



The Riley Group, Inc.

October 28, 2013

Estate of Maxine E. DeLauro
Ms. Angela T. Prince, Personal Representative
11023 Southeast 326th Street
Auburn, Washington 98092

**RE: Preliminary Phase II Subsurface Investigation
Crystal Cleaners
520 Griffin Avenue
Enumclaw, Washington 98022
RGI Project No. 2013-299A**

Dear Ms. Prince:

The Riley Group, Inc. (RGI) is pleased to present our Preliminary Phase II Subsurface Investigation (Preliminary Phase II) findings and conclusions regarding the Crystal Cleaners property located at 520 Griffin Avenue in Enumclaw, Washington (hereafter referred to as the Site, Figure 1). Authorization for this project was provided by Ms. Angela T. Prince, on behalf of the Estate of Maxine E. DeLauro, September 20, 2013.

PROJECT BACKGROUND

RGI completed, on behalf of the estate of Maxine E. DeLauro (hereafter referred to as the Client), a Phase I Environmental Site Assessment (ESA), dated August 29, 2013 (RGI Project No. 2013-299). Based on our Phase I ESA findings, the following recognized environmental condition (REC) was identified in connection with the Site or its setting:

- **On-Site Dry Cleaning Facility:** The Site has been occupied by a dry cleaning facility from 1969 through the present. Potential environmental issues associated with long-term and historical dry-cleaning operations include the storage, handling, use, and disposal of Stoddard solvent and tetrachloroethylene (PCE) and their generated wastes. The Phase I ESA concluded that the on-site dry cleaners posed a potential threat to soil and/or shallow groundwater quality beneath the Site.

At the Client's request, RGI has conducted this Preliminary Phase II to evaluate the potential for adverse environmental impacts to the soil and/or groundwater quality at the Site in association with the above-identified REC.

SCOPE OF WORK

The scope of work for this project was performed in general accordance with our Preliminary Phase II Subsurface Investigation proposal, dated September 16, 2013. In general, the scope of work completed for this project included the following:

- Performed public and private utility locating in an attempt to identify the location(s) of buried utility lines servicing the building on the Site.
- Relied on information obtained from the Phase I ESA of the Site in order to determine test probe location placement in relation to areas of potential contamination.

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- Advanced six direct-push test probes in suspect areas at the Site (P1 through P6), to a maximum depth of 12 feet below ground surface (bgs).

Note: an apparent groundwater monitoring well located on the Site (south of the building) was not sampled during this subsurface investigation. Based on the Phase I ESA findings, the monitoring well appeared to be in poor condition and may be acting as a conduit for stormwater run-off, or other contaminants, to enter the subsurface. Therefore, any groundwater samples obtained from the well may not be considered representative of groundwater quality.

- Submitted groundwater grab samples for laboratory analysis of potential contaminants of concern.
- Compared analytical results for soil and groundwater to the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A and/or B Cleanup Levels.
- Compared analytical results for groundwater to Ecology's proposed groundwater screening levels outlined in their draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, dated October 2009. The draft guidance indicates that an exceedance to the groundwater screening levels, within 100-foot radius (as a rule of thumb) of an existing building, could result in vapor intrusion into a building and adversely affect indoor air quality
- Prepared this report presenting our findings, observations, and conclusions.

SUBSURFACE INVESTIGATION AND SAMPLING

Private and Public Utility Locate

At least 48 hours prior to commencing our subsurface investigation, RGI contacted One-Call to locate known public underground utilities near, or on, the Site. Public underground utilities located included electric, natural gas, telecommunications, water, sewer, and cable.

RGI reviewed records on-file with the City of Enumclaw. In addition, RGI retained a private utility locator to locate private water, natural gas, electric, and other metallic underground utility conduits potentially located in the proposed test probe locations. A video inspection was conducted to identify the approximate location of the side sewer (as shown in the attached Figure 2). Older building side sewers often leak and are considered a potential conduit for various contaminants of concern to be released to the subsurface environment.

Subsurface Investigation

On October 9, 2013, six test probes (P1 through P6) were advanced to depths ranging from approximately 8 to 12 feet below ground surface (bgs). Test probes were advanced using a truck-mounted, direct push test probe rig owned and operated by Holocene Drilling, Inc. of Puyallup, Washington, under subcontract to RGI. Test probe locations are shown on Figure 2.

Test probes P1 and P2 were located west of the building. P3 and P4 were located south of the building, due to the location of the drycleaning machine and presumed southerly groundwater flow direction. P5 and P6 were located east of the building. P6 was located adjacent to the side sewer on the east side of the building to evaluate the side sewer as a potential pathway of contamination.

No sampling and testing of soil or groundwater was undertaken from inside the site building or off the Site (as excluded from our authorized scope of work).

Subsurface Conditions

Soil conditions encountered were described using the Unified Soil Classification System (USCS). Subsurface soils encountered during drilling generally consisted of sandy silt and gravelly silt. Shallow groundwater was encountered during test probing at depths of approximately 2 to 5 feet bgs. Test probe logs are included in Appendix A.

Soil Sampling

Discrete soil samples were collected at approximately 5-foot intervals (except in cases where there was too little recovery) from each test probe, inspected, and field screened for the presence of volatile organic compounds (VOCs) using a portable gas photoionization detector (PID) and/or water sheen test.

No elevated PID readings were noted at any of the test probe locations. In addition, no obvious odors, sheens, discolorations, or other evidence of soil contamination was observed in the field. Based on the field observations and related field-screening findings, and fact that shallow groundwater was intercepted at all test probes, soil samples were not selected for laboratory analysis.

Groundwater Grab Sampling

Groundwater grab samples were collected from all test probe locations. The groundwater samples were collected through a 3/4-inch-diameter temporary well screen using a peristaltic pump and disposable plastic tubing under low-flow conditions.

During sample collection, RGI attempted to purge as much water as possible in order to reduce sample turbidity prior to sample collection. In general, approximately one gallon of groundwater was purged from each test probe prior to sample collection.

All groundwater grab samples were selected for analytical laboratory analysis.

Groundwater grab samples may not be representative of groundwater conditions or quality (due to the increased sample turbidity associated with the sampling method). To obtain samples that are definitively representative of groundwater would require the installation, development, and sampling of groundwater monitoring wells, which is not the objective of this study. The objective of this study was to determine whether, and in relative terms, groundwater has been adversely affected by the potential contaminants of concern. Groundwater grab sampling will satisfy this project objective as well as provide useful information regarding potential groundwater monitoring well locations, should they be required.

Sampling Protocols

All samples were collected in accordance with our standard operating and decontamination procedures. Prior to advancing each test probe and between each sampling attempt, the sampling equipment and sampling tools were decontaminated by washing in an aqueous detergent solution consisting of a non-phosphate detergent and potable water, and then rinsing with potable water. Samples were placed in preconditioned, sterilized containers provided by an Ecology-accredited analytical laboratory. Soil samples collected for analysis of VOCs were collected using the Ecology-required 5035 sampling method. The samples were placed in a chilled cooler throughout the field program, with all subsequent transportation and transfer accomplished in strict accordance with RGI's chain-of-custody procedures.

Analytical test certificates, including quality control, data, and chain-of-custody documentation for all samples submitted to the analytical testing laboratory by RGI as part of this Preliminary Phase II are included in Appendix B. All test probes were abandoned using hydrated bentonite chips.

Phase II Investigation Derived Waste

All investigation-derived waste (IDW), including any personal protective equipment, soil generated during drilling and sampling, and purge and decontamination water was stored on-site in two 25-gallon steel drums.

REGULATORY FRAMEWORK

Washington's chemical release cleanup law, the Model Toxics Control Act (RCW 70.105D), mandates that site cleanups protect human health and the environment. The MTCA Cleanup Regulation (WAC 173-340) defines the approach for establishing cleanup requirements for individual sites, including the establishment of cleanup standards and selection of cleanup actions.

MTCA regulation provides three options for establishing generic and site-specific cleanup levels for soil and groundwater. Method A and B cleanup levels have been adopted for specific purposes and are intended to provide conservative cleanup levels for sites undergoing routine site characterization or cleanup actions or those sites with relatively few hazardous substances. Method B and C cleanup levels are set using a site risk assessment, which focus on the use of "reasonable maximum exposure" assumptions based on site-specific characteristics and toxicity of the contaminants of concern.

For purposes of comparison, analytical laboratory data for this project were compared to the MTCA Method A Cleanup Levels for Ground Water (considered protective of drinking water). The MTCA Method A cleanup levels are summarized Table 1 and Table 2. For contaminants that do not have an available MTCA Method A cleanup level, MTCA Method B cleanup levels were used.

In addition, concentrations of VOCs detected in groundwater are compared to Ecology's draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State, Investigation and Remedial Action* (Ecology guidance), dated October 2009. Within the Ecology draft guidance, Ecology proposed groundwater screening levels for various contaminants of concern, whereby an exceedance to the screening levels, within 100-foot radius (as a rule of thumb) of an existing building, could result in vapor intrusion into a building and adversely affect indoor air quality. The Ecology proposed groundwater screening levels are included in Table 2 for reference.

ANALYTICAL LABORATORY ANALYSIS

Soil and groundwater grab samples were submitted to Friedman & Bruya, Inc., an Ecology-accredited, third-party analytical laboratory for the requested analyses.

A total of twelve soil samples were submitted for archiving and potential future analysis. Soil samples were not analyzed for this Preliminary Phase II report.

A total of six groundwater grab samples were submitted for laboratory analyses. The samples were submitted for one or more of the following analyses:

- Stoddard solvents using Northwest Test Method NWTPH-Dx.
- Halogenated VOCs (HVOCs) using EPA Test Method 8260C.

ANALYTICAL RESULTS

Stoddard solvent concentrations were reported in all six samples, with concentrations ranging from 150 µg/L to 360 µg/L. However, all reported concentrations as Stoddard solvent were flagged in the analytical report as not representing the fuel standard used by the laboratory for quantification. According to the laboratory chemist, Stoddard solvent actually falls somewhere between diesel-range TPH and gasoline-range TPH. In addition, Ecology does not publish a Method A Cleanup Level specifically for Stoddard. For reference, the more conservative diesel-range TPH Method A Groundwater Cleanup Level of 500 µg/L is used for comparison. All apparent Stoddard solvent concentrations were below the diesel-range TPH Method A Groundwater Cleanup Level of 500 µg/L.

HVOCs were not detected in shallow groundwater intercepted by test probes P1, P2, and P3 (above the method detection limits). Test probes P1, P2, and P3 were west of the building and behind the southwest corner of the building.

Elevated HVOCs, exceeding the MTCA Method A Cleanup Levels for Ground Water, were detected in shallow groundwater intercepted by test probes P4, P5, and P6. Test probes P4, P5, and P6 were located in the general vicinity of the Site building's side sewer lateral. PCE and TCE concentrations in groundwater ranged from 19 to 1,300 µg/L to 28 to 81 µg/L, respectively. These concentrations exceed the MTCA Method A Cleanup Levels for Ground Water for PCE and TCE of 5 µg/L. In addition, cis-1,2-dichloroethene (cis-1,2-DCE) was detected at concentrations up to 120 µg/L and vinyl chloride up to 1.3 µg/L (both above their respective MTCA Method A Cleanup Levels for Ground Water).

The presence of TCE, cis-1,2-DCE, and vinyl chloride are considered to represent the natural degradation (or breakdown) process of PCE. In other words, the simplified natural degradation of PCE is PCE to TCE, TCE to cis-1,2-DCE, and cis-1,2-DCE to vinyl chloride. This findings suggest that the PCE release to the subsurface environment has undergone reductive dechlorination over time.

According to Ecology's draft *Guidance for Evaluating Soil Vapor Intrusion in Washington State*, the elevated PCE, TCE and/or vinyl chloride concentrations detected in shallow groundwater suggest the potential for vapor intrusion into the on-site building.

CONCLUSIONS

Based on our preliminary subsurface investigation findings, RGI concludes the following:

- Shallow groundwater was encountered in all six test probes advanced during this subsurface investigation. Depth to groundwater encountered during drilling ranged from depths of 2 feet and 5 feet bgs. Shallow soils encountered during drilling generally consisted of sandy silt to a maximum depth explored during this investigation of 12 feet bgs.
- Groundwater grab sample data indicates that shallow groundwater on the eastern and southeastern portion of the Site is impacted with concentrations of PCE, TCE, cis-1,2,-DCE, and vinyl chloride above the MTCA Method A or B Groundwater Cleanup Levels. This area of groundwater contamination generally coincides with the location of the on-Site buildings sewer lateral. Therefore, the chlorinated solvent release to the subsurface may have occurred, at least in part, from this sewer lateral.
- Groundwater grab sample data indicates that groundwater on the western and southwestern portion of the Site is not contaminated with chlorinated solvents.
- According to Ecology's *DRAFT Guidance for Evaluating Soil Vapor Intrusion in Washington State*, the elevated groundwater concentrations detected suggest the potential for vapor intrusion into the building.

PROJECT LIMITATIONS

This report is the property of RGI, the Estate of Maxine E. DeLauro, Ms. Angela Prince, and their authorized representatives or affiliates and was prepared in a manner consistent with the level of skill and care ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. This report is intended for specific application to Crystal Cleaners located at 520 Griffin Avenue, Enumclaw, Washington. No other warranty, expressed or implied, is made.

The analyses and recommendations presented in this report are based upon data obtained from our review of available information at the time of preparing this report, our test pits excavated or test borings drilled on the Site, or other noted data sources. Conditional changes may occur through time by natural or human-made process on this or adjacent properties. Additional changes may occur in legislative standards, which may or may not be applicable to this report. These changes, beyond RGI's control, may render this report invalid, partially or wholly. If variations appear evident, RGI should be requested to reevaluate the recommendations in this report.

Please contact the undersigned at (425) 415-0551 should you have any questions or need additional information.


Sincerely,
THE RILEY GROUP, INC.



Mike Gibson
Staff Geologist



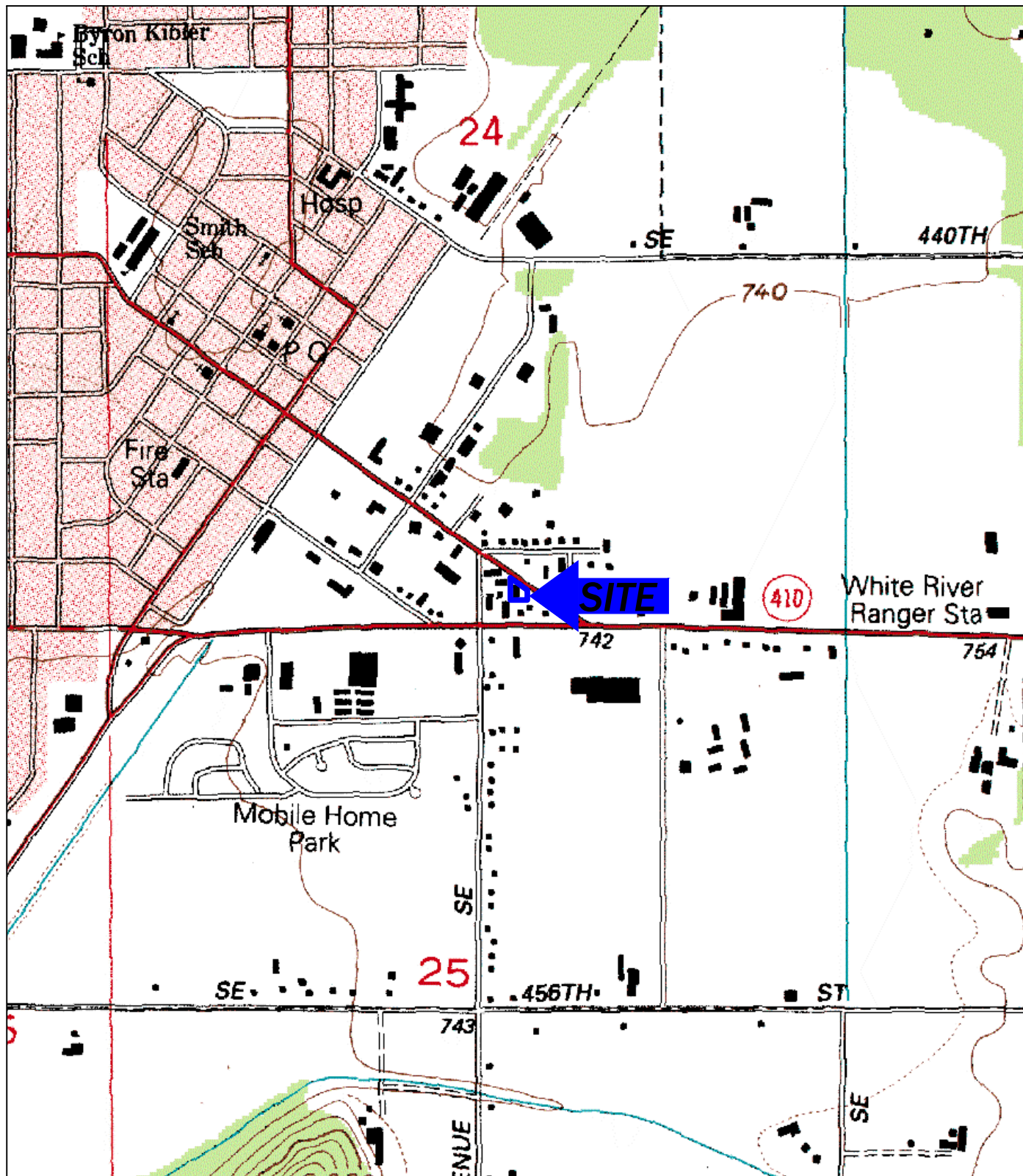
Jerry Sawetz,
Senior Environmental Scientist



Paul Riley, LG, LHG
Principal/Senior Reviewer

*Attachments: Figure 1, Site Vicinity Map
Figure 2, Site Plan with Test Probe Locations and Groundwater Analytical Results
Table 1, Summary of Soil Analytical Laboratory Results
Table 2, Summary of Groundwater Analytical Laboratory Results
Appendix A, Test Probe Logs
Appendix B, Analytical Laboratory Results*

Distribution: Ms. Angela Prince (one bound copy and PDF)



USGS, 1993, Enumclaw, Washington
7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



The Riley Group, Inc.

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Crystal Cleaners

Figure 1

RGI Project Number

Site Vicinity Map

Date Drawn:

2013-299A

10/2013

Address: 520 Griffin Avenue, Enumclaw, Washington 98022

Commercial/Retail

Griffin Avenue

Parking

Crystal Cleaners

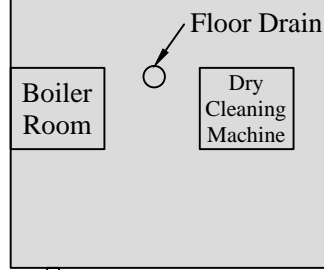
P1							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P1W-	200 x	ND	ND	ND	ND	ND	ND

P2							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P2W-	250 x	ND	ND	ND	ND	ND	ND

TMO Electrical Contractors

Asphalt

Gravel



Side Sewer

Natural Gas Meter

Monitoring Well

Parking Lot for South-Adjoining Pizza Hut

P5							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P5W	360 x	1,300	28	120	ND	ND	ND

P6							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P6W	170 x	19	ND	ND	ND	ND	ND

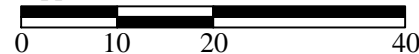
P4							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P4W	220 x	250	81	110	ND	1.3	ND

P3							
Sample	Stoddard	PCE	TCE	Cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P3W-	150 x	ND	ND	ND	ND	ND	ND

= Groundwater Analytical Results in ug/L
 Stoddard = Stoddard Solvent
 PCE = Tetrachloroethene
 TCE = Trichloroethene
 DCE = Dichloroethene
 VC = Vinyl Chloride
 HVOCs = Halogenated Volatile Organic Compounds
 ND = Not Detected Above Laboratory Detection Limit
 Bold and Yellow Highlighted Results Exceed MTCA Cleanup Levels

= Test Probe Location by RGI on 10/09/13
 = Catch Basin
 = Site Boundary

Approximate Scale: 1"=20'



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Crystal Cleaners

Figure 2

RGI Project Number	Site Plan with Test Probe Locations and Groundwater Analytical Results	Date Drawn:
2013-299A		10/2013
Address: 520 Griffin Avenue, Enumclaw, Washington 98022		

Table 1. Summary of Soil Sample Analytical Laboratory Results

Crystal Cleaners

520 Griffin Avenue, Enumclaw, Washington 98022

The Riley Group, Inc. Project No. 2013-299A

Sample Number	Sample Depth	Sample Date	PID	Stoddard Solvent	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P1-4.5	4.5	10/09/13	0.1	----	----	----	----	----	----	----
P1-7.75	7.75	10/09/13	0.1	----	----	----	----	----	----	----
P2-6	6	10/09/13	0.0	----	----	----	----	----	----	----
P2-10	10	10/09/13	0.0	----	----	----	----	----	----	----
P3-6	6	10/09/13	0.1	----	----	----	----	----	----	----
P3-10	10	10/09/13	0.0	----	----	----	----	----	----	----
P4-5	5	10/09/13	0.0	----	----	----	----	----	----	----
P4-10	10	10/09/13	0.1	----	----	----	----	----	----	----
P5-5	5	10/09/13	0.1	----	----	----	----	----	----	----
P5-10	10	10/09/13	0.0	----	----	----	----	----	----	----
P6-5	5	10/09/13	0.0	----	----	----	----	----	----	----
P6-10	10	10/09/13	0.0	----	----	----	----	----	----	----
MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses				100	0.05	0.03	160¹	1,600¹	240¹	Analyte Specific

All results and detection limits are given in mg/kg; equivalent to parts per million (ppm).

Sample Depth = Soil sample depth interval in feet below ground surface (bgs).

PID = photoionization detector.

Stoddard Solvent determined using Ecology Test Method NWTPH-Dx.

exceedance of the air cleanup level in an overlying structure under most circumstances (Ecology Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Draft October 2009).

ND = Not detected above noted analytical detection limit.

---- = Not analyzed or not applicable.

¹ Method A cleanup level was not available. Therefore, the MTCA Method B cleanup level is referenced.

Ecology Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses (WAC 173-340-900, Table 740-1).

Bold and yellow highlighted results indicate concentrations (if any) that exceed MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses.

Table 2. Summary of Groundwater Grab Sample Analytical Laboratory Results**Crystal Cleaners****520 Griffin Avenue, Enumclaw, Washington 98022****The Riley Group, Inc. Project No. 2013-299A**

Sample Number	Sample Date	Depth to Water (bgs)	Stoddard Solvent	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	Other HVOCs
P1W-	10/09/13	2.5	200 x	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND
P2W-	10/09/13	2.2	250 x	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND
P3W-	10/09/13	5.0	150 x	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND
P4W	10/09/13	2.7	220 x	250	81	110	ND<1	1.3	ND
P5W	10/09/13	5.7	360 x	1,300	28	120	ND<1	ND<0.2	ND
P6W	10/09/13	3.2	170 x	19	ND<1	ND<1	ND<1	ND<0.2	ND
MTCA Method A Cleanup Levels for Ground Water			500	5	5	16¹	160¹	0.2	Analyte Specific
Ecology Draft Method B Groundwater Screening Levels for Potential Vapor Intrusion			----	1	0.42	160	130	0.35	Analyte Specific

Samples collected by RGI field staff using a submersible pump under low flow conditions.

Unless otherwise noted, all analytical results are given in micrograms per liter (ug/L), equivalent to parts per billion (ppb).

Stoddard Solvent determined using Ecology Test Method NWTPH-Dx. Therefore, as diesel cleanup level is listed for reference.

PCE (tetrachloroethene), TCE (trichloroethene), cis-1,2-DCE (cis-1,2-dichloroethene), trans-1,2-DCE (trans-1,2-dichloroethene), VC (vinyl chloride), and other HVOCs (halogenated volatile organic compounds) determined using EPA Test Method 8260C.

ND = Not detected above noted analytical detection limit.

x = The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

---- = Not analyzed.

¹ Method A cleanup level was not available. Therefore, the MTCA Method B cleanup level is referenced.

Ecology Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-900, Table 720-1).

Ecology Draft Method B Groundwater Screening Levels = The maximum concentration in the groundwater expected not to result in exceedance of the air cleanup level in an overlying structure under most circumstances (Ecology Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Draft October 2009).

Bold and yellow highlighted results indicate concentrations (if any) that exceed MTCA Method A Cleanup Levels for Ground Water.

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P1**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Asphalt
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 12 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 2.5 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.2					0	Asphalt	
						Dark brown, fine to medium, sandy SILT, medium dense, moist, no odor, no sheen	
0.2				∇		Dark brown to gray, fine to medium, sandy organic SILT to SILTY SAND with scattered rounded gravel, soft, moist to wet, no odor, no sheen, irregular seepage packets, lenses of medium to coarse sands are wet to saturated	
	P1-4.5					Beige to gray, fine, sandy SILT with trace gravel, soft, moist to wet, no odor, no sheen	
0.1					5		
	P1-7.75					Light brown, fine to medium, SILTY SAND with trace gravel, soft, wet to saturated, no odor, no sheen	
0.1					10		
						Test probe terminated at 12 feet bgs	
					15		
					20		

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P2**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Asphalt
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 10 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 2.2 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.1				▽	0	Asphalt	
						Dark brown, fine, well-graded, medium to coarse sandy, organic SILT with scattered coarse gravel, medium stiff, moist, no odor, no sheen	
0.0						Dark brown to gray, fine, sandy SILT with scattered coarse gravel, soft, wet zones, no sheen	
0.0	P2-6				5	Light brown, fine to medium, sandy SILT with trace fine to medium gravel, soft, saturated, no sheen	
	P2-10				10	Test probe terminated at 10 feet bgs	
					15		
					20		

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P3**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Grass
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 10 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 5.0 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	


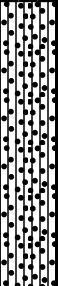
PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.0					0	Dark brown, fine to coarse, organic SILT with medium to coarse sand and gravel, dense, dry with moist packets, no odor, no sheen (Fill)	
0.1	P3-6			5	5	Light brown mottled with oxidation staining, fine, sandy SILT with trace gravel, soft to medium dense, moist to wet, no odor, no sheen	
						Poor recovery	
0.0	P3-10			10	10	Test probe terminated at 10 feet bgs	
					15		
					20		

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P4**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Gravel/Grass
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 10 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 2.7 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.0	P4-5			2.7	0	Dark brown, fine to coarse, sandy, organic SILTY GRAVEL with concrete, brick, and glass, loose to medium stiff, dry with moist zones, no odor, no sheen (Fill)	
0.1	P4-10				5	Beige with oxidization staining from 5 to 6 feet bgs, fine to medium, SILTY SAND with scattered fine to medium rounded gravel, soft, moist to saturated, no odor, no sheen	
					10	Test probe terminated at 10 feet bgs	
					15		
					20		

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P5**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Gravel/Parking
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 10 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 5.7 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
					0	Dark brown, fine to coarse, sandy, organic SILTY GRAVEL with brick, soft, moist, no odor, no sheen (Fill)	
0.1	P5-5				5	Light brown, fine to medium, SILTY SAND, soft, wet to saturated, no odor, no sheen	
0.0	P5-10				10	Test probe terminated at 10 feet bgs	
					15		
					20		

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**



Test Probe No.: **P6**
 Sheet 1 of 1

Date(s) Drilled: 10/09/13	Logged By: MG	Surface Conditions: Gravel/Driveway
Drilling Method(s): Direct Push	Drill Bit Size/Type: 2" Diameter	Total Depth of Borehole: 8 feet bgs
Drill Rig Type: Truck Mounted	Drilling Contractor: Holocene Drilling Inc.	Approximate Surface Elevation: n/a
Groundwater Level and Date Measured: 3.2 feet bgs	Sampling Method(s): Continuous	Hammer Data : n/a
Borehole Backfill: Bentonite	Location: 520 Griffin Avenue, Enumclaw, Washington 98022	

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.0	P6-5			3.2	0	Dark brown, fine, sandy, organic SILTY GRAVEL with brick, medium stiff, moist, no odor, no sheen	
					5	Light brown mottled with oxidation staining, fine to medium, SILTY SAND, soft to medium dense, moist to wet, no odor, no sheen	
0.0	P6-10				10	Test probe terminated at 8 feet bgs	

Project Name: **Crystal Cleaners**
 Project Number: **2013-299A**
 Client: **Estate of Maxine E. De Lauro**

PID Reading, ppm	Sample ID	Sample Type	Sampling Resistance, blows/ft	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
1	2	3	4	5	6	7	8

COLUMN DESCRIPTIONS

- 1** PID Reading, ppm: The reading from a photo-ionization detector, in parts per million.
- 2** Sample ID: Sample identification number.
- 3** Sample Type: Type of soil sample collected at the depth interval shown.
- 4** Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
- 5** GW Depth: Groundwater depth in feet below the ground surface.
- 6** Depth (feet): Depth in feet below the ground surface.
- 7** MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
- 8** Graphic Log: Graphic depiction of the subsurface material encountered.









FIELD AND LABORATORY TEST ABBREVIATIONS

- CHEM: Chemical tests to assess corrosivity
- COMP: Compaction test
- CONS: One-dimensional consolidation test
- LL: Liquid Limit, percent
- PI: Plasticity Index, percent
- SA: Sieve analysis (percent passing No. 200 Sieve)
- UC: Unconfined compressive strength test, Qu, in ksf
- WA: Wash sieve (percent passing No. 200 Sieve)






MATERIAL GRAPHIC SYMBOLS

-  Asphaltic Concrete (AC)
-  Silty GRAVEL (GM)
-  SILT, SILT w/SAND, SANDY SILT (ML)
-  Silty SAND (SM)
-  Silty SAND to Sandy SILT (SM-ML)

TYPICAL SAMPLER GRAPHIC SYMBOLS

-  Auger sampler
-  Bulk Sample
-  3-inch-OD California w/ brass rings
-  CME Sampler
-  Continuous Core
-  Grab Sample
-  2.5-inch-OD Modified California w/ brass liners
-  Pitcher Sample

OTHER GRAPHIC SYMBOLS

-  Water level (at time of drilling, ATD)
-  Water level (after waiting)
-  Minor change in material properties within a stratum
-  Inferred/gradational contact between strata
-  Queried contact between strata

GENERAL NOTES

- 1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- 2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
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October 23, 2013

Ada Hamilton, Project Manager
The Riley Group, Inc.
17522 Bothell Way NE
Bothell, WA 98011

Dear Ms. Hamilton:

Included are the results from the testing of material submitted on October 10, 2013 from the Crystal Cleaners Ph II 2013-299A, F&BI 310193 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
TRG1023R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 10, 2013 by Friedman & Bruya, Inc. from the The Riley Group Crystal Cleaners Ph II 2013-299A, F&BI 310193 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>The Riley Group</u>
310193 -01	P1-4.5
310193 -02	P1-7.75
310193 -03	P2-6
310193 -04	P2-10
310193 -05	P3-6
310193 -06	P3-10
310193 -07	P4-5
310193 -08	P4-10
310193 -09	P5-5
310193 -10	P5-10
310193 -11	P6-5
310193 -12	P6-10
310193 -13	P1W-
310193 -14	P2W-
310193 -15	P3W-
310193 -16	P4W
310193 -17	P5W
310193 -18	P6W

The NWTPH-Dx stoddard laboratory control sample and the associated relative percent difference failed the acceptance criteria. The data were flagged accordingly. There was insufficient sample for reextraction and reanalysis.

Chloroethane in the 8260C matrix spike, laboratory control sample and laboratory control sample duplicate exceeded the acceptance criteria. The analyte was not detected in the sample, therefore the data were acceptable.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P1W-	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-13
Date Analyzed:	10/11/13	Data File:	101117.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P2W-	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-14
Date Analyzed:	10/11/13	Data File:	101118.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P3W-	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-15
Date Analyzed:	10/11/13	Data File:	101119.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P4W	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-16
Date Analyzed:	10/11/13	Data File:	101120.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	1.3
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	110
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	81
Tetrachloroethene	250 ve

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P4W	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-16 1/10
Date Analyzed:	10/14/13	Data File:	101416.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<2 pr
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	110
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	82
Tetrachloroethene	250

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P5W	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-17
Date Analyzed:	10/11/13	Data File:	101121.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	120
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	28
Tetrachloroethene	1,300 ve

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P5W	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-17 1/100
Date Analyzed:	10/14/13	Data File:	101417.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	104	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<20 pr
Chloroethane	<100
1,1-Dichloroethene	<100
Methylene chloride	<500
trans-1,2-Dichloroethene	<100
1,1-Dichloroethane	<100
cis-1,2-Dichloroethene	130
1,2-Dichloroethane (EDC)	<100
1,1,1-Trichloroethane	<100
Trichloroethene	<100
Tetrachloroethene	1,300

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	P6W	Client:	The Riley Group
Date Received:	10/10/13	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	310193-18
Date Analyzed:	10/14/13	Data File:	101415.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	19

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	Crystal Cleaners Ph II 2013-299A
Date Extracted:	10/11/13	Lab ID:	03-2051 mb
Date Analyzed:	10/11/13	Data File:	101107.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzen e	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/23/13

Date Received: 10/10/13

Project: Crystal Cleaners Ph II 2013-299A, F&BI 310193

Date Extracted: 10/16/13

Date Analyzed: 10/17/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS**

**AS STODDARD SOLVENT
USING METHOD NWTPH-Dx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Stoddard Solvent Range</u> (C ₈ -C ₁₁)	<u>Surrogate</u> (% Recovery) (Limit 47-140)
P1W- 310193-13	200 x	83
P2W- 310193-14	250 x	81
P3W- 310193-15	150 x	67
P4W 310193-16	220 x	85
P5W 310193-17	360 x	84
P6W 310193-18	170 x	89
Method Blank 03-2089 MB	<50	86

Note: The NWTPH-Dx stoddard laboratory control sample and the associated relative percent difference failed the acceptance criteria. The results should be considered estimates.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/23/13

Date Received: 10/10/13

Project: Crystal Cleaners Ph II 2013-299A, F&BI 310193

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 310178-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	104	36-166
Chloroethane	ug/L (ppb)	50	<1	181 vo	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	91	60-136
Methylene chloride	ug/L (ppb)	50	<5	102	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	91	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	91	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	92	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	97	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	91	60-146
Trichloroethene	ug/L (ppb)	50	<1	95	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	101	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	91	95	50-154	4
Chloroethane	ug/L (ppb)	50	159 vo	167 vo	58-146	5
1,1-Dichloroethene	ug/L (ppb)	50	89	90	67-136	1
Methylene chloride	ug/L (ppb)	50	97	98	39-148	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	92	93	68-128	1
1,1-Dichloroethane	ug/L (ppb)	50	90	91	79-121	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	93	93	80-123	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	97	97	73-132	0
1,1,1-Trichloroethane	ug/L (ppb)	50	92	94	83-130	2
Trichloroethene	ug/L (ppb)	50	95	95	80-120	0
Tetrachloroethene	ug/L (ppb)	50	99	102	76-121	3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/23/13

Date Received: 10/10/13

Project: Crystal Cleaners Ph II 2013-299A, F&BI 310193

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
STODDARD SOLVENT USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Stoddard Solvent	ug/L (ppb)	2,500	58 vo	147	70-130	87 vo

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 - More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

310193

SAMPLE CHAIN OF CUSTODY

ME 10-10-13

03/02/VS3
2 of 2

Send Report To Ada Hamilton
Company 17522 Bothell Way NESTA
Address Bothell, WA 98011
City, State, ZIP The Riley Group, Inc.
Phone # 425-415-0551 Fax # 425-415-0311

SAMPLERS (signature) <u>Mike Gipson</u>	
PROJECT NAME/NO. <u>Crystal Cleaners Ph II</u>	PO# <u>2013-299A</u>
REMARKS	

TURNAROUND TIME <input type="checkbox"/> Standard (2 Weeks) <input type="checkbox"/> RUSH Rush charges authorized by _____
SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Return samples <input type="checkbox"/> Will call with instructions

Lab ID	Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
							TPH-Diesel	TPH-Gasoline	BTEX by 8021B	4-VOCs by 8260	SVOCs by 8270	HFS	Stoddard Solvent		NWTPH-DX	
11AE	P6-5	01AE	10/9/13	11:15	S	5										HOLD
12	P6-10	02		11:20	S	5										HOLD
13	P1w-	03		13:00	W	5				X				X		
14	P2w-	04		12:50						X				X		
15	P3w-	05		12:25						X				X		
16	P4w	06		12:15						X				X		
17	P5w	07		11:50						X				X		
18	P6w	08	✓	11:40	✓	✓				X				X		
												Samples received at <u>4</u> °C				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044
FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>Mike Gipson</u>	Mike Gipson	RGT	10/9/13	3:45
Received by: <u>[Signature]</u>	PHAN C	PERD	10/10	12:55
Relinquished by:				
Received by: <u>[Signature]</u>	Nhan Phan	FBI	10/10/13	1445