ASSOCIATED ENVIRONMENTAL GROUP, LLC

Phase II Environmental Site Assessment

Conducted on:
4 Corners Cleaners
23886 SE Kent-Kangley Road
Maple Valley, Washington 98038-6848

Prepared for:
Mr. Chang Kim
23886 SE Kent-Kangley Road
Maple Valley, Washington 98038-6848

Prepared & Reviewed by:

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Project Manager

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Senior Hydrogeologist

State of Washington
Hydrogeologist
2635
Licensed Geologist
SCOTT I ROSE

AEG Project #: 17-126
Date of Report: April 21, 2017

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1.0 INTRODUCTION

Associated Environmental Group, LLC (AEG) has completed a subsurface investigation at 23886 SE Kent-Kangley Road, in Maple Valley, Washington (the Site), which included advancing three subsurface borings and 14 sub-slab vapor ports at the Site. Soil and vapor samples were collected from the borings and laboratory analyzed for chlorinated volatile organic compounds (CL VOCs). This subsurface investigation was performed to evaluate whether a release associated with dry cleaning operations at the Site may have occurred to the environment.

1.1 Site and Vicinity Area

The Site is located northwest of the intersection between SE Kent-Kangley Road and Highway 169 in Maple Valley, Washington. The Site is positioned on an approximately 9.57-acre lot with five buildings totaling 254,663 square feet. Two of the five buildings are situated in an "L" shape along the northwest corner of the property, including the 4 Corners Cleaners Site. The three other buildings are situated along the east side and center of the property, with the rest of the Site being asphalt and vegetation. The immediate vicinity of the Site is primarily commercial businesses. Figure 1, *Vicinity Map*, presents the general layout of the Site vicinity. The Site's current layout can be seen in Figure 2, *Sample Locations Map*.

1.2 Site Geology and Hydrogeology

Based on the soil survey maps published by the United States Department of Agriculture Soil Conservation Service (2015), the Site is mapped as Everett very gravelly sandy loam. This soil typically has a high infiltration rate. The soils are gravelly, have a high water table, or are shallow to an impervious layer.

2.0 OBJECTIVES AND SCOPE OF WORK

The objective of this investigation at the Site was to assess subsurface environmental conditions to determine whether a release had occurred. Specific tasks performed included:

- Conducting both public and private utilities locates for the Site and vicinity. The public rights of way locates were performed by the Underground Utilities Locate Center; Applied Professional Services (APS) provided private utility locates on the Site.
- Advancing three borings at selected locations to depths of approximately 2 feet below ground surface (bgs) using a roto hammer.
- Continuously logging the subsurface media during the investigation, and collecting soil samples at various depths to observe and document soil lithology, color, moisture content, and sensory evidence of impairment.
- Advancing 14 borings at selected locations to depths of approximately 2.5 feet bgs using a roto hammer.
- Collecting soil vapor samples from the sub-slab locations for laboratory analyses.
- Transporting and submitting the soil and vapor samples to ESN Northwest Laboratories in Olympia a Washington-State-certified analytical laboratories for analysis for CL VOCs via EPA Method 8260C.
- Completing data analysis of laboratory analytical results and comparing data to Ecology's Model Toxics Control Act (MTCA) Method A or Method B cleanup levels for soil and screening levels for sub-slab vapor.
- Containing investigation-derived wastes, including soil cuttings and decontamination wash fluids, in 15-gallon steel drums, and storing them on Site awaiting the results of laboratory analyses.
- Preparing this report presenting final documentation of the field activities and methodologies, and summarizing the analytical results, conclusions, and recommendations.

3.0 FIELD METHODOLOGY

On March 13, 2017, AEG supervised the advancement of three soil borings to a maximum depth of 2 feet bgs via a roto hammer operated by Environmental Services Network NW, Inc. (ESN) of Olympia, Washington. Soil samples were collected during drilling for field screening and laboratory analyses. The borings were advanced around the current dry cleaning machine. Soil at the Site is dense sandy gravel, and the roto hammer was unable to penetrate past 23 inches bgs. No groundwater was encountered during this event.

AEG returned to the Site on March 31, 2017, and sampled soil vapor from sub-slab locations SV-1 through SV-14 to evaluate the soil-to-vapor pathway.

The soil and sub-sab vapor sample locations are illustrated on Figure 2, *Sample Locations Map*. Photo documentation of the subsurface investigation is presented in Appendix A, *Site Photographs*.

3.1 Soil Sampling Procedures

Soil sampling methods for this work followed the protocols established by Ecology and the U.S. Environmental Protection Agency (EPA). To minimize VOC losses, soil sampling for VOCs and field preservation methods followed methods set forth by EPA's Method 5035A and Ecology's guidance, "Collecting and Preparing Soil Samples for VOC Analysis". Soil samples were collected from the boreholes via continuous soil cores in an acetate sleeve inside the drilling rod's core barrel. Soils were observed to document soil lithology, color, moisture content, and sensory evidence of contamination.

Soil samples from each boring were transferred to laboratory provided pre-weighed 40-milliliter (ml) volatile organic analysis (VOA) glass vials and 4-ounce (oz.) glass jars. The soil samples for VOCs were transported to ESN in Olympia for analysis following industry standard chain-of-custody procedures.

Soil laboratory analytical results are provided in Appendix B, Supporting Documents, Laboratory Datasheets.

3.2 Soil Vapor Procedures

Soil vapor sampling methods for this work followed the protocols established by the Interstate Technology and Regulatory Council (ITRC). After the roto-hammer boring was completed to about 1 foot bgs, the sample probe and rod were inserted and sealed with molding clay. AEG attached a certified-clean, 1-liter (L) Tedlar sampling bag via ¼-inch Teflon tubing attached to a

disposable sampling tip. The vapor sample was extracted using a peristaltic pump with new tubing into the Tedlar sample bag. The approximate sampling time to fill a 1-L sampling bag was 5 to 10 minutes. Once the sampling bag was filled, it was identified with a sample number, sample location, date collected, and work assignment number on a chain of custody form. Chain of custody sheets accompanied all samples to the laboratory and transported via ESN in Olympia, Washington, and analyzed for CL VOCs by EPA Method 8260C.

3.3 Quality Controls

To ensure that quality information was obtained at the Site:

- All samples were collected in general accordance with industry protocols for the collection, documentation, and handling of samples.
- Nitrile gloves were used in handling all sampling containers and sampling devices.
- Upon sampling, all soil vapor samples were placed into a cooler.
- The samples were transported under a chain-of-custody to the laboratory for analysis.

The laboratory provided standard quality assurance/quality control (QA/QC), which included:

- Surrogate recoveries for each sample.
- Method blank results.
- Duplicate analyses, matrix or blank spiked analyses.
- Duplicate spiked analyses.

3.4 Investigation-Derived Waste

Investigation-derived waste for this project consisted of soil cuttings from the subsurface exploration activities, and decontamination water from decontamination of the drilling core barrel and associated equipment. These wastes were separated and placed in Washington State Department of Transportation (DOT) approved 55-gallon drums. The drums were appropriately labelled and stored on Site for subsequent characterization and disposal.

4.0 ANALYTICAL RESULTS

All analytical results were compared to MTCA Method A or B cleanup levels for soil and Method B sub-slab screening levels for sub-slab vapor. Copies of the laboratory datasheets are provided in Appendix B, Supporting Documents, *Laboratory Datasheets*.

4.1 Soil Results

Soil samples results indicated PCE was detected **above** the MTCA Method A cleanup level of 0.05 milligrams per kilogram (mg/kg) in sample B1-22 (0.058 mg/kg) and B3-23 (0.067 mg/kg). PCE was detected **below** the MTCA Method A cleanup level in B2-20 (0.044 mg/kg).

Table 1, *Summary of Soil Analytical Results*, presents analytical results as compared to Ecology MTCA cleanup levels for soil.

4.2 Soil Vapor Results

Analytical results of the sub-slab vapor samples indicated the presence of PCE **above** the MTCA Method B sub-slab screening level of 321 micrograms per cubic meter (µg/m^3) in all samples, except SV-13. Concentrations of PCE ranged from 850 µg/m^3 in SV-6 to 6,300 µg/m^3 in SV-11.

In addition, dichlorodifluoromethane was detected **above** the MTCA Method B screening level of 1,520 µg/m^3 in 10 of 14 sub-slab vapor samples. Concentrations of dichlorodifluoromethane ranged from 2,500 µg/m^3 in SV-9 to 15,000 µg/m^3 in SV-4.

Chloroform was detected **above** the MTCA Method B screening level of 3.62 µg/m^3 in samples SV-9 and SV-10 at 310 µg/m^3 and 31,000 µg/m^3, respectively.

1,1,2-Trichloroethane was detected **above** the MTCA Method B screening level of 5.31 µg/m^3 in sample SV-10 at 380 µg/m^3.

Table 2, *Summary of Sub-Slab Vapor Analytical Results*, presents analytical results as compared to MTCA Method B screening levels for sub-slab soil vapor.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The conclusions derived during the subsurface assessment activities at the Site are as follows:

- PCE was detected in Site soil and sub-slab vapor at concentrations exceeding MTCA Method A cleanup levels and Method B screening levels. These exceedances suggest a release from dry cleaning operations has occurred at the Site.
- Other VOCs, including dichlorodifluoromethane, chloroform, and 1,1,2-trichloroethane, were also detected in sub-slab vapor above their respective MTCA Method B screening levels. The source of these VOCs is unknown at this time.

5.2 Recommendations

Based on the conclusions from this investigation, AEG recommends the following:

- Further Site characterization, including the installation of at least three groundwater monitoring wells to assess the depth of potential impacts in soil and groundwater, and to identify groundwater gradient and potential for off-property migration of PCE.
- Additional soil borings in the parking areas and near the entrance roadway to assess the potential source of the dichlorodifluoromethane, which is a refrigerant and not usually associated with dry cleaning operations.
- A Tier II Vapor assessment be performed to determine the lateral extent of VOCs present in sub-slab soil vapor, and whether those vapors may be impacting indoor air. AEG recommends advancing a soil vapor probes outside the building perimeter, and concurrently collecting one indoor air sample and one background ambient air sample.

6.0 LIMITATIONS

This report summarizes the findings of the services authorized under our agreement with Mr. Chang Kim. It has been prepared using generally accepted professional practices, related to the nature of the work accomplished. This report was prepared for the exclusive use of Mr. Chang Kim and his designated representatives for the specific application to the project purpose.

Recommendations, opinions, site history, and proposed actions contained in this report apply to conditions and information available at the time this report was completed. Since conditions and regulations beyond our control can change at any time after completion of this report, or our proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices, and/or regulations subsequent to our performance of services. We cannot warrant or validate the accuracy of information supplied by others, in whole or part.

7.0 REFERENCES

American Society for Testing and Materials (ASTM) Standard E 1903-97. *Standard Guide Environmental Site Assessments: Phase II Environmental Site Assessment Process*.

Washington State Department of Ecology. 2009. *Guidance for Evaluating Soil Vapor Intrusion in Washington State*, Publication No. 09-09-047. October 2009.

Washington State Department of Ecology, 2007, *Model Toxic Control Act Statute and Regulation – Chapter 173-340 WAC*, Publication number 94-06 (Revised November 2007).

FIGURES

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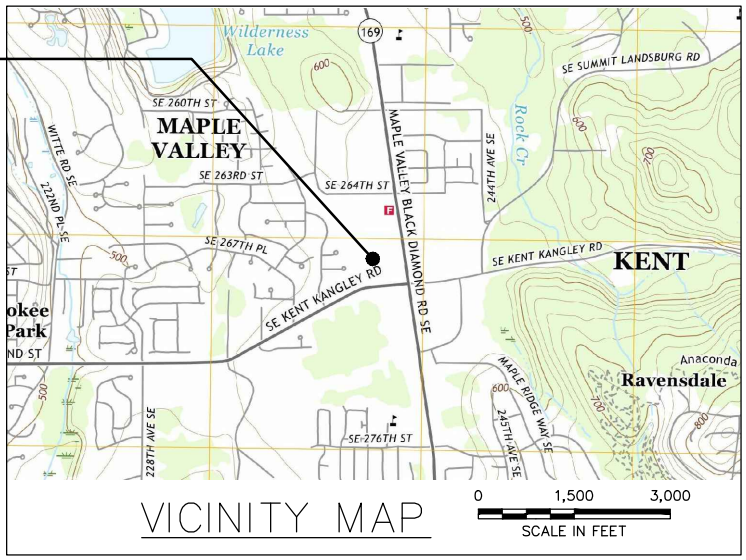
FILENAME	DRAWN BY		CHECKED BY		APPROVED BY		PROJECT NUMBER
17-126_17Q1.DWG	ICD	3/22/2017	CS	3/22/2017	CS	3/22/2017	17-126

N
W E
S

PROJECT LOCATION



VICINITY MAP

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.
VICINITY IMAGE SOURCE: U.S. GEOLOGICAL SURVEY–2017, 7.5 MINUTE QUADRANGLE MAP
BLACK DIAMOND, WASHINGTON

ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 1

VICINITY MAP

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

PROJECT NUMBER	17–126	
APPROVED BY	AS	3/22/2017
	CS	
CHECKED BY	CS	3/22/2017
DRAWN BY	ICD	3/22/2017
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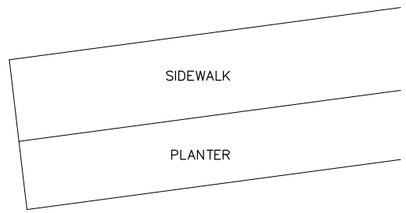

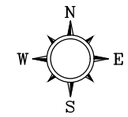

LEGEND

B–1 ● SOIL BORING LOCATION

SV-1 ● SOIL VAPOR LOCATION

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

ASSOCIATED ENVIRONMENTAL GROUP, LLC

FIGURE 2

SAMPLE LOCATIONS MAP

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

TABLES

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Table 1 - Summary of Soil Analytical Results

4 Corners Dry Cleaning

Maple Valley, Washington

Sample Number	Depth Collected (inches)	Date Collected	Tetrachloroethene (PCE)	Trichloroethane (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
B1-22	22.0	3/13/2017	**0.058**	<0.02	<0.05	<0.05	<0.02
B2-20	20.0	3/13/2017	**0.044**	<0.02	<0.05	<0.05	<0.02
B3-23	23.0	3/13/2017	**0.067**	<0.02	<0.05	<0.05	<0.02
PQL			0.02	0.02	0.05	0.05	0.02
MTCA Method A Cleanup Levels			0.05	0.03	160*	1,600*	0.67*

Notes:

All values are presented in milligrams per kilogram (mg/kg)

< = Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

*Method B cleanup level for direct contact; no Method A cleanup has been established.

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

Table 2 - Summary of Sub-Slab Vapor Analytical Results

4 Corners Cleaners

Maple Valley, Washington

Sample Number	Depth Collected (feet)	Date Collected	Detected Volatile Organic Compounds				
			Tetrachloroethylene (PCE)	Trichloroethylene (TCE)	Chloroform	Dichlorodiflouromethane	1,1,2-Trichloroethane
SV-1	SUB-SLAB	3/31/2017	**1,600**	<10	<10	<10	<10
SV-2	SUB-SLAB	3/31/2017	**1,800**	<10	<10	**8,600**	<10
SV-3	SUB-SLAB	3/31/2017	**1,500**	<10	<10	**12,000**	<10
SV-4	SUB-SLAB	3/31/2017	**790**	<10	<10	**15,000**	<10
SV-5	SUB-SLAB	3/31/2017	**940**	<10	<10	**8,200**	<10
SV-6	SUB-SLAB	3/31/2017	**850**	<10	<10	**7,200**	<10
SV-7	SUB-SLAB	3/31/2017	**1,700**	<10	<10	**870**	<10
SV-8	SUB-SLAB	3/31/2017	**1,100**	<10	<10	**290**	<10
SV-9	SUB-SLAB	3/31/2017	**2,800**	<10	**310**	**2,500**	<10
SV-10	SUB-SLAB	3/31/2017	**2,100**	<10	**31,000**	**3,100**	**380**
SV-11	SUB-SLAB	3/31/2017	**6,300**	<10	<10	**2,800**	<10
SV-12	SUB-SLAB	3/31/2017	**2,600**	<10	<10	**3,400**	<10
SV-13	SUB-SLAB	3/31/2017	**180**	<10	<10	**9,000**	<10
SV-14	SUB-SLAB	3/31/2017	**2,600**	<10	<10	**610**	<10
PQL			10	10	10	10	10
MTCA Method B Sub-Slab Screening Levels			321	12.30	3.62	1520	5.21

Notes:

All values are presented in micrograms per cubic meter (µg/m³)

< = Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

Red Bold indicates the detected concentration exceeds Ecology MTCA Method B sub-slab screening level

Bold indicates the detected concentration is below Ecology MTCA Method B sub-slab screening levels

APPENDIX A

Site Photographs

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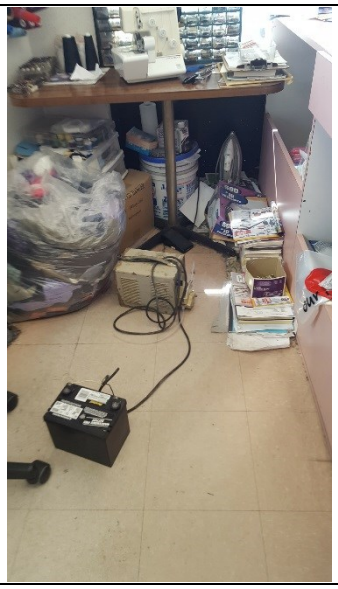
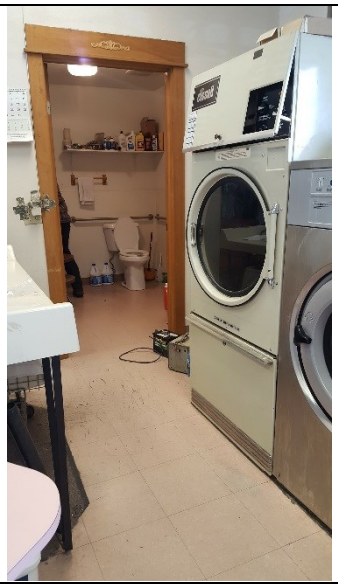
SITE PHOTOGRAPHIC RECORD

Project No.: 4 Corners Cleaners **Project Name: 17-126**

			
Photo #1:	Sample location of SV-1.	Photo #2:	Vapor sample collection equipment at sample location SV-2.
			
Photo #2:	Sample location of SV-3.	Photo #4:	Sample location of SV-7 and SV-14.

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SITE PHOTOGRAPHIC RECORD

Project No.: 4 Corners Cleaners **Project Name: 17-126**

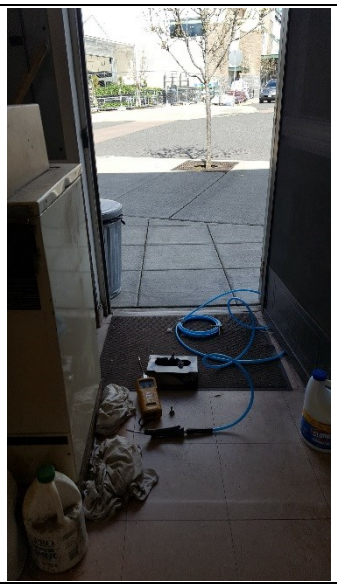			
Photo #5:	Vapor sample collection from sample location SV-8.	Photo #6:	Vapor sample SV-9 from the boiler room.
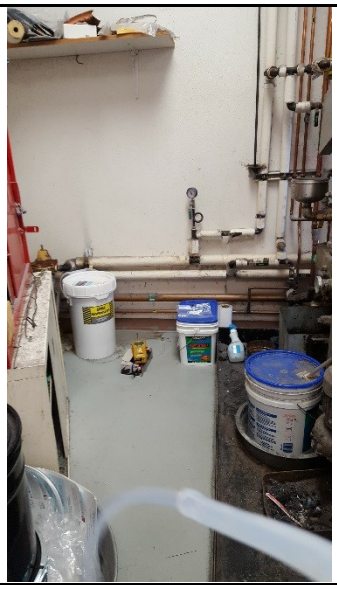			
Photo #7:	Vapor sample collection from sample location SV-11, behind the current dry cleaning machine.	Photo #8:	Vapor sample SV-12 collected in front of the cleaning machine.

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SITE PHOTOGRAPHIC RECORD

Project No.: 4 Corners Cleaners **Project Name: 17-126**

			
Photo #9:	Coring through concrete at sample location B-1.	Photo #10:	Coring through concrete at sample location B-2.
			
Photo #11	Core barrel advance at sample location B-3.	Photo #12:	Soil sample material from B-1 refusal at 22 inches bsg.

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SITE PHOTOGRAPHIC RECORD

Project No.: 4 Corners Cleaners **Project Name: 17-126**

			
Photo #13:	Soil sample material B-2 refusal at 20 inches bsg.	Photo #14:	Soil sample material B-3 refusal at 23 inches bsg.

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APPENDIX B

Supporting Documents

Laboratory Datasheets

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ESN NORTHWEST
Environmental
Services Network

March 20, 2017

Charlie Swift
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Mr. Swift:

Please find enclosed the analytical data report for the 4 Corners Cleaners in Kent, Washington. Probe services were conducted on March 13, 2016. Soil samples were analyzed for Chlorinated VOC's by Method 8260 on March 15, 2017.

The results of the analyses are summarized in the attached table. All soil values are reported on a dry weight basis. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT FOUR CORNERS CLEANERS
PROJECT #17-126
Kent, Washington

ESN Northwest
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Olympia, WA 98501
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lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil by Method 8260C/5035

	RL	MB	LCS	LCSD	B-3-23	B-2-20	B-1-22
Date extracted		03/15/17	03/15/17	03/15/17	03/13/17	03/13/17	03/13/17
Date analyzed	(mg/Kg)	03/15/17	03/15/17	03/15/17	03/15/17	03/15/17	03/15/17
% Moisture					5%	6%	6%
Dichlorodifluoromethane	0.05	nd			nd	nd	nd
Chloromethane	0.05	nd			nd	nd	nd
Vinyl chloride	0.02	nd	149*%	139*%	nd	nd	nd
Chloroethane	0.05	nd			nd	nd	nd
Trichlorofluoromethane	0.05	nd			nd	nd	nd
1,1-Dichloroethene	0.05	nd	83%	78%	nd	nd	nd
Methylene chloride	0.05	nd			nd	nd	nd
trans-1,2-Dichloroethene	0.05	nd			nd	nd	nd
1,1-Dichloroethane	0.05	nd			nd	nd	nd
cis-1,2-Dichloroethene	0.05	nd			nd	nd	nd
2,2-Dichloropropane	0.05	nd			nd	nd	nd
Chloroform	0.05	nd	84%	77%	nd	nd	nd
Bromochloromethane	0.05	nd			nd	nd	nd
1,1,1-Trichloroethane	0.05	nd			nd	nd	nd
1,2-Dichloroethane (EDC)	0.05	nd			nd	nd	nd
1,1-Dichloropropene	0.05	nd			nd	nd	nd
Carbon tetrachloride	0.05	nd			nd	nd	nd
Trichloroethene (TCE)	0.02	nd	96%	89%	nd	nd	nd
1,2-Dichloropropane	0.05	nd	94%	87%	nd	nd	nd
Bromodichloromethane	0.05	nd			nd	nd	nd
cis-1,3-Dichloropropene	0.05	nd			nd	nd	nd
trans-1,3-Dichloropropene	0.05	nd			nd	nd	nd
1,1,2-Trichloroethane	0.05	nd			nd	nd	nd
1,3-Dichloropropane	0.05	nd			nd	nd	nd
Dibromochloromethane	0.05	nd			nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	101%	96%	**0.067**	**0.044**	**0.058**
Chlorobenzene	0.05	nd	94%	91%	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd			nd	nd	nd
1,1,2,2-Tetrachloroethane	0.05	nd			nd	nd	nd
1,2,3-Trichloropropane	0.05	nd			nd	nd	nd
2-Chlorotoluene	0.05	nd			nd	nd	nd
4-Chlorotoluene	0.05	nd			nd	nd	nd
1,3-Dichlorobenzene	0.05	nd			nd	nd	nd
1,4-Dichlorobenzene	0.05	nd			nd	nd	nd
1,2-Dichlorobenzene	0.05	nd			nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd			nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd			nd	nd	nd
Hexachloro-1,3-butadiene	0.05	nd			nd	nd	nd
1,2,3-Trichlorobenzene	0.05	nd			nd	nd	nd
Surrogate recoveries							
Dibromofluoromethane		111%	115%	114%	127%	120%	123%
Toluene-d8		79%	75%	73%	82%	81%	81%
4-Bromofluorobenzene		120%	113%	113%	119%	122%	119%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG, LLC
ADDRESS: 605 - 11th Ave SE, Suite 201, Olympia, WA
PHONE: 360 - 352-5835 FAX: 360 - 352 - 8164
CLIENT PROJECT #: 17-126 PROJECT MANAGER: C. Swift

DATE: 3/13/17 PAGE _____ OF _____
PROJECT NAME: 4 - Corners Cleaners
LOCATION: Kent - Maple Valley, WA
COLLECTOR: C. Swift DATE OF COLLECTION: 3/13/17

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. B-3-23	23'	10:30	Soil	8oz					X													No Preservatives		
2. B-2-20	20'	10:50	Soil	8oz					X															
3. B-1-22	22'	11:00	Soil	8oz					X															
4.																								
5.																								
6.																								
7.																								
8.																								
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[signature]	3/13/17 / 3:58	[signature]	3/13/17 4:05
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com

ESN NORTHWEST
Environmental
Services Network

April 5, 2017

Becky Dilba
Associated Environmental Group, Inc.
605 11th Ave. SE, Suite 201
Olympia, WA 98501

Dear Ms. Dilba:

Please find enclosed the analytical data report for the Four Corners Cleaners in Maple Valley, Washington. Probe services were conducted on March 31, 2017. Soil vapor samples were analyzed for Chlorinated VOC's by Method 8260 on April 1, 2017.

The results of the analyses are summarized in the attached table. Applicable detection limits and QA/QC data are included. An invoice for this work is also enclosed.

ESN Northwest appreciates the opportunity to have provided analytical services to Associated Environmental Group, Inc. for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Michael A Korosec

Michael A. Korosec
President

1210 Eastside Street SE, Suite 200 ■ Olympia, Washington 98501 ■ 360.459.4670 ■ FAX 360.459.3432
Web Site: *www.esnnw.com* E-Mail: *info@esnnw.com*

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT FOUR CORNERS CLEANERS
PROJECT #17-126
Maple Valley, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil Vapor by Method 8260C

Analytical Results

	RL	MB	LCS	LCSD	SV1	SV2	SV3	SV4	SV5	SV6
Date analyzed	(ug/m3)	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17
Dichlorodifluoromethane	10.0	nd			nd	**8,600**	**12,000**	**15,000**	**8,200**	**7,200**
Chloromethane	10.0	nd			nd	nd	nd	nd	nd	nd
Vinyl chloride	10.0	nd	130%	125%	nd	nd	nd	nd	nd	nd
Chloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	10.0	nd	83%	86%	nd	nd	nd	nd	nd	nd
Methylene chloride	10.0	nd			nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	10.0	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	10.0	nd			nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	10.0	nd			nd	nd	nd	nd	nd	nd
Chloroform	10.0	nd	103%	111%	nd	nd	nd	nd	nd	nd
Bromochloromethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	10.0	nd			nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	10.0	nd			nd	nd	nd	nd	nd	nd
Carbon tetrachloride	10.0	nd			nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	10.0	nd	93%	98%	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	10.0	nd			nd	nd	nd	nd	nd	nd
Bromodichloromethane	10.0	nd			nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	10.0	nd			nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	10.0	nd			nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	10.0	nd			nd	nd	nd	nd	nd	nd
Dibromochloromethane	10.0	nd			nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	10.0	nd	97%	97%	**1,600**	**1,800**	**1,500**	**790**	**940**	**850**
Chlorobenzene	10.0	nd	98%	100%	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	10.0	nd			nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	10.0	nd			nd	nd	nd	nd	nd	nd
2-Chlorotoluene	10.0	nd			nd	nd	nd	nd	nd	nd
4-Chlorotoluene	10.0	nd			nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	10.0	nd			nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	10.0	nd			nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	10.0	nd			nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	10.0	nd			nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	10.0	nd			nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	10.0	nd			nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	10.0	nd			nd	nd	nd	nd	nd	nd
Surrogate recoveries										
Dibromofluoromethane		104%	112%	114%	102%	106%	106%	107%	108%	112%
Toluene-d8		105%	96%	94%	105%	107%	107%	107%	107%	110%
4-Bromofluorobenzene		104%	98%	100%	108%	107%	107%	104%	103%	101%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST CHEMISTRY LABORATORY

Associated Environmental Group
PROJECT FOUR CORNERS CLEANERS
PROJECT #17-126
Maple Valley, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Chlorinated Volatile Organic Compounds in Soil Vapor by Method 8260C

Analytical Results

	RL	SV7	SV8	SV9	SV10	SV11	SV12	SV13	SV14
Date analyzed	(ug/m3)	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17	04/01/17
Dichlorodifluoromethane	10.0	**870**	**290**	**2,500**	**3,100**	**2,800**	**3,400**	**9,000**	**610**
Chloromethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Vinyl chloride	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Chloroethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Methylene chloride	10.0	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Chloroform	10.0	nd	nd	**310**	**31,000**	nd	nd	nd	nd
Bromochloromethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Bromodichloromethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
trans-1,3-Dichloropropene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	10.0	nd	nd	nd	**380**	nd	nd	nd	nd
1,3-Dichloropropane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Dibromochloromethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	10.0	**1,700**	**1,100**	**2,800**	**2,100**	**6,300**	**2,600**	**180**	**2,600**
Chlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	10.0	nd	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries									
Dibromofluoromethane		107%	111%	108%	111%	102%	100%	103%	110%
Toluene-d8		104%	105%	103%	104%	112%	106%	106%	104%
4-Bromofluorobenzene		106%	104%	106%	105%	110%	104%	106%	106%

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 35%

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: AEG

ADDRESS: 1005 11th Ave SE, Olympia

PHONE: (360) 352-5832 FAX:

CLIENT PROJECT #: 17-126 PROJECT MANAGER:

DATE: 3/31/17 PAGE 1 OF 1

PROJECT NAME: 4 Corners Cleaners

LOCATION: 23886 Kent-Kangley Rd, Maple Valley

COLLECTOR: B Hahn DATE OF COLLECTION: 3/31/17

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1.																								
2. SV1		1247	AIR	Tedlar				T																
3. SV2		1105																						
4. SV3		1109																						
5. SV4		1115																						
6. SV5		1121																						
7. ~~8~~ SV6		1130																						
8. SV7		1140																						
9. SV8		1155																						
10. SV9		1204																						
11. SV10		1211																						
12. SV11		1218																						
13. SV12		1230																						
14. SV13		1236																						
15. SV14		~~1147~~																						
16.																								
17.																								
18.																								

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	3/31/17	1354	1:54
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SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

AIR

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
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