1260	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1268	NA	NA	ND	ND	NA	NA	ND	100	1,000
Aroclor 1262	NA	NA	ND	ND	NA	NA	ND	100	1,000

SCB-XX- Sample is a duplicate of SCB-5

NA - Not Analyzed

ug/Kg - micrograms per kilogram or parts per billion

ND - Not detected at or above laboratory detection limits

NVG - No Value Given

J - Estimated Value

FB - Field Blank

*6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

**6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;

Table 375-6.8(b): Commercial Use Soil Cleanup Objectives

Validated

TABLE 5

Analytical Results for Metals In Soil
Former Belle Cleaners
40 Purchase Street, Rye, New York

Sample ID	**SCB-2 (20-22)**	**SCB-3 (20-21)**	**SCB-4 (10-15)**	**SCB-5 (4-5) SS**	**SCB-6 (1.5-3.5) SS**	**SCB-7 (SUB-SLAB)**	**SCB-XX**	***Part 375**	****Part 375**
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Unrestricted	Commercial
Date Sampled	4/24/2012	4/24/2012	4/24/2012	4/26/2012	4/26/2012	4/24/2012	4/26/2012	Use	Use
Metals									
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NA	NA	4,940	4,620	NA	NA	5,300	NVG	NVG
Antimony	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Arsenic	NA	NA	ND	ND	NA	NA	ND	13	16
Barium	NA	NA	48.8	29.8	NA	NA	35	350	400
Beryllium	NA	NA	0.25	0.22	NA	NA	0.26	7	590
Cadmium	NA	NA	ND	ND	NA	NA	ND	3	9.3
Calcium	NA	NA	1,320	1,590	NA	NA	3,450	NVG	NVG
Chromium	NA	NA	14.8	14	NA	NA	16	NVG	NVG
Cobalt	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Copper	NA	NA	12.9	9.6	NA	NA	11	50	270
Iron	NA	NA	9,230	9,030	NA	NA	10,200	NVG	NVG
Lead	NA	NA	10.3	9.2	NA	NA	10	63	1000
Magnesium	NA	NA	1,720	1,740	NA	NA	1,910	NVG	NVG
Manganese	NA	NA	195	163	NA	NA	187	1,600	10,000
Mercury	NA	NA	0.052	ND	NA	NA	0.05	0.18	2.8
Nickel	NA	NA	19.7	20.3	NA	NA	24	30	310
Potassium	NA	NA	1,210	1,230	NA	NA	1,260	NVG	NVG
Selenium	NA	NA	ND	ND	NA	NA	ND	4	1,500
Silver	NA	NA	ND	ND	NA	NA	ND	2	1,500
Sodium	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Thallium	NA	NA	ND	ND	NA	NA	ND	NVG	NVG
Vanadium	NA	NA	14.1	13.3	NA	NA	14	NVG	NVG
Zinc	NA	NA	17.8	19.2	NA	NA	22	109	10,000

Notes:
SCB-XX- Sample is a duplicate of SCB-5
mg/kg - milligrams per kilogram or parts per million
ND - Not detected at or above laboratory detection limits
NVG - No Value Given
J - Estimated Value
U - The analyte was analyzed for, but was not detected above the reported sample quantitation limits.
FB - Field Blank
NA- Not Analyzed

*6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;
Table 375-6.8(a):Unrestricted Use Soil Cleanup Objectives
***6 NYCRR Part 375; Subparts 375-1 to 375-4 & 375-6;*
Table 375-6.8(b):Commercial Use Soil Cleanup Objectives

Validatec

Table 6

Analytical Results for Volatile Organic Compounds In Groundwater

Former Belle Cleaners

40 Purchase Street

Rye, NY

Sample ID	MW-1	MW-2	MW-3a	MW-4a	MW-XX**	Field Blank	Trip Blank	NYSDEC TOGS*
Matrix	groundwater	groundwater	groundwater	groundwater	groundwater	liquid	liquid	
Date Sampled	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	
Volatile Organic Compounds								
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Acetone	ND	ND	ND	ND	ND	ND	ND	50
Benzene	ND	ND	ND	ND	ND	ND	ND	1
Bromochloromethane	ND	ND	ND	ND	ND	ND	ND	5
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	50
Bromoform	ND	ND	ND	ND	ND	ND	ND	50
Bromomethane	ND	ND	ND	ND	ND	ND	ND	5
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	50
Carbon disulfide	ND	ND	ND	ND	ND	ND	ND	NS
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	5
Chlorobenzene	**19.1**	**22.4**	4.6	**6.4**	**60**	ND	ND	5
Chloroethane	ND	ND	ND	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	ND	ND	ND	7
Chloromethane	ND	ND	ND	ND	ND	ND	ND	NS
Cyclohexane	1.6 J	ND	ND	ND	ND	ND	ND	NS
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	ND	ND	ND	0.04
Dibromochloromethane	ND	ND	ND	ND	ND	ND	ND	50
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	NS
1,2-Dichlorobenzene	ND	**8.6**	ND	ND	2.6	ND	ND	3
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	3
1,4-Dichlorobenzene	ND	ND	ND	ND	2.9	ND	ND	3
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	5
1,2-Dichloroethane	1.5	3.6	ND	ND	2.9	ND	ND	0.6
1,1-Dichloroethene	ND	2.7	ND	ND	ND	ND	ND	5
cis-1,2-Dichloroethene	3.5	121	1.5	136	47.6	ND	ND	5
trans-1,2-Dichloroethene	ND	**14.4**	ND	5.0	ND	ND	ND	5
1,2-Dichloropropane	2.6	ND	ND	ND	5.1	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	0.4
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	0.4
1,4-Dioxane	ND	ND	ND	ND	ND	ND	ND	NS
Ethylbenzene	ND	ND	ND	ND	1.3	ND	ND	5
Freon 113	ND	ND	ND	ND	ND	ND	ND	NS
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	50
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	5
Methyl Acetate	ND	ND	ND	ND	ND	ND	ND	NS
Methylcyclohexane	ND	ND	ND	ND	ND	ND	ND	NS
Methyl Tert Butyl Ether	0.72 J	ND	ND	ND	ND	ND	ND	NS
4-Methyl-2-pentanone (MIBK)	ND	ND	ND	ND	ND	ND	ND	NS
Methylene chloride	ND	ND	ND	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	ND	ND	ND	930
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	5
Tetrachloroethene	**8.9**	**4,230**	**17.6**	**107**	**4,570 J**	ND	ND	5
Toluene	ND	ND	ND	ND	ND	ND	ND	5
1,2,3-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	5
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	5
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	1
Trichloroethene	0.78 J	**101**	1.1	**26.7**	**27.1**	ND	ND	5
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	5
Vinyl chloride	ND	**31.7**	ND	**14.7**	**2.3**	ND	ND	2
m,p-Xylene	ND	ND	ND	ND	0.88 J	ND	ND	NS
o-Xylene	ND	ND	ND	ND	ND	ND	ND	NS
Xylene (total)	ND	ND	ND	ND	0.88 J	ND	ND	5

Notes:

ug/L - micrograms per liter or parts per billion
ND - Not detected at or above laboratory detection limits
NS - No Standard
J - Estimated Value
UJ - Reported quantitation limit is approximate

Boxed and bold indicates exceedance groundwater standards or guidance values

**NYSDEC Technical and Operational Guidance Series (1.1.1)*
Ambient Water Quality Standards and Guidance Values
and Groundwater Effluent Limitations; June 1998
*** MW-XX is a duplicate of MW-2*
R- the presence or absence of the analyte cannot be verified due to quality control criteria

Table 7

Analytical Results for Semi-Volatile Organic Compounds In Groundwater

Former Belle Cleaners

40 Purchase Street

Rye, NY

Sample ID	**MW-1A**	**MW-2**	**MW-3A**	**MW-4A**	**MW-XX****	**Field Blank**	**Trip Blank**	**NYSDEC TOGS***
Matrix	groundwater	groundwater	groundwater	groundwater	groundwater	liquid	liquid	
Date Sampled	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	
Semi-Volatile Organic Compounds								
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Chlorophenol	ND	NA	NA	ND	NA	ND	NA	2
4-Chloro-3-methyl phenol	ND	NA	NA	ND	NA	ND	NA	2
2,4-Dichlorophenol	ND	NA	NA	ND	NA	ND	NA	2
2,4-Dimethylphenol	ND	NA	NA	ND	NA	ND	NA	2
2,4-Dinitrophenol	ND	NA	NA	ND	NA	ND	NA	2
4,6-Dinitro-o-cresol	ND	NA	NA	ND	NA	ND	NA	NS
2-Methylphenol	ND	NA	NA	ND	NA	ND	NA	2
3&4-Methylphenol	ND	NA	NA	ND	NA	ND	NA	2
2-Nitrophenol	ND	NA	NA	ND	NA	ND	NA	2
4-Nitrophenol	ND	NA	NA	ND	NA	ND	NA	2
Pentachlorophenol	ND	NA	NA	ND	NA	ND	NA	2
Phenol	ND	NA	NA	ND	NA	ND	NA	2
2,3,4,6-Tetrachlorophenol	ND	NA	NA	ND	NA	ND	NA	2
2,4,5-Trichlorophenol	ND	NA	NA	ND	NA	ND	NA	2
2,4,6-Trichlorophenol	ND	NA	NA	ND	NA	ND	NA	2
Acenaphthene	ND	NA	NA	ND	NA	ND	NA	20
Acenaphthylene	ND	NA	NA	ND	NA	ND	NA	20
Acetophenone	ND	NA	NA	ND	NA	ND	NA	NS
Anthracene	ND	NA	NA	ND	NA	ND	NA	50
Atrazine	ND	NA	NA	ND	NA	ND	NA	7.5
Benzaldehyde	ND	NA	NA	ND	NA	ND	NA	NS
Benzo(a)anthracene	ND	NA	NA	ND	NA	ND	NA	0.002
Benzo(a)pyrene	ND	NA	NA	ND	NA	ND	NA	NS
Benzo(b)fluoranthene	ND	NA	NA	ND	NA	ND	NA	0.002
Benzo(g,h,i)perylene	ND	NA	NA	ND	NA	ND	NA	5
Benzo(k)fluoranthene	ND	NA	NA	ND	NA	ND	NA	0.002
1,1'-Biphenyl	ND	NA	NA	ND	NA	ND	NA	5
4-Bromophenyl phenyl ether	ND	NA	NA	ND	NA	ND	NA	NS
Butyl benzyl phthalate	ND	NA	NA	ND	NA	ND	NA	50
Caprolactam	ND	NA	NA	ND	NA	ND	NA	NS
2-Chloronaphthalene	ND	NA	NA	ND	NA	ND	NA	NS
4-Chloroaniline	ND	NA	NA	ND	NA	ND	NA	5
Carbazole	ND	NA	NA	ND	NA	ND	NA	29
Chrysene	ND	NA	NA	ND	NA	ND	NA	0.002
bis(2-Chloroethoxy)methane	ND	NA	NA	ND	NA	ND	NA	NS
bis(2-Chloroethyl)ether	ND	NA	NA	ND	NA	ND	NA	NS
bis(2-Chloroisopropyl)ether	ND	NA	NA	ND	NA	ND	NA	NS
4-Chlorophenyl phenyl ether	ND	NA	NA	ND	NA	ND	NA	NS
2,4-Dinitrotoluene	ND	NA	NA	ND	NA	ND	NA	5
2,6-Dinitrotoluene	ND	NA	NA	ND	NA	ND	NA	5
3,3'-Dichlorobenzidine	ND	NA	NA	ND	NA	ND	NA	5
Dibenzo(a,h)anthracene	ND	NA	NA	ND	NA	ND	NA	50
Dibenzofuran	ND	NA	NA	ND	NA	ND	NA	5
Di-n-butyl phthalate	ND	NA	NA	ND	NA	ND	NA	50
Di-n-octyl phthalate	ND	NA	NA	ND	NA	ND	NA	50
Diethyl phthalate	0.37 J	NA	NA	0.27 J	NA	0.24 J	NA	50
Dimethyl phthalate	ND	NA	NA	ND	NA	ND	NA	50
bis(2-Ethylhexyl)phthalate	ND	NA	NA	ND	NA	ND	NA	NS
Fluoranthene	ND	NA	NA	ND	NA	ND	NA	50
Fluorene	ND	NA	NA	ND	NA	ND	NA	50
Hexachlorobenzene	ND	NA	NA	ND	NA	ND	NA	0.04
Hexachlorobutadiene	ND	NA	NA	ND	NA	ND	NA	0.5
Hexachlorocyclopentadiene	ND	NA	NA	ND	NA	ND	NA	5
Hexachloroethane	ND	NA	NA	ND	NA	ND	NA	5
Indeno(1,2,3-cd)pyrene	ND	NA	NA	ND	NA	ND	NA	0.002
Isophorone	ND	NA	NA	ND	NA	ND	NA	50
2-Methylnaphthalene	ND	NA	NA	ND	NA	ND	NA	50
2-Nitroaniline	ND	NA	NA	ND	NA	ND	NA	5
3-Nitroaniline	ND	NA	NA	ND	NA	ND	NA	5
4-Nitroaniline	ND	NA	NA	ND	NA	ND	NA	5
Naphthalene	ND	NA	NA	ND	NA	ND	NA	10
Nitrobenzene	ND	NA	NA	ND	NA	ND	NA	0.4
N-Nitroso-di-n-propylamine	ND	NA	NA	ND	NA	ND	NA	NS
N-Nitrosodiphenylamine	ND	NA	NA	ND	NA	ND	NA	50
Phenanthrene	ND	NA	NA	ND	NA	ND	NA	50
Pyrene	ND	NA	NA	ND	NA	ND	NA	50
1,2,4,5-Tetrachlorobenzene	ND	NA	NA	ND	NA	ND	NA	5

notes:

NA-Not Analyzed
ND - Not detected at or above laboratory detection limits
NS - No Standard
J - Estimated Value
UJ - Reported quantitation limit is approximate

**NYSDEC Technical and Operational Guidance Series (1.1.1)*
Ambient Water Quality Standards and Guidance Values
and Groundwater Effluent Limitations; June 1998
** MW-XX is a duplicate of MW-2

Boxed and bold indicates exceedance of groundwater standards or guidance values

Table 8

Analytical Results for Pesticides and PCB's In Groundwater

Former Belle Cleaners
40 Purchase Street
Rye, NY

Sample ID / Matrix / Date Sampled	MW-1A groundwater 10/23/2012	MW-2 groundwater 10/23/2012	MW-3A groundwater 10/23/2012	MW-4A groundwater 10/23/2012	MW-XX** groundwater 10/23/2012	Field Blank liquid 10/23/2012	Trip Blank liquid 10/23/2012	NYSDEC TOGS*
PCBs								
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2,4-D	ND	NA	NA	ND	NA	ND	NA	NS
Aldrin	ND	NA	NA	ND	NA	ND	NA	NS
alpha-BHC	ND	NA	NA	ND	NA	ND	NA	NS
2,4,5-TP (Silvex)	ND	NA	NA	ND	NA	ND	NA	NS
beta-BHC	ND	NA	NA	ND	NA	ND	NA	NS
2,4,5-T	ND	NA	NA	ND	NA	ND	NA	NS
Dalapon	ND	NA	NA	ND	NA	ND	NA	50
delta-BHC	ND	NA	NA	ND	NA	ND	NA	NS
Dicamba	ND	NA	NA	ND	NA	ND	NA	0.44
Dichloroprop	ND	NA	NA	ND	NA	ND	NA	NS
gamma-BHC (Lindane)	ND	NA	NA	ND	NA	ND	NA	NS
Dinoseb	ND	NA	NA	ND	NA	ND	NA	2
MCPA	ND	NA	NA	ND	NA	ND	NA	NS
MCPP	ND	NA	NA	ND	NA	ND	NA	NS
Pentachlorophenol	0.18	NA	NA	0.15	NA	ND	NA	2
2,4-DB	ND	NA	NA	ND	NA	ND	NA	NS
alpha-Chlordane	ND	NA	NA	0.08	NA	ND	NA	NS
gamma-Chlordane	ND	NA	NA	0.066	NA	ND	NA	NS
Dieldrin	ND	NA	NA	ND	NA	ND	NA	0.004
4,4'-DDD	ND	NA	NA	ND	NA	ND	NA	0.3
4,4'-DDE	ND	NA	NA	ND	NA	ND	NA	0.2
4,4'-DDT	ND	NA	NA	ND	NA	ND	NA	0.2
Endrin	ND	NA	NA	ND	NA	ND	NA	NS
Endosulfan sulfate	ND	NA	NA	ND	NA	ND	NA	NS
Endrin aldehyde	ND	NA	NA	ND	NA	ND	NA	5
Endrin ketone	ND	NA	NA	ND	NA	ND	NA	5
Endosulfan-I	ND	NA	NA	ND	NA	ND	NA	NS
Endosulfan-II	ND	NA	NA	ND	NA	ND	NA	NS
Heptachlor	ND	NA	NA	ND	NA	ND	NA	0.04
Heptachlor epoxide	ND	NA	NA	ND	NA	ND	NA	0.03
Methoxychlor	ND	NA	NA	ND	NA	ND	NA	35
Toxaphene	ND	NA	NA	ND	NA	ND	NA	0.06
Aroclor 1016	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1221	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1232	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1242	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1248	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1254	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1260	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1262	ND	NA	NA	ND	NA	ND	NA	0.1
Aroclor 1268	ND	NA	NA	ND	NA	ND	NA	0.1

Notes:
ug/L - micrograms per liter or parts per billion
ND - Not detected at or above laboratory detection limits
NA- Not Analyzed
NS - No Standard
J - Estimated Value

**NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998*
*** MW-XX is a duplicate of MW-2*

Table 9
Analytical Results for Metals In Groundwater

Former Belle Cleaners
40 Purchase Street
Rye, NY

Sample ID	MW-1A	MW-2	MW-3A	MW-4A	MW-XX**	Field Blank	Trip Blank	NYSDEC TOGS*
Matrix	groundwater	groundwater	groundwater	groundwater	groundwater	liquid	liquid	
Date Sampled	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	10/23/2012	
Total Metals								
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	1,090	NA	NA	**13,800**	NA	<200	NA	2,000
Antimony	<6.0	NA	NA	<6.0	NA	<6.0	NA	6
Arsenic	5.9	NA	NA	<3.0	NA	<3.0	NA	50
Barium	466	NA	NA	248	NA	<200	NA	2,000
Beryllium	<1.0	NA	NA	<1.0	NA	<1.0	NA	3
Cadmium	<3.0	NA	NA	<3.0	NA	<3.0	NA	10
Calcium	128,000	NA	NA	161,000	NA	<5000	NA	NS
Chromium	<10	NA	NA	26.4	NA	<10	NA	100
Cobalt	<50	NA	NA	<50	NA	<50	NA	NS
Copper	<10	NA	NA	36	NA	<10	NA	1,000
Iron	**23,700**	NA	NA	**18,800**	NA	<100	NA	600
Lead	3.9	NA	NA	23.1	NA	<3.0	NA	50
Magnesium	26,000	NA	NA	29,800	NA	<5000	NA	35,000
Manganese	**6,080**	NA	NA	**1,420**	NA	<15	NA	600
Mercury	<0.20	NA	NA	<0.20	NA	<0.20	NA	1.4
Nickel	<10	NA	NA	43.1	NA	<10	NA	200
Potassium	<10000	NA	NA	15,600	NA	<10000	NA	NS
Selenium	<10	NA	NA	<10	NA	<10	NA	20
Silver	<10	NA	NA	<10	NA	<10	NA	100
Sodium	472,000	NA	NA	635,000	NA	<10000	NA	NS
Thallium	<2.0	NA	NA	<2.0	NA	<2.0	NA	0.5
Vanadium	<50	NA	NA	<50	NA	<50	NA	NS
Zinc	<20	NA	NA	56.4	NA	<20	NA	5,000

Notes:
ug/L - micrograms per liter or parts per billion
ND - Not detected at or above laboratory detection limits
NS - No Standard
J - Estimated Value
NA - Not Analyzed

Boxed and bold indicates exceedance of groundwater standards or guidance values

**NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; June 1998*
** MW-XX is a duplicate of MW-2
R- the presence or absence of the analyte cannot be verified

TABLE 10

Summary of Analytical Detections for
Indoor and Outside Ambient Air Samples
Former Belle Cleaners
40 Purchase Street
Rye, NY

Sample ID **Matrix** **Date Sampled** **Location**	**SCAS-1** Indoor Air 12/13/2010	**SCAS-2** Indoor Air 12/13/2010	**SCAS-3** Indoor Air 12/13/2010	**SCAS-4** Outside Ambient Air 12/13/2010	**NYSDOH** Ambient Air Matrix Value*
Method ***EPA TO-15***					
Parameters	ug/m^3	ug/m^3	ug/m^3	ug/m^3	ug/m^3
Acetone	9.75	14.74	14.74	2.85	NGV
Ethyl alchohol	101.68	111.10	96.03	5.65	NGV
Isopropyl Alcohol	39.28	41.74	39.28	ND	NGV
Methylene Chloride	ND	ND	ND	6.60	60
Tetrachloroethene	45.46	38.00	52.92	ND	100
Toluene	9.79	11.30	11.30	ND	NGV
Trichloroethene	ND	ND	2.20	ND	5

Notes:

*NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York; October 2006

NGV = No Given Value

All concentrations are reported in micrograms per cubic meter (ug/m^3)

ND = Compound was analyzed for but was not detected

CA RICH ENVIRONMENTAL SPECIALISTS

APPENDIX B
QUALITY ASSURANCE PROJECT PLAN

Quality Assurance Project Plan

1.1 Introduction - The following Quality Assurance Project Plan (QAPP) has been prepared specifically for the remedial Investigation Work Plan (RIWP) at the former Belle Cleaners located in Rye, New York. This Plan was prepared and approved as stated below:

Prepared by: ______________________________ Date: January 17, 2014
Richard J. Izzo, Project Manager

Approved by: ______________________________ Date: January 17, 2014
Jason Cooper, Q.A. Officer

1.2 QAPP - Table of Contents

The following elements are included in this QAPP:

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

- Identify areas of potential sources of the perchloroethene (PCE);
- Determine the nature and extent of any sources of these contaminants at the subject property; and,

The investigative methods that will be used include Geoprobe drilling, soil sampling, monitoring well installation and sampling, and sub-slab soil vapor and indoor air sampling. These are described in detail in Investigation Work Plan.

1.4 Project Organization - Mr. Richard Izzo will serve as the Project Manager (PM) and will be responsible for the overall scheduling and performance of all the Investigation 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 data validator and laboratory
- Performance of Field Audits
- Preparation of a Data Usability Report

Experienced CA RICH staff will complete the field activities described in the Work Plan.

1.5 Quality Assurance Objectives and Data Measurement - Two types of data will be collected during this R.I.

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 day.

Laboratory Analysis - Soil samples will delivered to a New York State-certified laboratory for analysis of volatile organics. This data is intended to be used to determine the nature and extent of soil contamination and for use in the development of remedial measures such as those discussed in the RI Work Plan. To meet these goals the laboratory will follow the NYSDEC - Analytical Services Protocol dated 2005. All soil and groundwater samples will be analyzed for volatile organic compounds using USEPA method 8260c (Halogenated VOCs only) by a NYSDOH-ELAP certified laboratory. All vapor/air samples will be performed using USEPA method TO-15. NYSDOH ELAP-certified Accutest Laboratories of Dayton, NJ will perform the analysis of all samples. A summary of analytical methods /quality assurance samples is presented on Table Q-1.

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

- **Representativeness -** Representativeness is the degree to which sampling data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability. The Work Plan has been designed to assess the presence of the constituents at the time of sampling. The Plan presents the rationale for sample quantities and location. The Work Plan presents field sampling methodologies and laboratory analytical methodologies, respectively.

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. Comparability between this investigations, and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the QAPP, the RIWP, the NYSDEC ASP analytical methods (2005) with NYSDEC ASP QA/QC requirements (2005) and Superfund Category reporting deliverables; 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 investigation 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 Remedial Investigation. 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 and Investigation Work Plan. Checks for analytical precision will include the analysis of matrix spike duplicates, 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 RIWP.

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 the time of collection through laboratory analysis. 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.

- **Sample Container Details –** The sample matrix, testing parameters, analytical methods, sample containers, preservation and holding times for all samples are included on Table Q-1.

- **Chain-of-Custody Records** - To establish the documentation that is 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. The bottom of each page will be signed.

1.8 Calibration Procedures and Frequency - The contracted laboratory will follow the NYSDEC ASP protocols (2005) for equipment calibration procedures and frequency.

The QA Officer will be responsible for ensuring that the 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 log book.

1.9 Analytical Procedures - All laboratory analysis will be performed using the test methods outlined on Table Q-1 and will follow NYSDEC ASP (2005) protocols with category B deliverables.

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.

- **Laboratory Data** - The laboratory will transfer the instrument readings to laboratory report forms. A qualified independent third party will perform validation of all analytical data using NYSDEC DUSR protocols and prepare a Data Usability Summary Report (DUSR). The DUSR will be provided to NYSDEC.

CA Rich will prepare summary tables of the validated analytical data using computer spread sheet 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 in accordance with NYSDEC ASP (2005) 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 RIWP. 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 at a frequency of once for this initial 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 investigation phase of this project as described below.

- **Field Audits -** The Project Manager and Quality Assurance Officer will monitor field performance. Field performance audit summaries will contain an evaluation of field measurements 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 (2005).

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 -** Laboratory instrument and equipment procedures will be documented by the laboratory. 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 RI will be evaluated with respect to precision, accuracy, and completeness and compared to the Project DQOs. 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 (2005).

- **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.

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

  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 useability 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. 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 field work, 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 and the 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 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 to Management

- **Internal Reporting -**The analytical laboratory will submit analytical reports using NYSDEC ASP (2005), 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** – A Remedial Investigation Report and Data Usability Summary Report (DUSR) will contain a separate QA/QC section summarizing the quality of data collected and/or used as appropriate to the project DQOs.

  The laboratory data will also be provided to the NYSDEC in electronically in an EqUIS compatible format.

APPENDIX C

HEALTH AND SAFETY & COMMUNITY AIR MONITORING PLAN

HEALTH AND SAFETY PLAN
&
COMMUNITY AIR MONITORING PLAN
FOR THE
REMEDIAL INVESTIGATION WORK PLAN
AT
THE FORMER BELLE CLEANERS PROPERTY
40 PURCHASE STREET
RYE, NEW YORK

1.0 INTRODUCTION

This Health and Safety Plan (HASP) is developed for implementation during the planned remedial investigation activities at 40 Purchase Street, Rye, NY (hereinafter referred to as 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 excavation and injection 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 activity (eg. soil borings), a work / exclusion zone will be established within a radius of approximately 10 feet surrounding the activity. Access to this area will be limited to properly trained, properly protected personnel directly involved with the investigation. 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 are 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, chemical-resistant steel-toed boots, boot covers, inner and outer gloves.

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

C – One-piece, hooded chemical-resistant splash suit, hard hat, canister equipped face mask, chemical-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 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 a PID 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 HSC.

3.3 Air Monitoring

The HSC 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 during 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 (HNU) or MiniRae™ 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 and/or other activities will be trained, fit-tested, and medically certified (OSHA 29 CFR 1910. 134). This includes the HSC 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 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 HSC's attention, he or she will evaluate the issue and apply the procedures outlined in this HASP.

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 or his/her designee. 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** Greenwich Hospital 5 Perryridge Road Greenwich, CT (See Figure 1 for Map Route)	**(203) 863-3000**
(2)	**AMBULANCE**	**911**
(3)	**FIRE DEPARTMENT** **HAZARDOUS MATERIAL**	 **911 or (914) 967-4530**
(4)	**POLICE DEPARTMENT** **Rye Police Department**	**911** **(914) 967-1234**
(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 µg/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.

5.1 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.

5.2 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.

5.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

1. All Emergency Response Contacts as listed in the HASP 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.
2. Geoenvironmental Consultants, Inc., 1987; Safety & Operations At Hazardous Materials Sites.
3. US Department Of Health And Human Services, Centers For Disease Control, 1985; NIOSH Guide To Chemical Hazards.
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., 1984; Dangerous Properties Of Industrial Materials.

7.0 KEY PERSONNEL

Responsibility	Name and Phone Number	Task Description
Project Manager	Richard Izzo (516) 576-8844	Oversee and coordinate all technical aspects for the project
Site Safety Officer	Mike Yager (516) 576-8844	Coordinate and inspect all health and safety operations from the project site

Client Representative James Kim (310) 283-5025

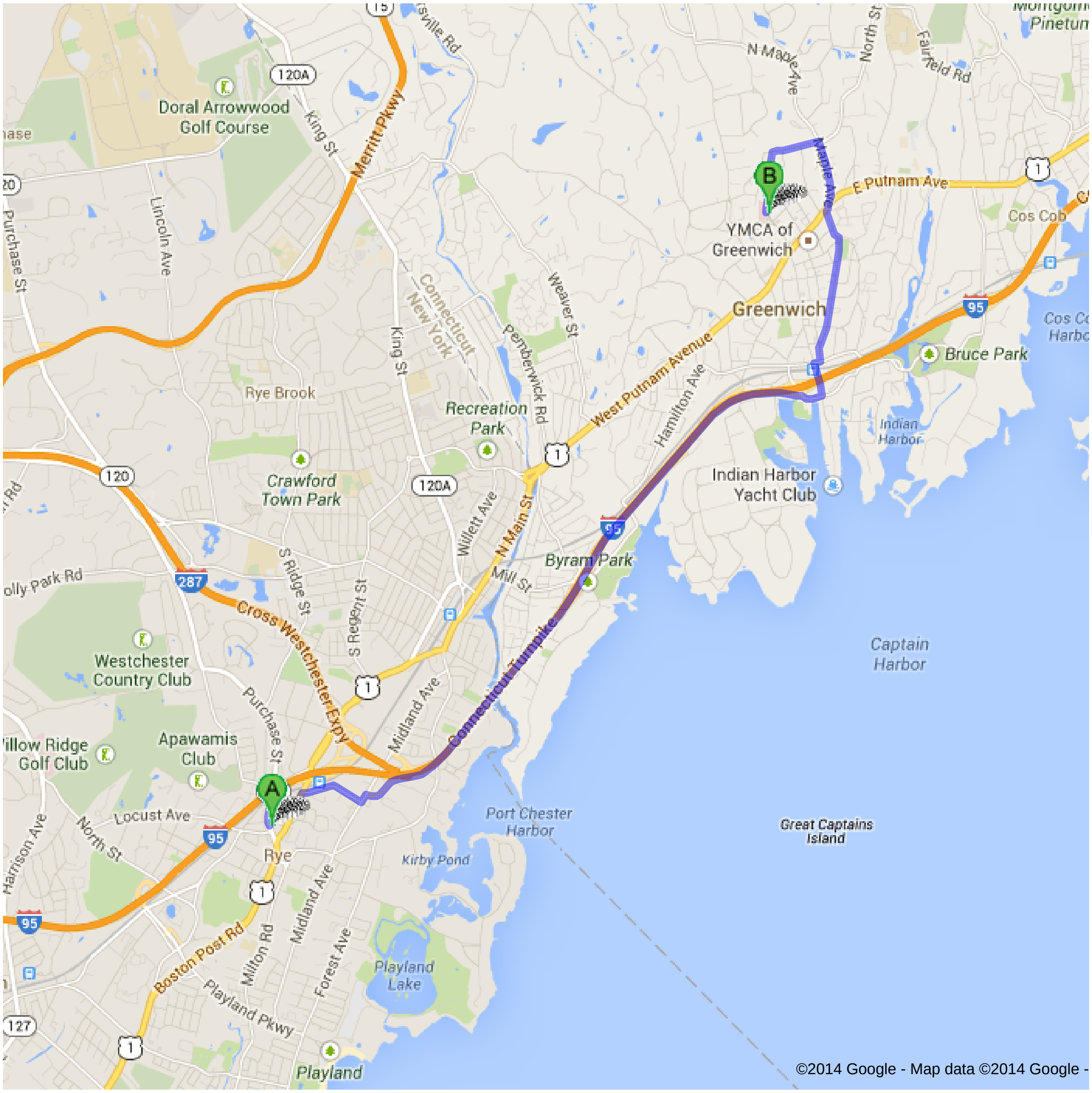
Project Manager Alternate Victoria Whelan (516) 576-8844

Site Safety Officer Alternate Jessica Proscia (516) 576-8844

Figure 1

Hospital Route Map

Directions to 5 Perryridge Rd, Greenwich, CT 06830
6.7 mi – about **14 mins**



A 40 Purchase St, Rye, NY 10580

1.	Head **north** on **Purchase St** toward **Smith St**	go 0.1 mi total 0.1 mi
2.	Take the 2nd right onto **Purdy Ave**	go 0.1 mi total 0.3 mi
3.	Turn left onto **Boston Post Rd**	go 0.1 mi total 0.4 mi
4.	Turn right onto **Peck Ave** About 55 secs	go 0.4 mi total 0.8 mi
5.	Take the 3rd left onto **72/Midland Ave**	go 259 ft total 0.8 mi
6.	Turn right to merge onto **I-95 N** Entering Connecticut About 4 mins	go 3.4 mi total 4.2 mi
7.	Take exit **3** for **Arch Street**	go 0.1 mi total 4.4 mi
8.	Keep right at the fork, follow signs for **Bruce Museum** and merge onto **Arch St**	go 0.1 mi total 4.5 mi
9.	Turn left onto **Steamboat Rd**	go 0.2 mi total 4.7 mi
10.	Take the 1st right onto **Bruce Park Ave**	go 220 ft total 4.8 mi
11.	Take the 1st left onto **Mason St**	go 0.1 mi total 4.9 mi
12.	At the traffic circle, take the **1st** exit onto **Milbank Ave** About 2 mins	go 0.6 mi total 5.5 mi
13.	At the traffic circle, continue straight to stay on **Milbank Ave** About 46 secs	go 0.2 mi total 5.7 mi
14.	Slight right toward **Maple Ave**	go 259 ft total 5.7 mi
15.	Continue straight onto **Maple Ave** About 58 secs	go 0.4 mi total 6.1 mi
16.	Turn left onto **Patterson Ave**	go 0.2 mi total 6.3 mi
17.	Continue onto **Deer Park Dr**	go 331 ft total 6.4 mi
18.	Turn left onto **Perryridge Rd** Destination will be on the right About 1 min	go 0.4 mi total 6.7 mi

B 5 Perryridge Rd, Greenwich, CT 06830

Attachment 1

Physical Properties and
Toxicological Information for PCE

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 D
RESUMES OF PROJECT PERSONNEL

RICHARD J. IZZO, CPG

- **TITLE**

  Associate

- **EDUCATION**

  Bachelor of Science, Geology, State University of New York at Oneonta, 1985

- **CERTIFICATIONS AND REGISTRATIONS**

  AIPG Certified Professional Geologist No. 9644
  Hazardous Waste Operations & Emergency Response Supervisor (29 CFR 1910.120)
  Health & Safety Operations at Hazardous Materials Sites (29 CFR 1910.120)

- **PROFESSIONAL AFFILIATIONS**

  Association of Groundwater Scientists and Engineers
  American Society for Testing and Materials (ASTM)

- **PROFESSIONAL EXPERIENCE**

  Associate, CA Rich Consultants, Inc., 1985 - Present

  Mr. Izzo possesses over twenty five years experience in the design, implementation, and management of environmental testing and remediation programs throughout the Tri-State Area. Examples of these programs include a NYSDEC Brownfields Investigation in Bushwick, NY, a Remedial Investigation for a Superfund Site in Maybrook, NY and a NYSDEC Phase II investigation in Croton-on-Hudson, NY. His responsibilities included design of monitoring well networks, including well location and depth selection; supervision of drilling and well installation; design of sampling and analysis programs including sampling methodology, protocol, and analytical parameters; sampling of soil, groundwater, surface water, ambient air, soil vapor, building materials, and interior radon testing; data reduction (including interpretation of laboratory results, determination of ground water flow direction and rate), and preparation of written reports; interface between responsible parties and regulatory agencies.

  Mr. Izzo has designed, implemented, and managed several remediation programs in the Tri-State Area including a NYSDEC Voluntary Cleanup of a former decal manufacturing facility in Mount Vernon, NY to restore the site to “unrestricted usage” conditions. Mr. Izzo has managed remedial investigative testing and analysis as well as conceptual design of active soil vapor extraction and groundwater treatmant systems. In addition, Mr. Izzo has participated in the design and implementation of passive and active floating product removal systems utilizing pump and treatment methods, oil-sorbent materials and oxygen-releasing products to remove light non-aqueous phase liquids (LNAPLS) and enhance natural bioremediation of dissolved hydrocarbons. Additional remedial action programs managed by Mr. Izzo include removal, testing and proper disposal of abandoned underground storage tanks, as well as contaminated soils and water at a US Postal Service construction site in Manhattan; and identification, testing, excavation and proper disposal of over 7,000 tons of hydrocarbon-impacted soils under a NYSDEC consent Order at a Suffolk County, NY former industrial property as part of site re-development into a residential community.

Mr. Izzo implemented quarterly water quality monitoring program at a New Jersey Site contaminated with chlorinated hydrocarbons. As part of this project, he directed testing and remedial activities including excavation and disposal of contaminated soil based on soil vapor screening with real-time vapor monitoring equipment; removal and disposal of buried 1000 gallon storage tank; removal of contaminated groundwater through installation of small scale recovery well system. In addition, Mr. Izzo assisted in the design of a pilot-scale pump and treatment operation involving the installation of an air stripper to mitigate volatile organic contamination in shallow groundwater.

Mr. Izzo designed, authored, and assisted in the implementation of a Site Health and Safety Plan for the construction and eventual occupation of a United States Postal Service General Mail Facility/Vehicle Maintenance Facility on a former landfill in Brooklyn, NY. Mr. Izzo assisted in development of the Firm's Phase I and Phase II assessment capabilities, and currently serves as the Firm's Environmental Assessment Manager. Related responsibilities include technical and budgetary management of Phase I/Phase II capabilities, as well as assessment sales and client liaison.

Mr. Izzo managed and participated in several ground water resource investigations for potential developers in Westchester, Putnam, and Dutchess Counties in New York. His experience includes seismic profiling, fracture trace analysis, selection of test well locations, supervision of test well installation, design and implementation of 24, 48 and 72-hour pumping tests, as well as reduction and analysis of pumping test data. Mr. Izzo managed a hydrogeologic investigation in support of a ground water allocation permit application for a golf course in Monmouth County, New Jersey. His responsibilities included a drainage basin recharge estimate, analysis of pumping test data and a computer model assessing pumpage impacts to surrounding wells. Additional related responsibilities included preparation of written report and expert testimony at a NJDEP hearing.

Mr. Izzo designed and implemented a town-wide ground water resource management study for the Town of North Castle, New York. This study included mapping of stratified drift and fracture bedrock aquifers, analysis of hydrogeologic information from existing well inventory, development of water budget and estimate of current and potential future ground water resource demand. Mr. Izzo managed a water resource feasibility study for a golf course DEIS application in northern Westchester County. Activities included determination of irrigation requirements and ground water resource exploration. In addition, Mr. Izzo designed and managed a hydrogeologic assessment for a community water supply system in Westchester County. Activities include determination of normal well system operation impacts on nearby surface water bodies, and prediction of well interference effects through utilization of computer modeling.

- **PUBLICATIONS**

Izzo, Richard J. *"Buyer Beware: User Responsibilities under All Appropriate Inquiry Standards"* New York Real Estate Journal; December 2007

Izzo, Richard J. & Rich, Charles A. "*Monitored Natural Attenuation is not NO ACTION"* Long Island Business News; April 1999

Izzo, Richard J*. "Lead Based Paint Risk and Risk Management"*
Long Island Business News, New England Real Estate Journal; May 1993

MICHAEL T. YAGER

- **TITLE**

  Project Manager/Environmental Scientist

- **EDUCATION**

  Biology and Environmental Science SUNY Cortland, 1988

- **CERTIFICATIONS AND REGISTRATIONS**

  Hazardous Waste Operations and Emergency Response-Supervisor OSHA Part 1910.120
  Health & Safety Operations at Hazardous Materials Sites 29 CFR1910.120 (E) (2) - 40 hours
  NYS Department of Labor (NYSDOL) Asbestos Air Sampling Technician
  USEPA AHERA, NYSDOL Approved Asbestos Inspector

- **PROFESSIONAL EXPERIENCE**

  Project Manager/Environmental Scientist, CA Rich Consultants Inc., 1988 – Present

  As a Project Manager/Environmental Scientist for CA RICH, Mr. Yager conducts all aspects of the asbestos abatement industry including asbestos inspections for residential, commercial, and industrial properties; Large and small scale asbestos abatement supervision including third party air monitoring for asbestos fiber control. In addition, Mr. Yager conducts Phase I ESAs and all aspects of hazardous waste site investigations and remediation including hazardous waste characterization, consolidation and disposal; regulatory compliance - RCRA, CERCLA (Superfund), ECRA, AHERA, large and small quantity generator reporting; SARA Title III Community Right-to-Know Reporting, discharge permits for air and groundwater.

  Mr. Yager has also designed, implemented and supervised investigatory and/or remedial activities conducted on-site. Investigatory activities include: sub-surface soil sampling, soil vapor/gas sampling; installation, development and sampling of groundwater monitoring wells, Hydropunch groundwater sampling; air sampling and/or monitoring; etc., to determine and/or delineate the extent and degree of existing contamination at the site. Corrective actions include: asbestos abatement activities; underground storage tank removal or abandonment; excavation of contaminated soils and/or materials; consolidation and proper disposal of hazardous waste; etc., to remediate hazardous materials and/or on-site conditions.

JASON T. COOPER, B.S.

- **TITLE**

  Project Environmental Scientist

- **EDUCATION**

  Bachelor of Science, Geology, State University of New York at Buffalo, 1999

- **CERTIFICATIONS**

  40-hour OSHA Hazardous Waste Operations and Emergency Response Training (OSHA 29 CFR 1910.120)
  8-hour OSHA Hazardous Waste Operations and Emergency Response Refresher Training
  Standard First Aid Training - American Red Cross
  CPR Training – American Red Cross

- **PROFESSIONAL AFFILIATIONS**

  Long Island Association of Professional Geologists (LIAPG)

- **PROFESSIONAL EXPERIENCE**

  Project Environmental Scientist, C A Rich Consultants, Inc., 2005 - Present

  As a Project Environmental Scientist with CA RICH, Mr. Cooper's responsibilities include the conductance of Phase I and Phase II Environmental Site Assessments (ESAs). Jason's Phase I and Phase II ESA experience includes coordinating historical and regulatory database searches, conducting Property inspections, collecting soil, groundwater, and sediment samples and authoring Phase I and Phase II reports.

  Mr. Cooper has also assisted with the construction and start-up tests for an air sparge/soil vapor extraction (AS/SVE) system for the remediation of PCE contamination. In addition, he has conducted quarterly monitoring and troubleshooting for the AS/SVE system.

  Mr. Cooper also conducts annual property inspections for the highly successful Tenant Environmental Compliance Program, which helps to ensure that the tenants are not contaminating a landlord's properties. This Program now covers almost two million square feet of multi-tenanted buildings on Long Island, NY.

  Geologist, Geologic Services Corporation, 2001 - 2005

  As a Geologist with Geologic Services Corporation, Mr. Cooper's responsibilities included the authoring of quarterly monitoring reports, sub-surface investigation reports, and sensitive receptor survey reports. In addition he has conducted monitoring well installation oversight with logging and sampling, remediation system maintenance, well surveying, groundwater sampling, 24-hour pump tests, equipment maintenance and peer mentoring.

  Mr. Cooper developed and implemented a program for the management and oversight for the collection of over 1,000 groundwater samples for a retail gasoline station in Smithtown, New York. His duties included the training of personnel, management and QA/QC of samples, and meeting monthly deadlines. In addition, he conducted monthly mass flux calculations, MTBE vertical cross-section contour maps, vertical cross-section groundwater flow maps (flow nets), and aerial groundwater flow maps.

Jason has also assisted with the construction of a groundwater pump and treat remediation system and determined the most affective locations for the submersible pumps for maximum contamination recovery.

Jason has completed the ExxonMobil Loss Prevention Safety (LPS) program and participated in monthly Health and Safety meetings. Jason conducted health and safety oversight of drilling activities, tank cleanings and removals and soil removal. The LPS and health and safety programs were implemented in the field by Jason as a health and safety officer with zero incidences.

Field Technician, Environmental Assessment and Remediation (EAR) 2000 - 2001

As a field technician with EAR, Mr. Cooper's responsibilities included the construction of remediation systems, operations and maintenance along with troubleshooting of remediation systems, groundwater sampling, air sampling and well abandonment.

VICTORIA D. WHELAN, B.S.

- **TITLE**

  Project Hydrogeologist

- **EDUCATION**

  Bachelor of Science, Geology, State University of New York at Oswego, 2005

- **CERTIFICATIONS**

  40-hour OSHA Hazardous Waste Operations and Emergency Response Training (OSHA 29 CFR 1910.120)
  Standard First Aid Training - American Red Cross- Bohemia Fire Department
  CPR Training – American Red Cross -Bohemia Fire Department

- **PROFESSIONAL EXPERIENCE**

  Project Hydrogeologist, C A Rich Consultants, Inc., 2006 - Present

  As a Project Hydrogeologist with CA RICH, Ms. Whelan's responsibilities include the conductance of Phase I and Phase II Environmental Site Assessments (ESAs). Ms. Whelan has also conducted all aspects of environmental investigations including monitoring well design/installation, groundwater, indoor air, soil gas, subslab vapor, and soil sampling, UST removals, soil delineation, excavation, petroleum and hazardous waste disposal, analytical interpretation, groundwater contouring, and report preparation.

  Ms. Whelan conducts annual property inspections for the highly successful Tenant Environmental Compliance Program, which helps to ensure that the tenants are not contaminating a landlord's properties. This Program now covers almost two million square feet of multi-tenanted buildings on Long Island, NY.

  Project Hydrogeologist, Walden Associates, P.L.L.C, 2005 - 2006

  As a Hydrogeologist with Walden Associates, Ms. Whelan's responsibilities included the quarterly monitoring report write ups, sub-surface investigation reports, monitoring well installation oversight with logging and sampling, remediation system maintenance, well surveying, groundwater sampling, and free product recovery.

  Ms. Whelan assisted with the start-up tests and monitoring for an air sparge/soil vapor extraction (AS/SVE) system for the remediation of PCE contamination on a Federal Superfund site.

- **PROFESSIONAL AFFILIATIONS**

  Long Island Association of Professional Geologists (LIAPG)
  National Ground Water Association, member
  Sigma Xi, member

- **PUBLICATIONS**

Andrews, J., and **Whelan, V.,** Department of Earth Sciences, State University Of New York at Oswego NY 13126**,** Ordovician Carbonates in Northwest Lewis and parts of Southeastern Jefferson counties, New York Northeastern Section and Southeastern Section joint Meeting

- **FIELD RESEARCH FOR PAPER CONTRIBUTIONS**

Bauer, M., Valentino, D., Chiarenzelli, J., Solar, G., Department of Earth Sciences, State University of New York at Oswego, NY 13126, Metamorphic Petrology and Unit Distribution in The Oliver hill Dome, Eastern Adirondack Mountains, New York, Northeastern Section and Southeastern Section joint Meeting

Smith, N., Valentino, D., Chiarenzelli, J., Solar, G., Department of Earth Sciences, State University of New York at Oswego, NY 13126, Distribution of L- and L-S Tectonite in the Oliver Hill Dome, Eastern Adirondack Mountains, New York, Northeastern Section and Southeastern Section joint Meeting

Stilwell, S., Garwron, J., Andrews, J., Bauer, M., Crocetti, A., Meneilly, N., Piaschyk, D., Smith, N., and **Whelan, V.,** Earth Sciences, SUNY Oswego, Oswego, NY 13126, Fracture analysis along the southern shore of Lake Ontario in the Oswego Formation, Oswego County, New York, Northeastern Section and Southeastern Section joint Meeting

JESSICA E. PROSCIA, B.S.

- **TITLE**

  Project Environmental Scientist

- **EDUCATION**

  Bachelor of Science, Health Science, Environmental Health and Safety, State University of New York at Stony Brook, 2007

- **CERTIFICATIONS**

  40-hour OSHA Hazardous Waste Operations and Emergency Response Training (OSHA 29 CFR 1910.120)
  8-hour OSHA Hazardous Waste Operations and Emergency Response Refresher Training
  Standard First Aid Training - American Red Cross
  CPR Training – American Red Cross

- **PROFESSIONAL EXPERIENCE**

  Project Environmental Scientist, C A Rich Consultants, Inc., Oct. 2008 – Present

  As a Project Environmental Scientist with CA RICH, Ms. Proscia's responsibilities include the conductance of Phase I and Phase II Environmental Site Assessments (ESAs). Ms. Proscia has also conducted all aspects of environmental investigations including UST removals, supervision of drilling and well installation, sanitary system or dry well clean-outs, groundwater, and soil sampling, soil delineation, excavation, petroleum and hazardous waste disposal, analytical interpretation, groundwater contouring, and report preparation.

  Environmental Scientist/Health and Safety Officer, Hydro Tech Environmental, Corp., 2007 - 2008

  As an Environmental Scientist with Hydro Tech Environmental, Ms. Proscia's responsibilities included Phase I ESA's through Subsurface Investigations. Ms. Proscia was also involved in site supervision on several properties in New York State.

  Ms. Proscia performed on site safety inspections for the company's field crew as well as trained staff for the OSHA 40-hour and 8-hour refresher course.

- **PROFESSIONAL AFFILIATIONS**

  Long Island Association of Professional Geologists (LIAPG)

Thomas R. Brown

- **TITLE**

Project Environmental Scientist

- **EDUCATION**

Bachelor of Science, Geology, Environmental Geoscience, State University of New York at New Paltz, 2012

- **CERTIFICATIONS**

40-hour OSHA Hazardous Waste Operations and Emergency Response Training (OSHA 29 CFR 1910.120)
8-hour OSHA Hazardous Waste Operations and Emergency Response Refresher Training

- **PROFESSIONAL EXPERIENCE**

Project Environmental Scientist, C A Rich Consultants, Inc., May 2012 – Present

As a Project Environmental Scientist with CA RICH, Mr. Brown's responsibilities include the conductance of Phase I and Phase II Environmental Site Assessments (ESAs). Mr. Brown has also conducted all aspects of environmental investigations including supervision of drilling and well installation, sanitary system or dry well clean-outs, groundwater, indoor air, soil gas, subslab vapor, and soil sampling, soil delineation, excavation, UST removals, petroleum and hazardous waste disposal, analytical interpretation, groundwater contouring, mapping, and report preparation.

Mr. Brown assisted with the start-up tests for soil vapor extraction (SVE) systems for the remediation of PCE contamination on Federal Superfund sites.