

CA RICH Phase II Report



PHASE II ENVIRONMENTAL INVESTIGATION

**BELLE CLEANERS & LAUNDRY
40 PURCHASE STREET, RYE, NY**

Submitted: February 2005

Prepared for:

**BELLE CLEANERS & LAUNDRY
40 PURCHASE STREET, RYE, NY**

Prepared by:

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



RICH
ENVIRONMENTAL SPECIALISTS

February 24, 2005

BELLE CLEANERS AND LAUNDRY
40 Purchase Street
Rye, NY 10580

Attention: James J. Kim

RE: SUMMARY REPORT
Environmental Testing in Response to
Reported Release (Spill No. 0406235)
Belle Cleaners and Laundry
40 Purchase Street, Rye, NY 10580

Dear Mr. Kim

Please find our attached Summary Report for the above-captioned project. As discussed in the attached Report, results of this most recent 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. Recommendations for further action are limited to one year of quarterly air, soil vapor and groundwater monitoring.

Thank you for this opportunity to provide you with our professional services. If you have questions or need for any additional detail, please feel free to contact the undersigned.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

Richard J. Izzo, CPG 9644
Associate

RJI/tk
Attachments

cc:
Craig Tompkins – Bohler Engineering
Keith T. D'Ambrosio – Whitestone Associates
Ram Pergadia - NYSDEC

Hdrive/projects/bellecleaners/cl

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1.0 EXECUTIVE SUMMARY

CA Rich Consultants, Inc. (CA RICH) was retained by Belle Cleaners and Laundry (the Client) to conduct Phase II testing at their Property located at 40 Purchase Street, Rye, NY. The Property has been utilized in excess of forty years as a dry cleaning establishment. This testing was conducted under the auspices of the New York State Department of Environmental Conservation (NYSDEC) in response to the detection (during a previous Phase II study) of the dry-cleaning related chlorinated volatile organic compound (CVOC) perchloroethylene (PCE) in subsurface soil and groundwater at one location immediately adjacent (east) to the on-site building. The PCE detection prompted a call by the Property owner to the NYSDEC Spill Hotline and subsequent issuance of Spill Number 0408235.

The scope of this on-site testing program included installation of four soil borings: one in the location of the previous PCE detection and three through the basement slab of the on-site building. Two soil samples were collected from soils recovered beneath the basement slab. Each boring location was converted to a one-inch diameter microwell for collection and analysis of groundwater samples. In addition, two indoor air quality samples were collected from within the basement of the building along with one exterior "ambient" air sample and two sub-slab soil vapor samples.

Results of this most recent 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.

Recommendations for further action are limited to one year of quarterly air, soil vapor and groundwater monitoring.

2.0 INTRODUCTION AND BACKGROUND

This Report summarizes the recent environmental testing at the former Belle Cleaners located at 40 Purchase Street, Rye, NY (the Site). The scope of the Phase II testing was based upon our review of the recent Phase I and Phase II ESA by Whitestone Associates, Inc., discussions with the Property owner, Mr. James Kim, a telephone conversation with Mr. Ram Pergadia of the New York State Department of Environmental Conservation (NYSDEC), and our cursory site visit conducted on 11-8-04.

The Phase I and Phase II was conducted by Whitestone Associates, Inc. prior to the execution of a lease agreement for the Property between Mr. Kim and Commerce Bank, N.A which plans on demolishing the on-site building and constructing and occupying a new bank building. The property is currently vacant but has been used as a dry cleaning establishment for over 40 years. More recently, the southern portion of the on-site building has been used as a nail salon.

The Whitestone Associates, Inc. Phase I and Phase II identified the presence of low levels of Perchloroethylene (PCE) and its related degradation "daughter" byproducts in the subsurface soil and groundwater immediately adjacent (east) of the building. In addition, low levels of petroleum-related and fill-related constituents were also detected. As recommended by Whitestone Associates, Inc., the NYSDEC Region 3 Spill Hotline was contacted (by Mr. Kim) on October 26, 2004, and Spill Number 0408235 was issued by the Department.

Based upon the information generated, CA RICH prepared a Scope of Work dated January 12, 2005 for additional on-site testing. Prior to implementation, the Scope of Work was reviewed by Whitestone Associates, Inc., and Bohler Engineering, P.C. on behalf of Commerce Bank, NA. In addition, a copy of the Scope of Work was forwarded to Mr. Ram Pergadia of NYSDEC. The work summarized below was performed in general conformance with the approved Scope of Work.

3.0 SUMMARY OF WORK

3.1 Hand-cored Soil borings

Three (3) small-diameter borings designated MW-2; MW-3 and MW-4 were installed through the basement floor in areas of potential contaminant sources using an electric Bosch hammer and soil auger system. Due to difficult drilling conditions, and a shallow water table (less than 1 foot below the basement slab, recovery of soil samples was only possible at two of the three locations, MW-2 and MW-3. Each sample was collected from a depth of zero to six inches below the basement slab and screened for total organic vapor with a photoionization detector (PID). Neither of the two samples exhibited any measurable organic vapor concentrations. The soil materials were then placed in laboratory-issued volatile organic compound (VOC) soil jars and submitted to a New York State Accredited Laboratory for chemical analysis including volatile organic compounds (VOCs). The locations of the soil borings are illustrated on Figure 1.

3.2 Sump and Floor Drain Investigation

Two sumps are located in the basement of the former Belle Cleaners and the adjacent former nail salon. There is also a series of floor drains and associated subsurface piping between the two sumps. When the water level in the nail salon sump reaches a certain level it is automatically pumped through the subsurface piping into the Belle Cleaners sump. The water in the Belle Cleaners sump is then conveyed to the municipal sanitary sewer. As part of our investigation, we dye tested the floor drains between the two sumps to confirm their discharge point. The results of the dye testing indicate that water flowing into all of the floor drains is conveyed to the Belle Cleaners sump.

The Belle Cleaners sump was then tested to determine whether it has a hard or soft bottom. Manual probing with the soil auger and a wrecking bar indicated that the sump's bottom is composed of concrete. As such, no sediment sample was collected from the sump. The location of the two sumps is illustrated on Figure 1.

3.3 Microwell Installation and Sampling

Potable water for Rye is provided by municipal sources from the surface water resources of the Mianus Reservoir in Connecticut. No groundwater is used in the vicinity of the Property for any purpose. Groundwater under unconfined conditions (i.e. the water table) is found in the unconsolidated sediments underlying the subject Property at a depth of approximately 14 feet below land surface. According to maps published by the United States Geological Survey and local area reconnaissance, groundwater underlying the Property follows the local topographic relief and flows with eventual discharge into Blind Brook approximately 300 feet southwest of the Property. Based upon this information, microwell locations were selected to provide data representative of both upgradient and downgradient conditions relative to the shallow groundwater flow direction.

Following soil sample collection, the three hand driven borings in the basement were extended below the water table to the depth at which bedrock refusal was encountered using the bosch hammer with an auger extension. At each location, refusal was encountered at a depth of approximately three feet below the basement slab. A one-inch diameter microwell was then installed at each location using one-inch diameter 10-slot screen and sand packed from the bottom of the screen up to the bottom of the slab. A bolt-down curb box was then cemented in around each well.

One additional microwell (MW-1) was installed in the asphalt area to the east of the building. This well was installed using a Geoprobe in the location of Whitestone Associates B-1 boring (location of PCE and TCE detections). MW-1 was drilled to a depth of 13 feet below land surface at which point bedrock refusal was encountered. The well was then installed with a 5-foot screen and eight feet of riser, sand packed and fitted with a bolt-down curb box.

Following installation of the wells, each well was developed using a peristaltic pump until relatively turbid free groundwater was produced. Because of the shallow bedrock, well yields were not sufficient to sustain continued withdrawal. The wells were pumped dry and allowed to recharge for additional pumping cycles. Following a one-week equilibration period, the wells were purged and sampled using a peristaltic pump with dedicated polyethylene tubing. Samples were collected in laboratory-issued VOC vials and submitted to a New York State Accredited Laboratory for chemical analysis including volatile organic compounds (VOCs). The microwell locations are illustrated on Figure 1.

3.4 Soil Vapor and Indoor Air Sampling and Analysis

Our testing also included the collection of soil vapor samples from two locations and indoor air samples from the two basement spaces in the building and an additional exterior background location. The two sub slab soil vapor samples (AS-03 and AS-04) were collected by installing a temporary soil gas well point to a depth of six inches below the basement slab. The two points were sealed with bentonite grout to prevent atmospheric air from entering the sampling train. Once the grout was allowed to cure, the well points were connected to laboratory prepared and issued stainless steel vacuum canisters. The interior basement indoor air samples (AS-01 and AS-02) along with the exterior ambient air sample (AS-05) were collected directly into the steel canisters from the ambient air within the basements and from the building exterior. All of the air samples were submitted to a New York State Accredited Laboratory for chemical analysis including EPA Compendium Method TO-15.

4.0 SUMMARY OF RESULTS

4.1 Soils

Low levels of perchloroethylene (PCE) degradation byproducts were detected in soil sample MW-2 and low levels of petroleum-related compounds were detected in sample MW-3. However, none of the detected compounds were found at or in excess of NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives (RSCOS). A summary of the detected VOCs in soil is presented on Table 1. Copies of original laboratory results are included as Appendix A.

4.2 Air and Soil Vapor

Neither of the two indoor air samples (AS-01 or AS-02) exhibited the presence of any of the targeted VOCs at or above laboratory detection limits. One of the sub slab samples (AS-04) exhibited the presence of PCE at a concentration of 47 parts per billion (ppb) along with the PCE degradation daughter compounds trichloroethylene (TCE) at 16 ppb and cis-1,2 dichloroethene (DCE) at 50 ppb. Sample AS-05 taken from the ambient exterior air behind the building also contained low levels of these and other VOCs. A complete listing of analytical detections for air/soil gas samples is presented on Table 2.

The results of the air quality testing were compared to the New York State Department of Health Draft Soil Vapor / Indoor Air Decision Diagram for TCE. According to the guidance document an indoor air sample result of "no detection" coupled with a sub-slab soil vapor detection greater than or equal to 50 micrograms per cubic meter (ug/m^3) (equivalent to 7.5 ppb) results in a recommendation for continued monitoring. A copy of the 10/25/04 Draft Decision Diagram is included as Appendix B.

4.3 Groundwater

Sampling and analysis of groundwater from four microwells installed as part of this investigation resulted in detections of chlorinated and petroleum-related VOCs underlying the Property in excess of NYSDEC water quality standards and guidelines. The highest concentration of PCE (290 ug/l) was detected in MW-1 along with TCE at 250 ug/l . The concentrations exceed the NYSDEC Class GA potable groundwater standard of 5 ug/l . Additional PCE degradation byproducts were also detected in MW-1 at lower concentrations including DCE and vinyl chloride. PCE was also detected in MW-2, 3, and 4 at concentrations of 190 ug/l , 17 ug/l and 26 ug/l , respectively. In addition to the chlorinated volatile organic compounds (CVOCs), some petroleum-related compounds were detected. Acetone was detected in MW-3 at 1,200 ug/l and in MW-2 and MW-4 at lower concentrations. This may be the result of an incidental or accidental release of acetone from the former nail salon, however, acetone is a common laboratory analytical artifact and may be attributable to contamination during lab analysis. A summary of analytical detections in groundwater is presented on Table 3.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Soils

The Phase I/Phase II investigation by Whitestone Associates identified low levels of PCE along with petroleum and fill related compounds in the subsurface soils immediately to the east of the on-site building. Soil samples collected from the limited (less than 1 foot) vadose zone beneath the basement slab as part of this investigation also exhibited very low concentrations of CVOCs and petroleum-related constituents well below NYSDEC RSCOS. The levels measured are not judged representative of gross contamination nor a significant continuing source of contamination, but rather residual concentrations attributable to years of on-site industrial usage as a dry cleaning establishment. As such, no active soil remediation is recommended at this time.

5.2 Air Quality

Samples of the indoor air quality within the basement of the former cleaners and nail salon did not exhibit the presence of any VOCs at or above laboratory detection limits. One of the sub-slab samples contained PCE and its degradation byproducts as well as low levels of petroleum-related VOCs. The exterior ambient air sample also exhibited the presence of CVOCs and petroleum-related VOCs. Because no measurable concentrations of targeted VOCs were detected in the indoor air within the building's basement, no mitigative measures are necessary to protect the health of future site occupants. However, based upon NYSDEC and NYSDOH requirements, detection of TCE in the sub-slab soil vapor sample AS-04, at a concentration in excess of 50 $\mu\text{g}/\text{m}^3$ (equivalent to approximately 7.5 ppb) warrants monitoring to ensure that conditions remain stable over an appropriate period of time. As such, CA RICH recommends quarterly CVOC indoor air and sub-slab vapor monitoring for a period of one year. Should conditions improve or remain stable at the end of one year, no further testing will be warranted.

5.3 Groundwater

Sampling and analysis of groundwater samples from the four microwells installed as part of this investigation resulted in detections of PCE and related "daughter" degradation byproducts in all of the wells along with sporadic low-level detections of petroleum-related compounds. Elevated concentrations of acetone were also reported in two of the wells.

Concentrations of the dry-cleaning related CVOCs were observed to be highest in the "upgradient" well just east of the building and appeared to decrease significantly beneath the building to the southwest. As is the case with on-site soils, the levels identified do not suggest gross contamination or a significant ongoing contaminant source that threatens downgradient receptors (i.e. Blind Brook). Conversely, the concentrations and extent of identified CVOCs suggests residual contamination from small historical incidental releases or historical on-site waste handling practices. In addition, the presence of the "daughter" degradation byproducts including TCE, DCE, vinyl chloride and chloroform suggests that on-site natural attenuation of the identified contaminants is occurring.

Based upon this information, and the fact that there is no known local groundwater usage, no active on-site groundwater remediation is judged necessary at this time. However, based upon the documentation of VOC contamination underlying the Property in excess of NYSDEC TOGS Ambient Water Quality Standards and Guidance Values, CA RICH recommends that the microwells installed as part of this investigation be preserved and sampled quarterly for a period of one year. Should conditions improve or remain stable at the end of one year, no further testing will be warranted.

5.4 Documentation and NYSDEC Oversight

The recommended quarterly monitoring outlined above should be documented in the form of quarterly reports submitted to NYSDEC for review. Because no active remediation is necessary, it is recommended that future monitoring be conducted under existing Spill Number 0408235 as opposed to a formal Consent Order or voluntary Brownfield Cleanup Program (BCP) Agreement. In this fashion, NYSDEC approval for termination of monitoring activities and "no further action" can be achieved through closure of the open Spill Case.

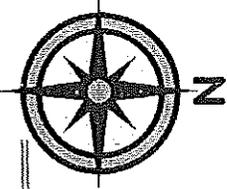
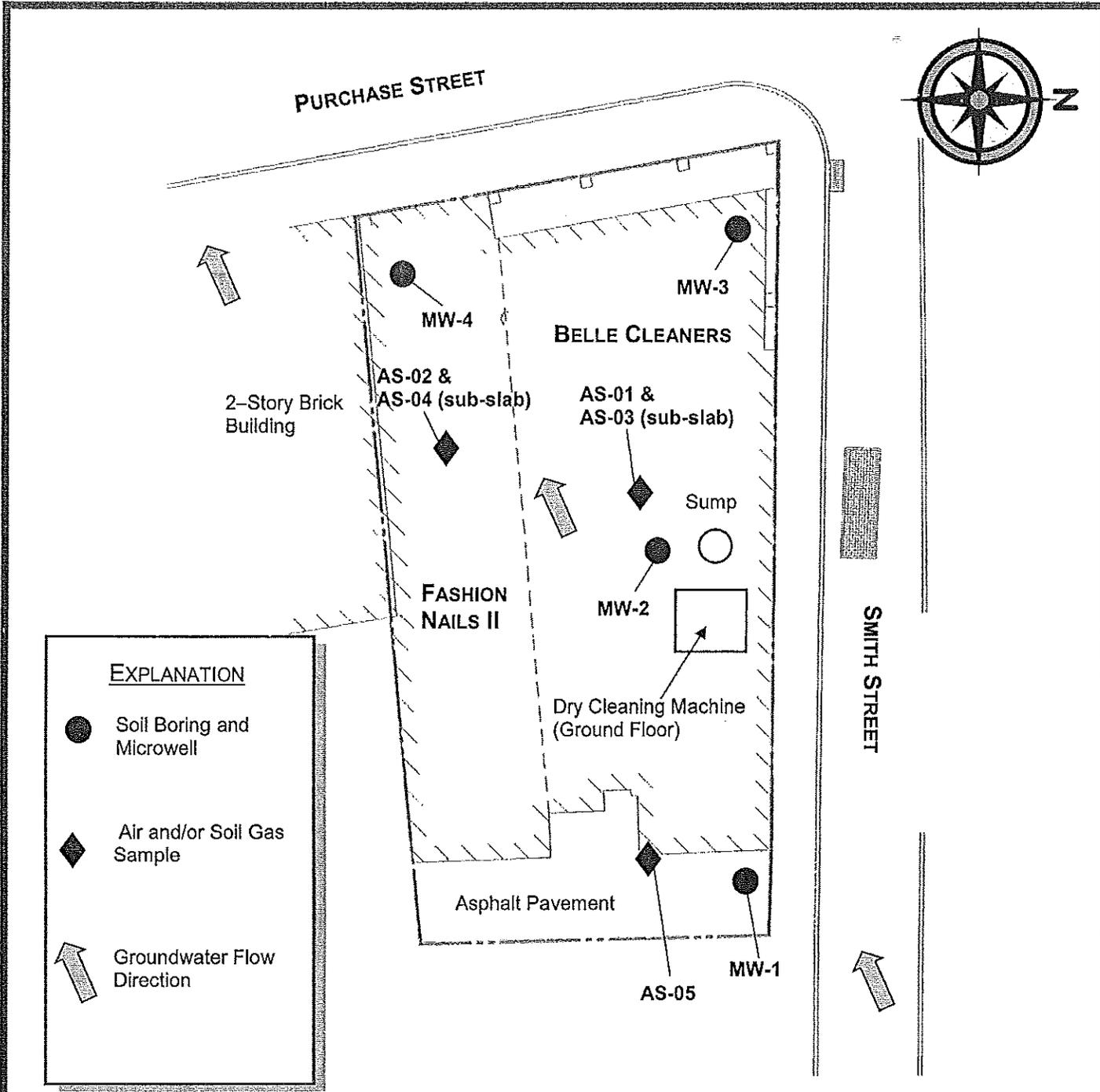
6.0 CERTIFICATION AND LIMITATIONS

CA Rich Consultants, Inc. has performed this investigation in accordance with good commercial and customary practice and generally accepted protocols within the consulting industry. There have been no intentional deviations or deletions from this practice in the conductance of this investigation.

This investigation has been performed diligently in consideration of the accepted practices of the environmental consulting profession. CA RICH cannot warrant site-wide conditions because there may remain unknown or hidden conditions that could not be revealed during the testing conducted.

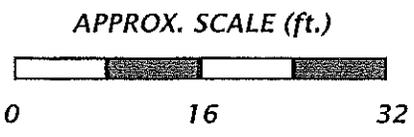
The undersigned cannot be held responsible for inaccurate information furnished to CA RICH regarding the environmental integrity of the Property. However, we do acknowledge that to the best of our belief, the information supplied is true, complete and correct, and that facts or figures that may have an adverse effect upon the validity of this study have not purposely been omitted.

CA RICH has no interest other than professional in this investigation and neither its performance, nor compensation for same, is contingent upon the findings and recommendations that are represented herein.



EXPLANATION

- Soil Boring and Microwell
- ◆ Air and/or Soil Gas Sample
- ↖ Groundwater Flow Direction



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



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

TITLE:		DATE:
Sampling Locations		2/23/05
		SCALE:
FIGURE:		DRAWN BY:
1	Belle Cleaners & Laundry Rye, NY	STM
DRAWING:		APPR. BY:
		RJI

Table 1
Summary of Analytical Detections in Soil Samples
Belle Cleaners
Rye, New York

Sample ID Matrix Date Sampled	MW-2 Soil 1/21/2005	MW-3 Soil 1/21/2005	NYSDEC TAGM #4046
Volatile Organic Compounds Method 8260 Units	<u>ug/Kg</u>	<u>ug/Kg</u>	<u>ug/Kg</u>
<u>Parameters</u>			
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
<p>Notes:</p> <p>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 micrograms per kilogram (ug/Kg) or parts per billion</p>			

TABLE 2

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

Method EPA TO-15	Sample ID Matrix Date Sampled Location	AS-01 Air 1/18/2005 Basement 1-Air	AS-02 Air 1/18/2005 Basement 2-Air	AS-03 Air 1/18/2005 Basement 1-Sub Slab	AS-04 Air 1/18/2005 Basement 2-Sub Slab	AS-05 Air 1/18/2005 Exterior Ambient Air	NYSDOH Ambient Air Guideline	NYSDOH Immediate Action Level
	Parameters	ppb (v/v)	ppb (v/v)	ppb (v/v)	ppb (v/v)	ppb (v/v)	ppb (v/v)	ppb (v/v)
	Tetrachloroethene (PCE)	ND	ND	ND	47	4.8	15	150
	Toluene	ND	ND	ND	1.8	8.4	NA	NA
	Dichlorodifluoromethane	ND	ND	ND	ND	ND	NA	NA
	Acetone	ND	ND	ND	ND	46	NA	NA
	2-Butanone	ND	ND	ND	16	31	NA	NA
	m&p xylenes	ND	ND	ND	1.1	3.4	NA	NA
	o-xylene	ND	ND	ND	ND	1.2	NA	NA
	1,2,4 trimethylbenzene	ND	ND	ND	ND	ND	NA	NA
	benzene	ND	ND	ND	ND	1.4	NA	NA
	carbon disulfide	ND	ND	ND	1.0	4.8	NA	NA
	chloromethane	ND	ND	ND	ND	ND	NA	NA
	1,2 dichloroethane	ND	ND	ND	ND	ND	NA	NA
	ethylbenzene	ND	ND	ND	ND	ND	NA	NA
	methylene chloride	ND	ND	ND	ND	ND	NA	NA
	Trichlorofluoromethane	ND	ND	ND	ND	ND	NA	NA
	Methyl tert-butyl ether	ND	ND	ND	5.5	5.0	NA	NA
	Vinyl chloride	ND	ND	ND	9.4	3.5	NA	NA
	1,1-Dichloroethene	ND	ND	ND	2.4	ND	NA	NA
	Chlorobenzene	ND	ND	ND	ND	1.5	NA	NA
	cis-1,2-Dichloroethene	ND	ND	ND	50	27	NA	NA
	Trichloroethene	ND	ND	ND	16	2.4	NA	NA

Notes:

ND = Not Detected

All concentrations are reported in parts per billion by volume (ppb v/v)

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 Date Sampled	MW-1 2/1/2005	MW-2 2/1/2005	MW-3 2/1/2005	MW-4 2/1/2005	NYSDEC 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-Isopropyltoluene	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