Site Assessment

Yakima Dry Cleaner
Yakima, Washington

for
Washington State Department of Ecology

March 10, 2023

GeoEngineers

Site Assessment

Yakima Dry Cleaner
Yakima, Washington

for
Washington State Department of Ecology

March 10, 2023

GeoEngineers

523 East Second Avenue
Spokane, Washington 99202
509.363.3125

Site Assessment

Yakima Dry Cleaner
Yakima, Washington

File No. 0504-183-00

March 10, 2023

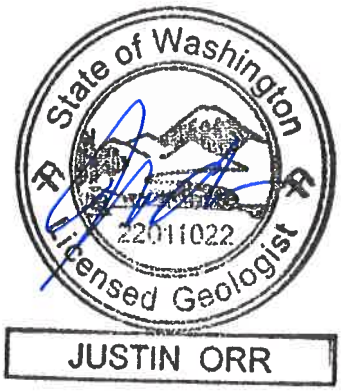
Prepared for:

Washington State Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, Washington 98903

Attention: John Mefford, LHG

Prepared by:

GeoEngineers, Inc.
523 East Second Avenue
Spokane, Washington 99202
509.363.3125



Justin D. Orr, LG
Staff Geologist

Bruce D. Williams
Senior Principal

JDO:BDW:tjh:tlm

Table of Contents

1.0 INTRODUCTION

This report describes soil and soil vapor assessment activities conducted at the Yakima Dry Cleaner facility (herein referred to as "site") located at 2904 West Nob Hill Boulevard in Yakima, Washington as shown on Figure 1, Vicinity Map. Washington State Department of Ecology (Ecology) reference numbers for the site include Facility Site ID 98634292 and Cleanup Site ID 16550.

This assessment report has been prepared by GeoEngineers, Inc. (GeoEngineers) for Ecology under Ecology Master Contract No. C1900044, task work assignment number GEI040. This report describes site history, field activities, observations and chemical analytical results associated with soil and soil vapor samples collected at the site. The purpose of this assessment was to determine if soil and/or groundwater contamination related to dry cleaning operations was present, to assess the extent and magnitude of contamination in soil and/or groundwater, and to evaluate potential vapor intrusion from soil and/or groundwater contamination. Groundwater was not encountered during the site assessment, and therefore groundwater analytical results are not discussed in this report.

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located at 2904 West Nob Hill Boulevard in Yakima, Washington. The site is bound by West Nob Hill Boulevard to the north and residential and/or commercial properties to the south, east and west. The site is paved with a building in the northeast corner. The site started operating as a dry-cleaning facility in the 1970s and is currently occupied by a bakery. Site details are shown on Figure 2, Site Plan.

Ecology determined the site to be a potential source of groundwater contamination based on site investigation and remedial action data collected from a gas station facility (Tiger Oil) site located approximately ¼-mile hydrogeologically downgradient (east) to the dry cleaners (Figure 1).

There are no known existing groundwater monitoring wells at the site. Groundwater at the Tiger Oil facility reportedly has been measured between 5 and 15 feet below ground surface (bgs) based on seasonal fluctuations.

2.1. Previous Site Investigations

CH2M Hill conducted soil sampling at the site in 1997 (CH2M Hill 1997). The CH2M Hill investigation included hand-augering 10 borings in the soil/vegetated area on the south side of the dry-cleaning building. Soil samples were collected from approximately 6 inches bgs. Evidence of dry-cleaning chemicals was not reported. CH2M Hill also identified an underground storage tank (UST) vent located near the southwest corner of the building but did not investigate the tank.

To assess the potential extent of chlorinated dry-cleaning chemicals (tetrachloroethene [PCE], trichloroethene [TCE] and daughter products) and Stoddard Solvent, GeoEngineers advanced soil borings, installed soil vapor points, collected soil and soil vapor samples, and submitted the samples for chemical analyses of the above listed analytes.

3.0 FIELD INVESTIGATION ACTIVITIES

The following sections describe field activities including advancing sonic borings, collection of soil samples, a discussion on observed subsurface conditions, installation of soil vapor and sub-slab vapor points and collection of soil vapor samples.

3.1. Sonic Soil Assessment

Initial site reconnaissance occurred on November 8 and 9, 2022. During these site visits, site access was assessed and potential soil boring locations were marked with white spray paint. Site utilities located near the boring locations were identified and marked by Utilities Plus, LLC, on November 9, 2022. Boring locations are shown on Figure 2.

Anderson Environmental Contracting, Inc. (AEC) advanced eight borings (GEI040-B-1 through GEI040-B-8) at the locations indicated on Figure 2 on November 29 and 30, 2022. Boring logs associated with the borings are included in Appendix A, Boring Logs. Boring GEI040-B-1 was advanced to approximately 40 feet bgs after discussion in the field with Ecology to attempt to characterize groundwater at the site; groundwater was not encountered at 40 feet bgs. The remaining borings (GEI040-B-2 through GEI040-B-8) were advanced to approximately 20 feet bgs. Soil samples recovered from the sonic borings were field screened in general accordance with the Work Plan (Appendix B). The following table summarizes the results of field screening and selection of soil samples for laboratory chemical analysis.

TABLE I. SUMMARY OF FIELD SCREENING RESULTS

Soil Boring	Total Depth (feet bgs)	Depth Intervals with Greatest Field-Screening Indication of Contamination (feet bgs)	Highest PID Detection (ppm)	Sheen	Sample Submitted
GEI040-B-1	40	10 – 11	24.3	No Sheen	GEI040-B1 (10-11)
GEI040-B-2	20	5 – 6	20.7	No Sheen	GEI040-B2 (5-6)
GEI040-B-3	20	None	0.0	No Sheen	GEI040-B3 (14-15)
GEI040-B-4	20	11 – 12	3.8	No Sheen	GEI040-B4 (11-12)
GEI040-B-5	20	10 – 11	10.1	No Sheen	GEI040-B5 (10-11)
GEI040-B-6	20	10 – 11	38.2	No Sheen	GEI040-B6 (10-11)
GEI040-B-7	20	10 – 11	2.6	No Sheen	GEI040-B7 (10-11)
GEI040-B-8	20	6 – 7 10 – 11	9.9 9.7	No Sheen No Sheen	GEI040-B8 (10-11)

Notes:
PID = photoionization detector; ppm = parts per million

AEC backfilled each boring with bentonite chips and cold patch asphalt or gravel to match the existing ground surface in general accordance with the Work Plan. Soil cuttings from the borings were placed in two 55-gallon drums, labeled and stored on site pending analysis and disposal.

3.2. Subsurface Conditions

Subsurface conditions indicated by soil recovered from GEI040-B-1 through GEI040-B-8 indicate the following general soil profile from the surface:

- 3 inches of asphalt (northern portion of the site) or 3 inches of gravel (southern portion of the site);
- 4 to 10 feet of sandy silt;
- 6 to 11 feet of silty sand;
- 1 to 5 feet of sandy silt; and
- Gravel and/or sand to the final depth of the boring.

Groundwater was not encountered at the time of exploration.

3.3. Soil Vapor Assessment

AEC installed a soil vapor point (SVP-1) outside the southeast corner of the bakery building on November 30, 2022, in general accordance with the Work Plan. The soil vapor point well construction diagram for SVP-1 is included in Appendix A. GeoEngineers installed two sub-slab vapor pins (SSV-1 and SSV-2) inside the building and collected soil vapor samples from SVP-1, SSV-1 and SSV-2 on December 28, 2022, in general accordance with procedures described in the Work Plan.

4.0 CHEMICAL ANALYTICAL RESULTS

The following sections describe soil and soil vapor chemical analytical results. Laboratory reports and a data validation report are included in Appendix C, Chemical Analytical Laboratory Reports and Data Validation.

4.1. Soil Chemical Analytical Results

Eight soil samples and one duplicate sample were submitted to Eurofins Environment Testing (Eurofins) for analysis of the following contaminants of concern (COCs):

- Gasoline-range petroleum hydrocarbons (GRPH) including Stoddard Solvent using Northwest Method NWTPH-Gx; and
- Volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Method 8260D.

Soil chemical analytical results are presented and compared to Washington State Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use in Table 1, Chemical Analytical Results – Soil and are summarized below:

- GRPH was either not detected or was detected at concentrations less than the MTCA Method A cleanup level.
- PCE was detected at concentrations greater than the MTCA Method A cleanup level in four samples. The laboratory method detection limit (MDL) was greater than the MTCA Method A cleanup level in one sample.
- Other VOCs were either not detected or were detected at concentrations less than their respective MTCA Method A cleanup levels.

4.2. Soil Vapor Chemical Analytical Results

Three soil vapor samples were submitted to Eurofins for analysis of VOCs using EPA Method TO-15 – Low Level.

Soil vapor chemical analytical results are presented and compared to MTCA Method B Sub-slab Soil Vapor cancer/non-cancer screening levels[1] in Table 2, Chemical Analytical Results – Soil Vapor and are summarized below:

- PCE was detected at concentrations greater than the MTCA Method B cleanup level (320 micrograms per cubic meter [µg/m^3]) in all the samples analyzed.
- Other VOCs were either not detected or were detected at concentrations less than the respective MTCA Method B screening levels.

5.0 SUMMARY AND CONCLUSIONS

Eight sonic soil borings were advanced on November 29 and 30, 2022 around the existing site structures at the site. Soil vapor samples were collected from two sub-slab vapor pins and one soil vapor point on December 28, 2022.

Laboratory chemical analysis of soil samples from the borings indicate PCE contamination is present in soil boring GEI040-B-2 northeast of the building and the soil borings west of the building (GEI0440-B05, GEI040-B-6 and GEI040-B-8). In general, PID detections in soil samples greater than 9 ppm indicated PCE concentrations greater than the MTCA Method A cleanup level. With the exception of GEI040-B-1, PID detections were less than 10 ppm in samples deeper than 12 feet bgs, indicating that there is not an observed pathway from soil to groundwater for PCE contamination.

Laboratory chemical analysis of the soil vapor samples indicate PCE is present in soil vapor at concentrations greater than the MTCA Method B cleanup levels. Sub-slab vapor samples SSV-1 and SSV-2 were located near borings GEI040-B-6 and GEI040-B-2, respectively, which indicates a correlation between PCE contamination in soil and soil vapor near those locations.

The results of this soil and soil vapor assessment for the site indicate contamination is present at the site.

6.0 LIMITATIONS

We have prepared this report for the exclusive use of Ecology and their authorized agents.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgement and experience. No warranty or other conditions, express or implied, should be understood.

[1] The Method B Sub-Slab Soil Vapor cancer screening level was used, where established, because it is the most conservative screening level.

Please refer to Appendix D, Report Limitations and Guidelines for Use for additional information pertaining to this report.

7.0 REFERENCES

CH2M Hill. 1997. "Summary of Soil Sampling Activities at WESTCO's Nob Hill Facility in Yakima, Washington." June 30, 1997.

TABLES

GeoEngineers

Table 1

Chemical Analytical Results - Soil[1]

Yakima Dry Cleaner
Yakima, Washington

			Location ID	GEI040-B1		GEI040-B2		GEI040-B3		GEI040-B4		GEI040-B5		GEI040-B6		GEI040-B7		GEI040-B8	
			Sample Depth (feet bgs)	10 to 11		5 to 6		14 to 15		14 to 15		10 to 11		10 to 11		10 to 11		10 to 11	
			Sample Date	11/29/2022		11/29/2022		11/29/2022		11/29/2022		11/30/2022		11/30/2022		11/30/2022		11/30/2022	
Method	**Analyte**	**MTCA CUL[4]**	**Units**																
NWTPH-Gx[2]	GRPH	30/100[5]	mg/kg	13	U	11	U	12	U	8.9	U	9.4	U	**8.0**	**J**	16	U	8.3	U
VOCs[3]	Trichloroethene (TCE)	0.03	mg/kg	0.020	U	0.017	U	0.019	U	0.013	U	0.014	U	0.016	U	0.025	U	0.013	U
	Tetrachloroethene (PCE)	0.05	mg/kg	0.046	U	**0.076**	**J**	0.044	U	0.031	U	**0.28**		**5.1**		0.058	U	**0.23**	
	cis-1,2-Dichloroethene	NE	mg/kg	0.054	U	0.046	U	0.052	U	0.037	U	0.039	U	0.045	U	0.068	U	0.034	U
	trans-1,2-Dichloroethene	NE	mg/kg	0.060	U	0.050	U	0.057	U	0.041	U	0.043	U	0.049	U	0.075	U	0.038	U
	1,1-Dichloroethene	NE	mg/kg	0.089	U	0.075	U	0.085	U	0.061	U	0.064	U	0.073	U	0.11	U	0.057	U
	Vinyl Chloride	NE	mg/kg	0.053	U	0.044	U	0.050	U	0.036	U	0.038	U	0.043	U	0.066	U	0.033	U
	Toluene	7	mg/kg	0.035	U	0.029	U	0.033	U	**0.040**	**J**	0.025	U	0.029	U	0.044	U	0.022	U

Notes

[1]Samples analyzed by Eurofins Environment Testing located in Spokane Valley, Washington.

[2]Gasoline-range petroleum hydrocarbons analyzed using Northwest Method NWTPH-Gx.

[3]Volatile organic compounds (VOCs) analyzed using EPA Method 8260D. Only contaminants of concern (COCs) and analytes with concentrations greater than the respective cleanup levels are shown. The full list of analytes are included in the laboratory reports (Appendix C).

[4]MTCA Method A unrestricted land use cleanup levels (CUL).

[5]Gasoline-range hydrocarbons when benzene is present / no detectable benzene.

mg/kg = milligrams per kilogram

bgs = below ground surface

NE = not established

U = analyte was not detected above the laboratory reporting or method detection limit (RL or MDL, respectively).

J = estimated concentration.

Bold indicates analyte was detected.

Gray shading and bold indicates the analyte exceeded the current referenced cleanup level.

Blue shading indicates the analyte was not detected, but the RL/MDL exceeded the current referenced cleanup level.

Table 2

Chemical Analytical Results - Soil Vapor[1]

Yakima Dry Cleaner
Yakima, Washington

			Location ID	SVP-1		SSV-1		SSV-2	
			Sample Date	12/20/2022		12/20/2022		12/20/2022	
Method	**Analyte**	**MTCA Screening Level[3]**	**Units**						
VOCs[2]	Tetrachloroethene (PCE)	320	µg/m^3	**5,400**		**3,900**		**840**	
	Trichloroethene (TCE)	11	µg/m^3	**3.3**	**J**	**9.6**	**J**	**0.69**	**J**
	cis-1,2-Dichloroethene	NE	µg/m^3	2.2	U	1.1	U	0.19	U
	trans-1,2-Dichloroethene	610	µg/m^3	2.3	U	1.7	U	0.30	U
	1,1-Dichloroethene	3000	µg/m^3	2.5	U	1.7	U	0.29	U
	Vinyl Chloride	9.5	µg/m^3	1.5	U	0.58	U	0.1	U
	1,3-Butadiene	2.8	µg/m^4	2.3	U	0.43	U	**1.5**	

Notes

[1]Samples analyzed by Eurofins Air Toxics located in Folsom, California.

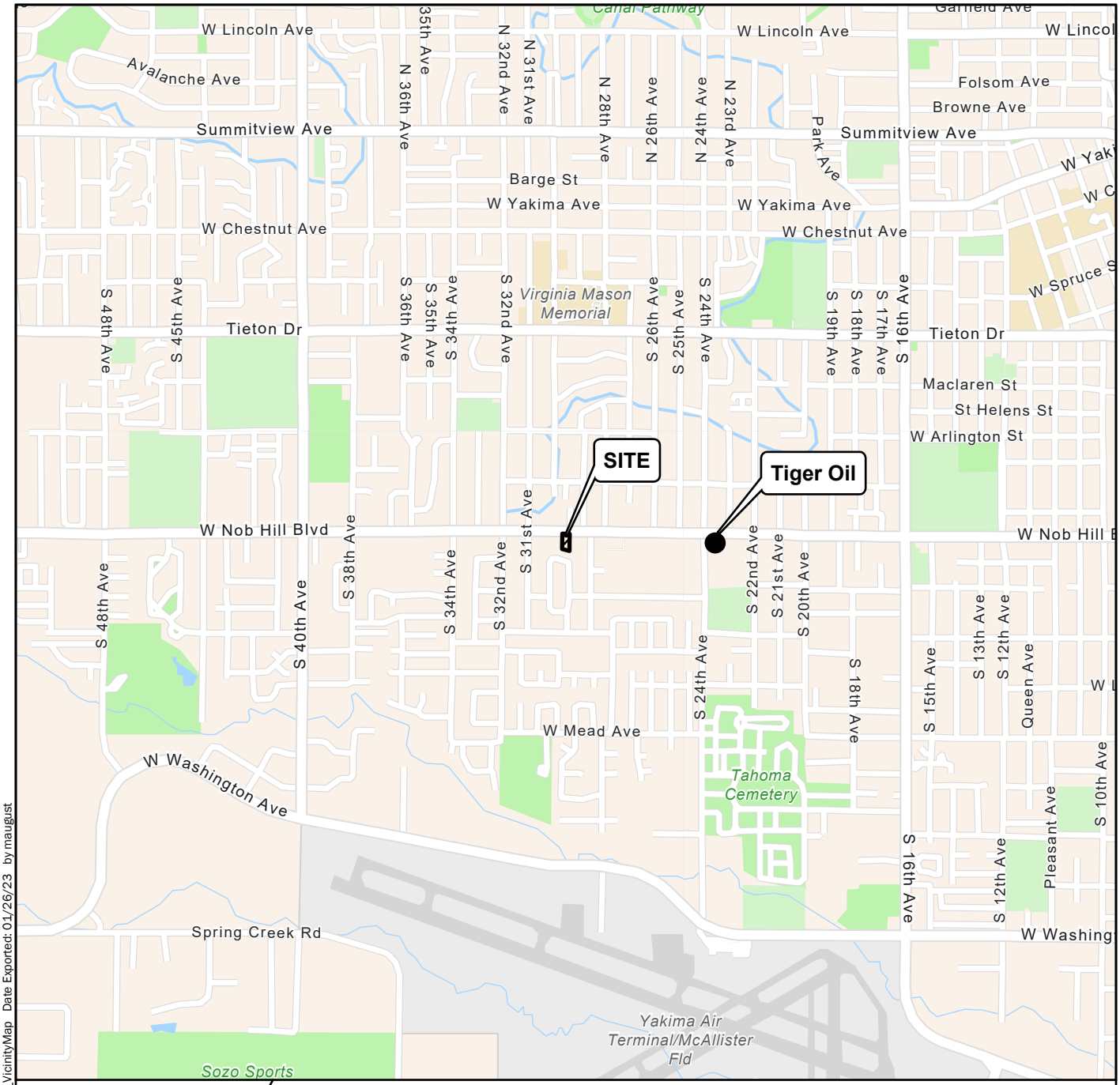
[2]Volatile organic compounds (VOCs) analyzed using EPA Method TO-15 - Low Level. Only contaminants of concern (COCs) and analytes with concentrations greater than the respective cleanup levels are shown. The full list of analytes are included in the laboratory reports (Appendix C).

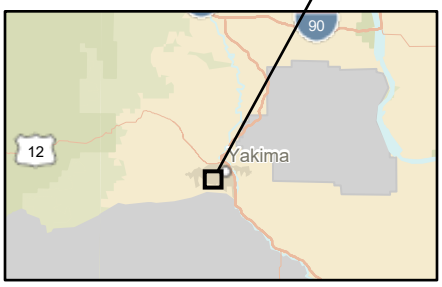
[3]MTCA Method B Sub-slab Soil Gas cancer/non-cancer screening levels (the lowest screening level is used).

µg/m^3 = micrograms per cubic meter
bgs = below ground surface
NE = not established
U = analyte was not detected above the laboratory reporting or method detection limit (RL or MDL, respectively).
J = estimated concentration.
Bold indicates analyte was detected.
Gray shading and bold indicates the analyte exceeded the current referenced cleanup level.
Blue shading indicates the analyte was not detected, but the RL/MDL exceeded the current referenced cleanup level.

FIGURES

GeoEngineers





N

0 2,000

Feet

Source(s):
- ESRI

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

Vicinity Map

Yakima Dry Cleaner
Yakima, Washington

GeoEngineers

Figure 1

P:\0\0504183\GIS\0504183_Project\0504183_Project.aprx\0504183000_F01_VicinityMap Date Exported: 01/26/23 by maugust

P:\0\0504183\GIS\0504183_Project\0504183_Project.aprx\0504183_Project Date Exported: 01/20/23 by ccabrera

Legend

- Project Area
- GeoEngineers Soil Boring
- GeoEngineers Soil Vapor Point
- GeoEngineers Subslab Vapor Point
- PCE Concentration Greater than MTCA Method A Soil Cleanup Level
- Contaminant Concentration(s) Greater than MTCA Method B Vapor Screening Level

Source(s):
- Yakima County GIS
- Bing Imagery

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

N

0 30

Feet

Site Plan

Yakima Dry Cleaner
Yakima, Washington

GeoEngineers

Figure 2

APPENDICES

GeoEngineers

APPENDIX A
Boring Logs

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel / Dames & Moore (D&M)

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled: Start 11/29/2022 End 11/29/2022	Total Depth (ft): 40	Logged By: JDO Checked By: JDO	Driller: Anderson Environmental Contracting, LLC	Drilling Method: Sonic	
Surface Elevation (ft) Vertical Datum: 1131 NAVD88		Hammer Data: NA		Drilling Equipment: Sonic Drill Rig	
Latitude: 46.5853 Longitude: -120.5481		System Datum: Decimal Degrees WGS84		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
1130	0		72					AC	Approximately 3 inches of asphalt concrete pavement			
						GEI040-B-1 (2-3)		CL	Brown sandy clay (stiff, moist)	NS	<1	
1125	5					GEI040-B-1 (5-6)		SM	Light brown silty fine to medium sand (medium dense, moist)	NS	<1	
1120	10		120			GEI040-B-1 (10-11) CA		CL/ML	Light brown sandy clay/sandy silt (stiff, moist)	NS	24.3	
1115	15					GEI040-B-1 (16-17)		ML	Reddish brown sandy silt (stiff, moist)	NS	10.5	
						GEI040-B-1 (18-19)		GP-GM	Brown fine gravel with silt and sand (dense, moist)	NS	<1	
1110	20		120									
						GEI040-B-1 (23-24)		SP	Grayish brown fine to medium sand with trace silt (dense, moist)	NS	<1	
1105	25											
						GEI040-B-1 (28-29)		ML	Light brown silt with sand (stiff, moist)	NS	<1	
1100	30		48					CL	Gray clay with brown sand and occasional gravel (very stiff to hard, moist)			
						GEI040-B-1 (33-34)				NS	33	
	35											

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

Date:12/19/22 Path:P:\0\0504183\GINT\0504183300.GPJ DBLibrary/Library:GEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_ENVIRONMENTAL_STANDARD_NO_GW

Log of Boring GEI040-B-1

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-2
Sheet 1 of 2

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	FIELD DATA: Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample	FIELD DATA: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
1095	35											
	40								Backfilled with bentonite chips, complete with cold patch			

Log of Boring GEI040-B-1 (continued)

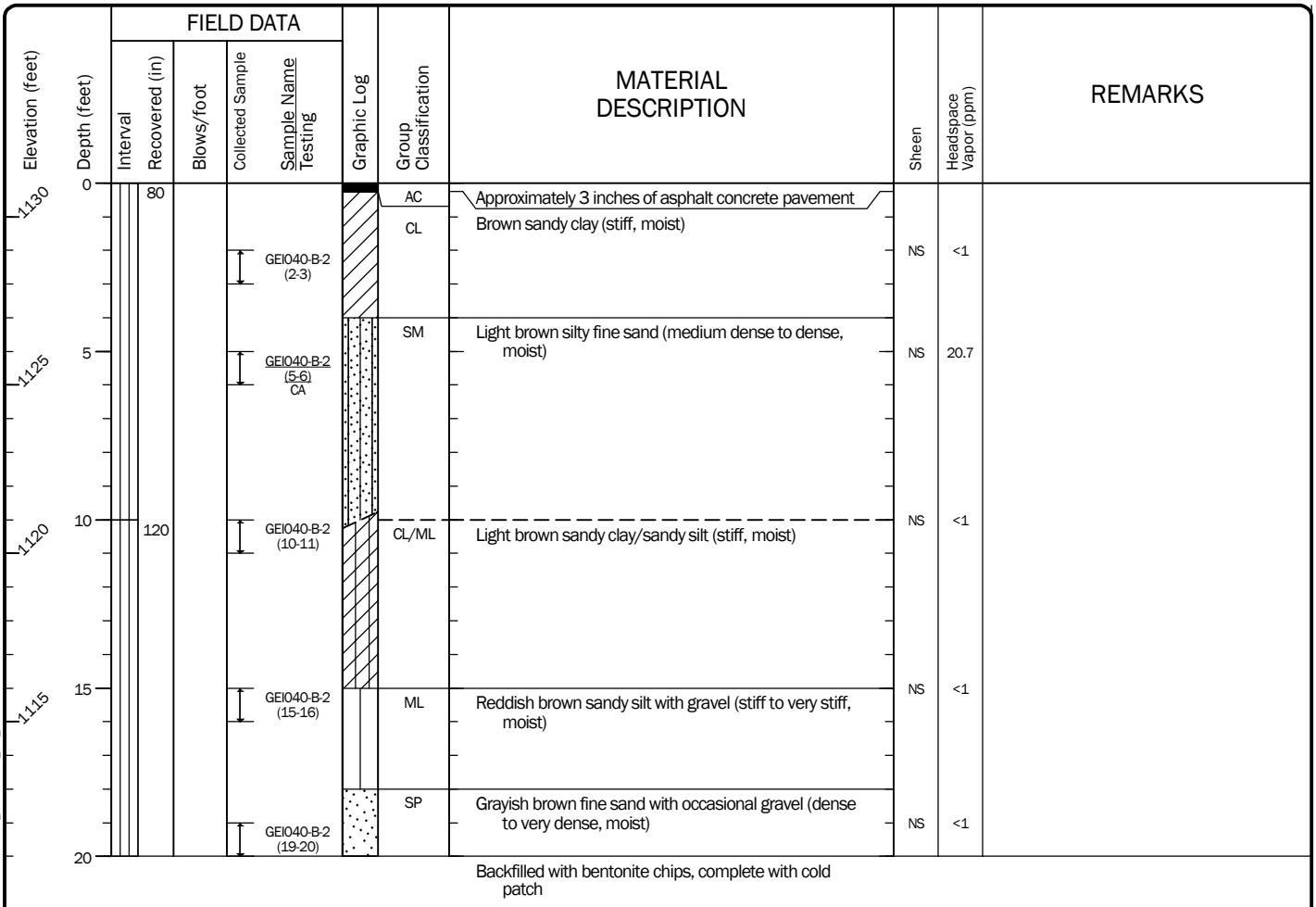
GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-2
Sheet 2 of 2

Drilled Start 11/29/2022 End 11/29/2022	Total Depth (ft) 20	Logged By JDO Checked By JDO	Driller Anderson Environmental Contracting, LLC	Drilling Method Sonic	
Surface Elevation (ft) 1131 Vertical Datum NAVD88		Hammer Data NA		Drilling Equipment Sonic Drill Rig	
Latitude 46.5853 Longitude -120.548		System Datum Decimal Degrees WGS84		Groundwater not observed at time of exploration	

Notes:



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

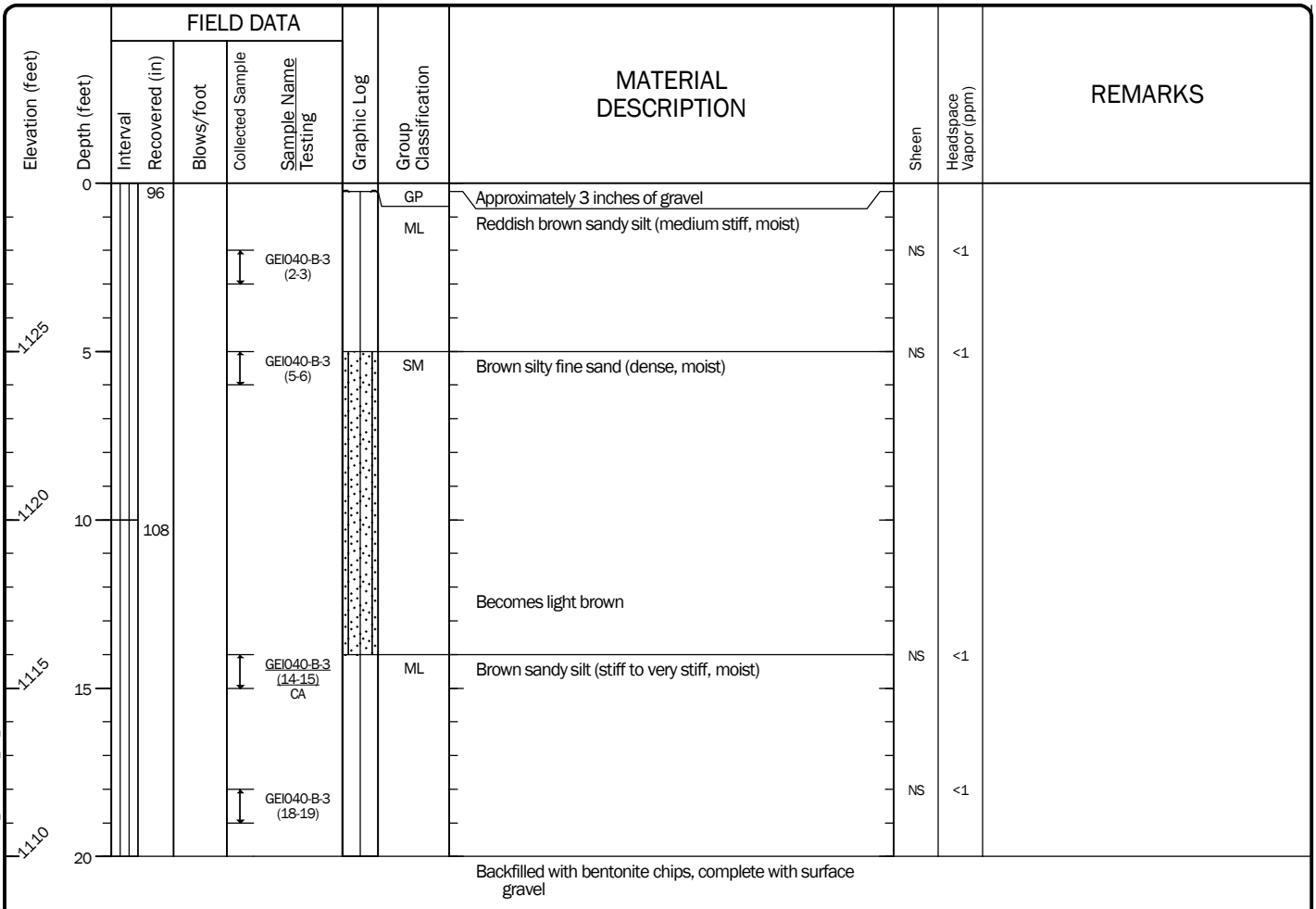
Log of Boring GEI040-B-2

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-3
Sheet 1 of 1

Drilled Start 11/29/2022 End 11/29/2022	Total Depth (ft) 20	Logged By JDO Checked By JDO	Driller Anderson Environmental Contracting, LLC	Drilling Method Sonic	
Surface Elevation (ft) 1130 Vertical Datum NAVD88		Hammer Data NA		Drilling Equipment Sonic Drill Rig	
Latitude 46.5851 Longitude -120.5481		System Datum Decimal Degrees WGS84		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

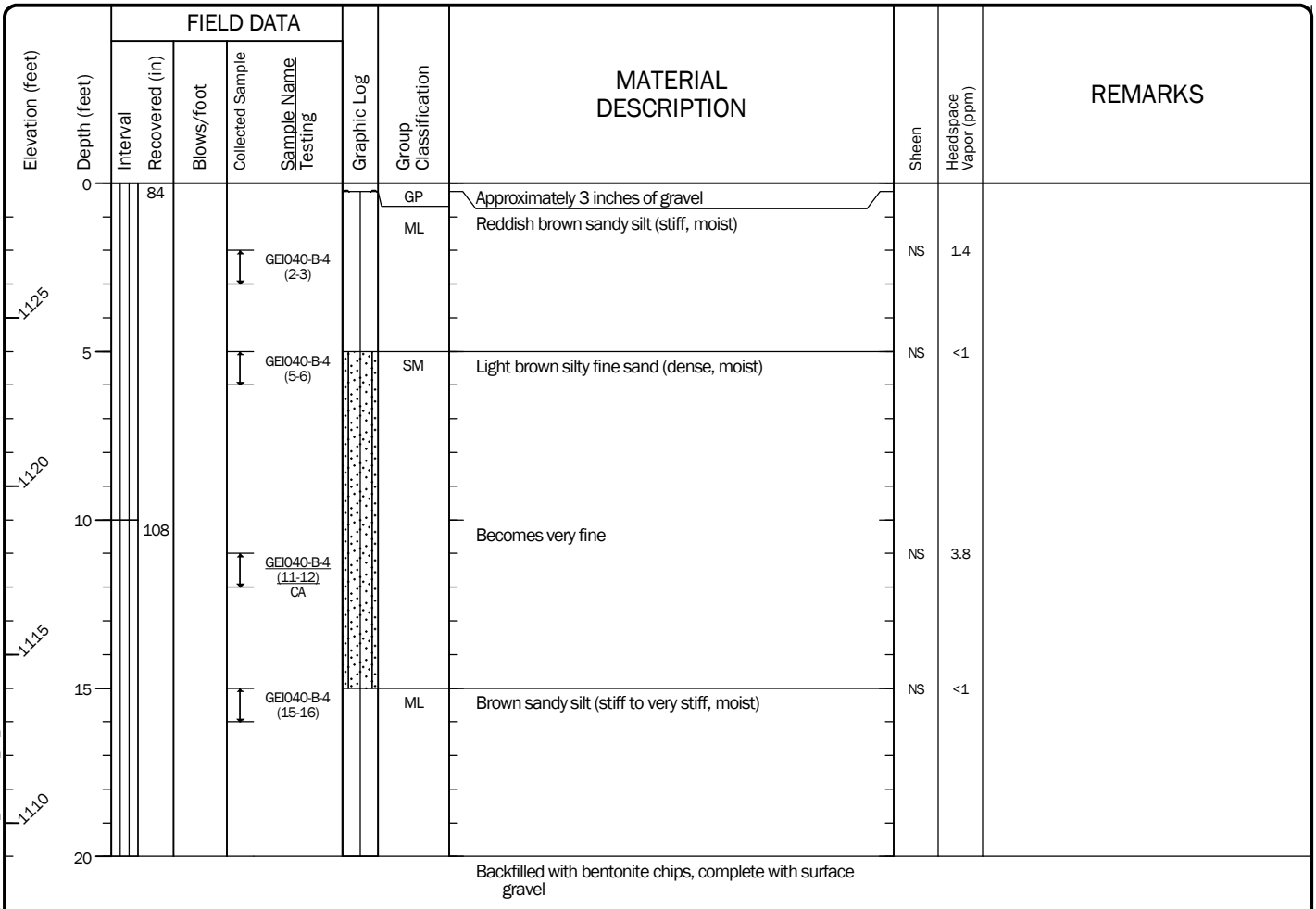
Log of Boring GEI040-B-3

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-4
Sheet 1 of 1

Drilled: Start 11/29/2022 End 11/29/2022	Total Depth (ft): 20	Logged By: JDO Checked By: JDO	Driller: Anderson Environmental Contracting, LLC	Drilling Method: Sonic	
Surface Elevation (ft): 1129 Vertical Datum: NAVD88		Hammer Data: NA		Drilling Equipment: Sonic Drill Rig	
Latitude: 46.5851 Longitude: -120.548		System Datum: Decimal Degrees WGS84		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

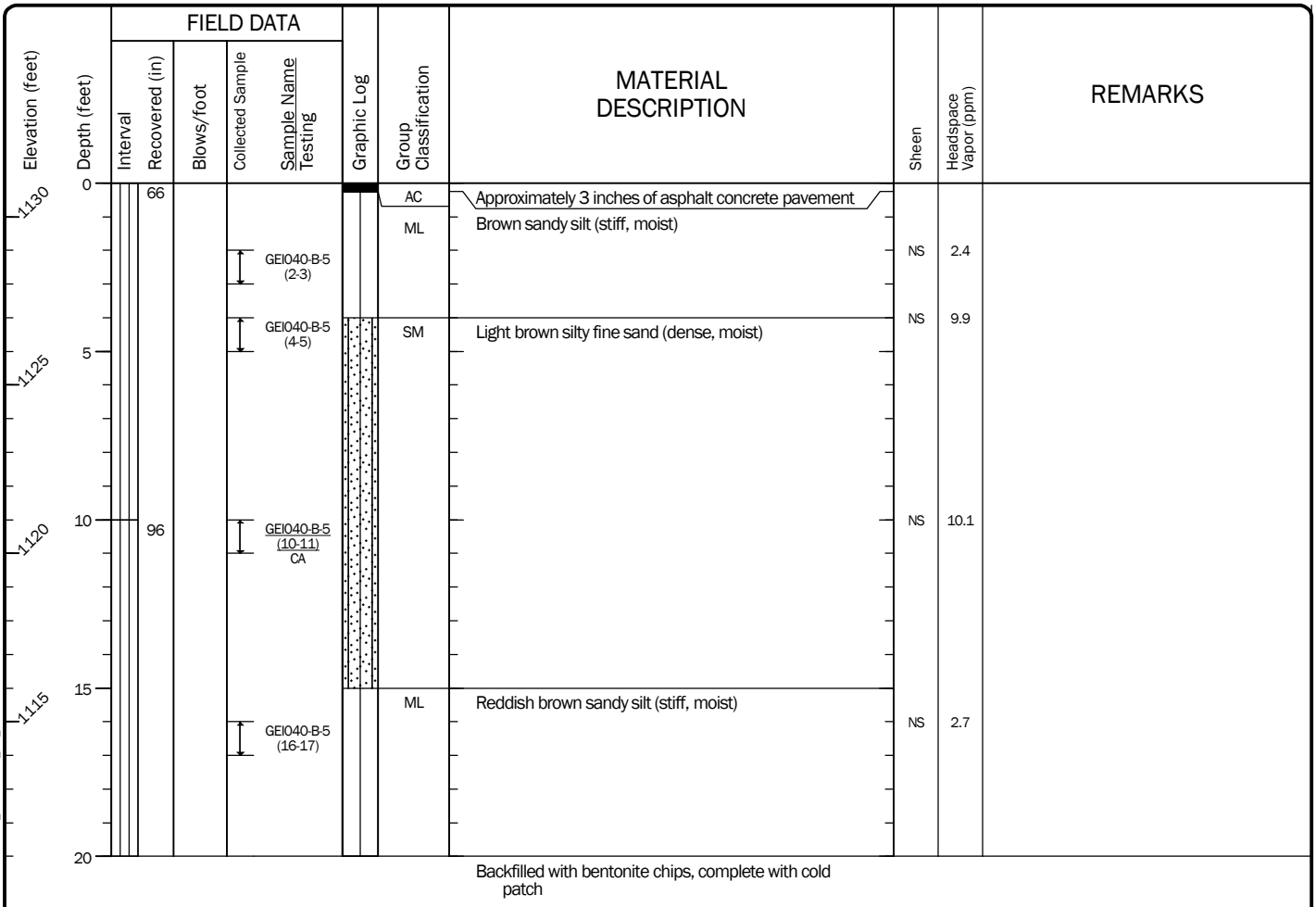
Log of Boring GEI040-B-4

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-5
Sheet 1 of 1

Drilled Start 11/30/2022 End 11/30/2022	Total Depth (ft) 20	Logged By JDO Checked By JDO	Driller Anderson Environmental Contracting, LLC	Drilling Method Sonic	
Surface Elevation (ft) 1131 Vertical Datum NAVD88		Hammer Data NA		Drilling Equipment Sonic Drill Rig	
Latitude 46.5853 Longitude -120.5482		System Datum Decimal Degrees WGS84		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

Log of Boring GEI040-B-5

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-6
Sheet 1 of 1

Drilled	Start 11/30/2022	End 11/30/2022	Total Depth (ft)	20	Logged By	JDO	Driller	Anderson Environmental Contracting, LLC	Drilling Method	Sonic
					Checked By	JDO				

Surface Elevation (ft) Vertical Datum	1131 NAVD88	Hammer Data	NA	Drilling Equipment	Sonic Drill Rig
Latitude Longitude	46.5852 -120.5482	System Datum	Decimal Degrees WGS84	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
1130	0		72			GEI040-B-6 (2-3)		AC	Approximately 3 inches of asphalt concrete pavement			
								ML	Brown sandy silt (stiff, moist)	NS	<1	
1125	5					GEI040-B-6 (5-6)		SM	Light brown silty fine sand (dense, moist)	NS	12.7	
1120	10		108			GEI040-B-6 (10-11) CA			Increasing silt	NS	38.2	
								ML	Reddish brown sandy silt (stiff to very stiff, moist)			
1115	15					GEI040-B-6 (15-16)				NS	6.7	
	20								Backfilled with bentonite chips, complete with cold patch			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

Log of Boring GEI040-B-6

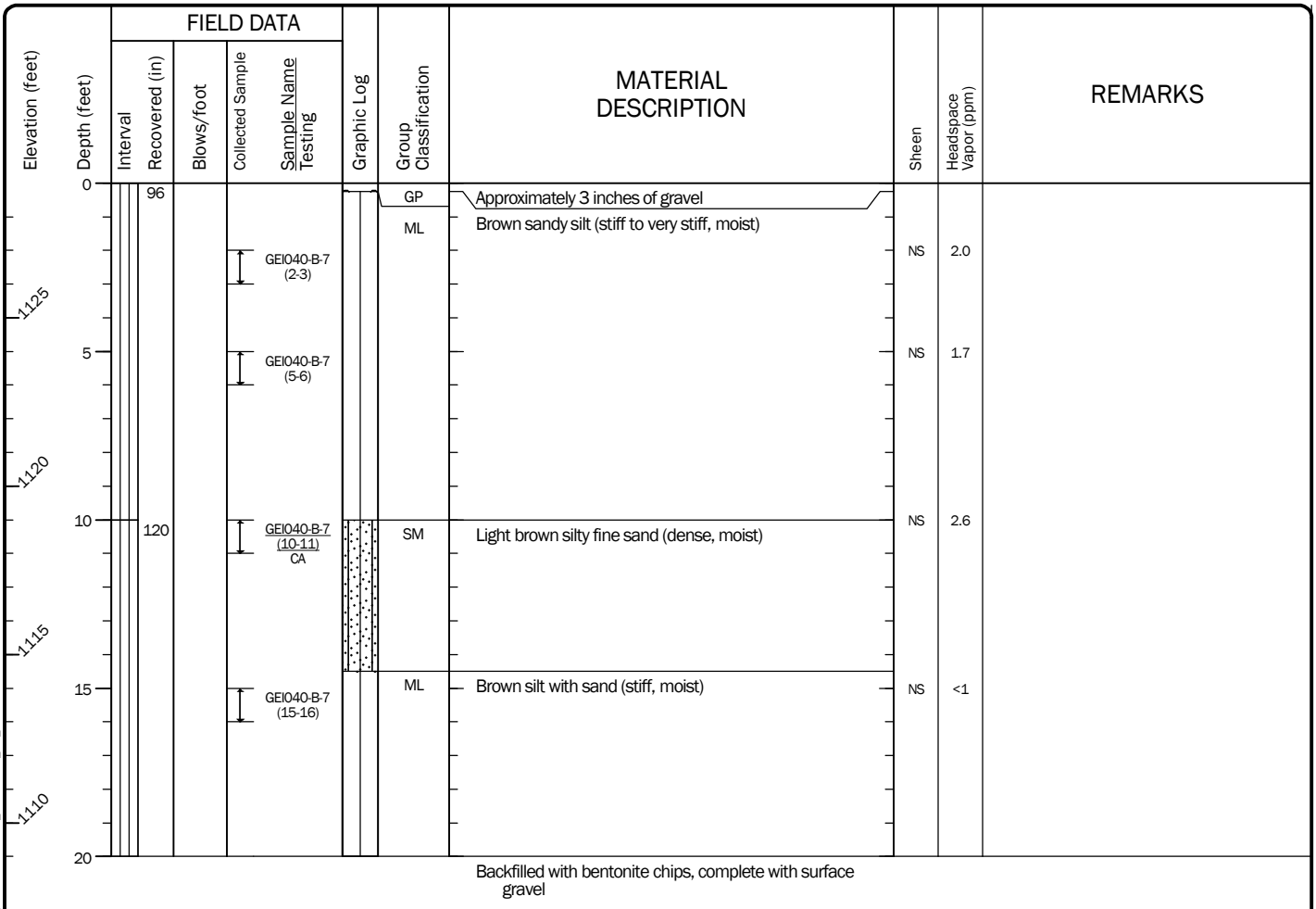
GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-7
Sheet 1 of 1

Drilled Start 11/30/2022 End 11/30/2022	Total Depth (ft) 20	Logged By JDO Checked By JDO	Driller Anderson Environmental Contracting, LLC	Drilling Method Sonic	
Surface Elevation (ft) 1129 Vertical Datum NAVD88		Hammer Data NA		Drilling Equipment Sonic Drill Rig	
Latitude 46.585 Longitude -120.5481		System Datum Decimal Degrees WGS84		Groundwater not observed at time of exploration	

Notes:



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

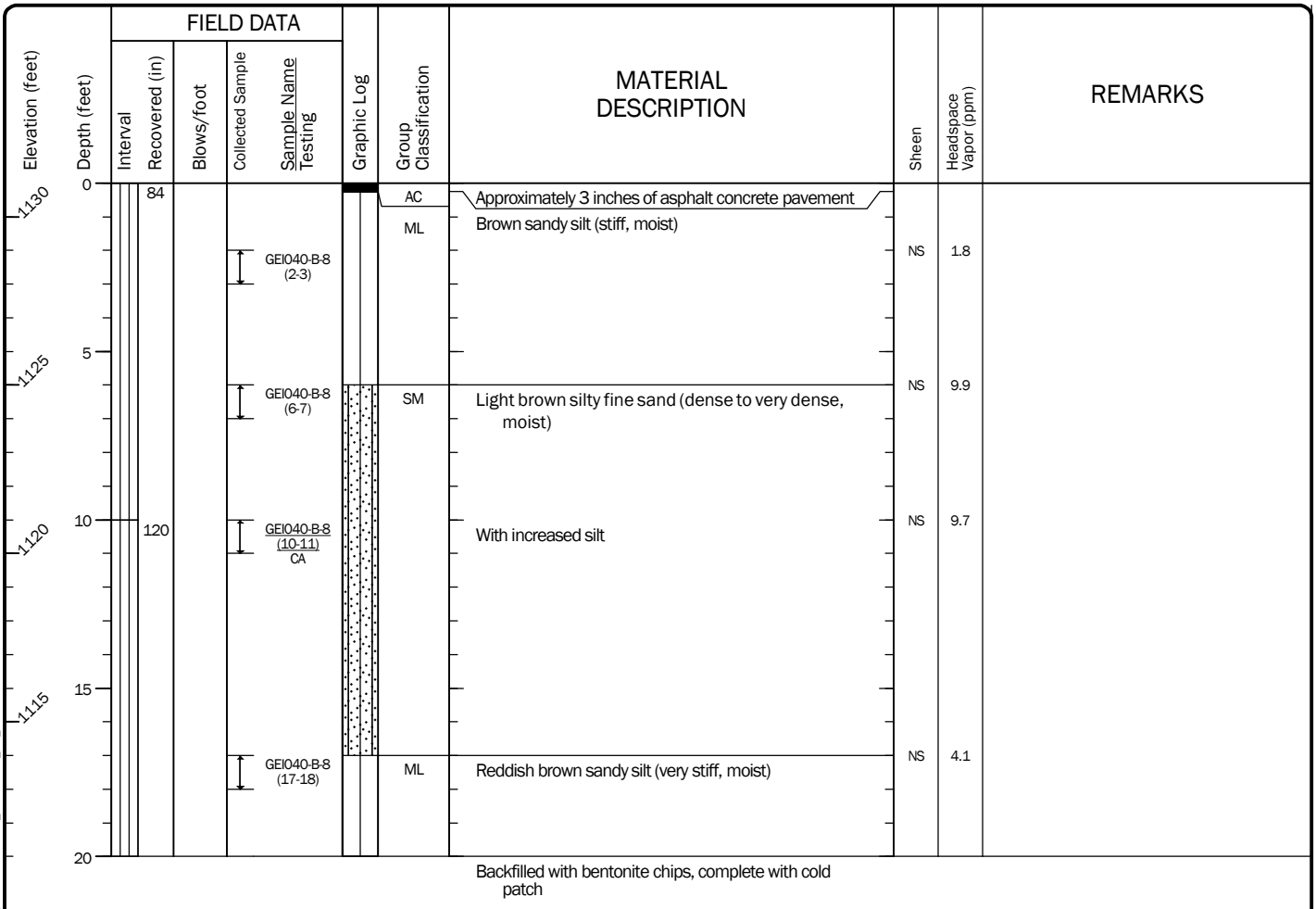
Log of Boring GEI040-B-7

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-8
Sheet 1 of 1

Drilled Start 11/30/2022 End 11/30/2022	Total Depth (ft) 20	Logged By JDO Checked By JDO	Driller Anderson Environmental Contracting, LLC	Drilling Method Sonic	
Surface Elevation (ft) 1131 Vertical Datum NAVD88		Hammer Data NA		Drilling Equipment Sonic Drill Rig	
Latitude 46.5852 Longitude -120.5482		System Datum Decimal Degrees WGS84		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

Log of Boring GEI040-B-8

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-9
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 11/30/2022 / 11/30/2022	7	JDO / JDO	Anderson Environmental Contracting, LLC	Sonic

Hammer Data	NA	Drilling Equipment	Sonic Drill Rig
Surface Elevation (ft) Vertical Datum	1129 NAVD88	Top of Casing Elevation (ft)	
Latitude / Longitude	46.5851 / -120.548	Horizontal Datum	Decimal Degrees WGS84

A 2-in well was installed on 11/30/2022 to a depth of 7 ft.

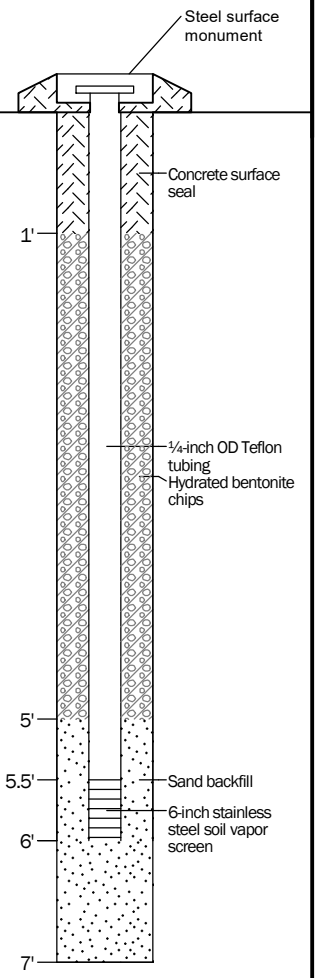
Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)

Notes: Soil vapor sample point

Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
0		72						GP	Approximately 3 inches of gravel		
								ML	Reddish brown sandy silt (stiff, moist)		
5								SM	Light brown silty fine sand (dense, moist)		

Elevation (feet): 1125

WELL LOG



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Aerial Imagery. Vertical approximated based on Aerial Imagery.

Log of Monitoring Well GEI040-SVP-1

GeoEngineers

Project: Yakima Dry Cleaner
Project Location: Yakima, Washington
Project Number: 0504-183-00

Figure A-10
Sheet 1 of 1

Date:12/19/22 Path:P:\0\0504183\GINT\0504183000.GPJ DBLibrary/Library:GEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_ENVIRONMENTAL_WELL

APPENDIX B
Work Plan

Work Plan

Yakima Dry Cleaner Site Assessment
Yakima, Washington

for
Washington State Department of Ecology

October 26, 2022

GeoEngineers
Earth Science + Technology

Work Plan

Yakima Dry Cleaner Site Assessment
Yakima, Washington

for
Washington State Department of Ecology

October 26, 2022

GeoEngineers

523 East Second Avenue
Spokane, Washington 99202
509.363.3125

Work Plan

Yakima Dry Cleaner Site Assessment
Yakima, Washington

File No. 0504-183-00

October 26, 2022

Prepared for:

Washington State Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, Washington 98903

Attention: John Mefford, LHG

Prepared by:

GeoEngineers, Inc.
523 East Second Avenue
Spokane, Washington 99202
509.363.3125

Justin D. Orr, LG
Staff Geologist

Bruce D. Williams
Senior Principal

JDO:BDW:mce:tjh

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

This Work Plan presents the scope of work and approach to conduct soil, soil vapor and if encountered, groundwater assessment activities at the Yakima Dry Cleaner facility (herein referred to as "site") located at 2904 West Nob Hill Boulevard in Yakima, Washington as shown in the Vicinity Map, Figure 1.

This Work Plan has been prepared by GeoEngineers for the State of Washington Department of Ecology (Ecology) under Ecology Master Contract No. C1900044, task work assignment number GEI040. The purpose of this assessment is to determine if soil and/or groundwater contamination related to dry cleaning operations is present, to assess the extent and magnitude of contamination in soil and/or groundwater, and to evaluate potential vapor intrusion from soil and/or groundwater contamination. Data generated from this assessment will support a no further action (NFA) determination or planning potential remedial actions within the defined project area to address ecological and human health risks associated with historical contamination.

A sampling plan, with a description of field assessment procedures is provided in Appendix A; the Quality Assurance Project Plan (QAPP) and the Health and Safety Plan (HASP) are presented in Appendices B and C, respectively. The Work Plan is organized as follows:

- Site Description and Background – Section 2.0
- Field Investigation Activities – Section 3.0
- Schedule – Section 4.0
- References – Section 5.0

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located at 2904 West Nob Hill Boulevard in Yakima, Washington. The site is bound by West Nob Hill Boulevard to the north and residential and/or commercial properties to the south, east and west. The site is paved with a building in the northeast corner. The site started operating as a dry-cleaning facility in the 1970s and is currently occupied by a Mexican Bakery. Site details are shown in the Site Plan, Figure 2.

Ecology determined the site to be a potential source of groundwater contamination based on site investigation and remedial action data collected from a gas station facility (Tiger Oil) site located approximately ¼-mile hydrogeologically downgradient to the dry cleaners.

There are no known existing groundwater monitoring wells at the site. Groundwater at the Tiger Oil facility was measured between 5 and 15 feet below ground surface (bgs) based on seasonal fluctuations.

2.1. Previous Site Investigations

CH2M Hill conducted soil sampling at the site in 1997. The CH2M Hill investigation included hand-augering 10 borings in the soil/vegetated area on the south side of the dry-cleaning building. Soil samples were collected from approximately 6 inches below ground surface. Evidence of dry-cleaning

chemicals was not reported. CH2M Hill also identified an underground storage tank (UST) vent located near the southwest corner of the building but did not investigate the tank.

To assess the potential extent of chlorinated dry-cleaning chemicals (tetrachloroethylene [PCE], trichloroethylene [TCE] and daughter products) and Stoddard Solvent, we plan to advance soil borings and install temporary well points, collect soil, groundwater and soil vapor samples from the borings and temporary wells, and submit the samples for chemical analyses of the above listed analytes. Temporary well points will only be installed, and groundwater samples will only be collected if observed field conditions indicate the potential for groundwater contamination.

3.0 FIELD INVESTIGATION ACTIVITIES

The tasks described below reflect the proposed field activities. The specific tasks conducted at the site may change in response to conditions encountered in the field or as additional information is obtained. Adjustments to the tasks listed will be mutually agreed upon by Ecology and GeoEngineers and authorized prior to implementation.

Field investigation activities will include the following:

- Coordinate underground utility locating using the State of Washington Utility Notification and a private utility locate company. Per state regulations, GeoEngineers will mobilize to/from the site from Spokane to mark the proposed boring locations prior to initiating the locate request.
- Mobilize to/from the site from Spokane, Washington to conduct the sampling event.
- Conduct a geophysical survey using ground-penetrating radar to assess subsurface anomalies along the building perimeter and within the building envelope.
- Conduct up to 2 days of subsurface assessment using sonic drilling techniques. We anticipate advancing up to 12 borings at the site. However, the number, location and depth of the borings will depend on field conditions (such as field screening evidence of contamination, accessibility, soil conditions and depth to groundwater). Borings will be advanced around the building with two borings to the north, two borings to the west, two borings to the south and several borings as potential step-out borings. Soil borings will not be advanced to the east of the building due to proximity to overhead power lines. In general, the borings will be advanced along each side of the dry cleaner building. Soil samples will be collected using a continuous core sampler (sonic) for field screening and potential chemical analysis. Borings will be advanced to a maximum depth of approximately 15 feet bgs, with one boring extended to 20 feet bgs. Proposed boring locations are shown in Figure 2. Soil samples will be collected per procedures outlined in Appendix A.
- Install up to one soil vapor point outside the building to approximately 5 feet bgs and collect a soil vapor sample. The proposed soil vapor point location is shown in Figure 2. The soil vapor sample will be collected per procedures outlined in Appendix A.
- Install up to two sub-slab Vapor Pins® inside the building and collect sub-slab vapor samples. The proposed sub-slab Vapor Pin® locations are shown in Figure 2. The sub-slab vapor samples will be collected per procedures outlined in Appendix A.

- Observe and document subsurface soil conditions using a qualified field engineer or geologist. Field screening will consist of visual observation, water sheen testing and headspace vapor measurements using a photoionization detector (PID).
- If indications of contaminated soil are observed extending to depths near groundwater, then the boring will be advanced at least 5 feet below the groundwater interface and a temporary groundwater sampling point will be installed for the collection of a grab groundwater sample. We anticipate up to 12 grab groundwater samples and one duplicate sample will be collected and submitted for analysis. Grab groundwater samples will be collected per procedures outlined in Appendix A.
- If deemed necessary and field-approved by Ecology, complete up to three of the borings as groundwater monitoring wells. Monitoring wells will be installed per procedures outlined in Appendix A. Each monitoring well will be completed with a flush-mounted protective steel monument.
- Backfill borings with bentonite clay and surface completed with turf, asphalt or concrete patch to match the existing ground surface.
- Conduct groundwater sampling at newly installed on-site wells, if warranted. Groundwater samples will be collected per procedures outlined in Appendix A. Three groundwater samples will be collected from the completed wells instead of collecting three grab samples from three of the temporary groundwater sampling points listed above.
- Submit at least one soil sample from each boring. The soil sample with the greatest field screening indication of potential contamination or the closest sample collected above the groundwater interface, if present, will be submitted for analysis. Samples will be submitted on a standard turnaround time (TAT).
- Soil and groundwater samples submitted from the site will be analyzed for the following potential contaminants:
  - Volatile organic compounds (VOCs) using Environmental Protection Agency (EPA) Method 8260D; and
  - Gasoline-range petroleum hydrocarbons (GRPH) using Northwest Method NWTPH-Gx.
- The soil vapor sample will be submitted and analyzed for VOCs using EPA Method TO-15.
- Drum and label investigation-derived waste (IDW). Analytical data from the soil borings will be used to characterize the IDW. In addition, a sample will be collected and analyzed for Resource Conservation and Recovery Act (RCRA) metals, which is required by most disposal facilities. A qualified contractor will be retained to profile and transport the IDW for disposal at a permitted facility. We assume IDW will be non-hazardous.
- Compare soil and groundwater analytical results to Washington State Model Toxics Control Act (MTCA) Method A cleanup levels and compare soil vapor analytical reports to MTCA Method B cleanup levels.
- Prepare a site assessment report that provides field and laboratory data, comparison of the analytical results to MTCA, and recommendations, as needed. The report will include field procedures, tables and figures, and historical site information, as appropriate.

- Enter laboratory analytical data results into Ecology's Environmental Information Management (EIM) database.

4.0 SCHEDULE

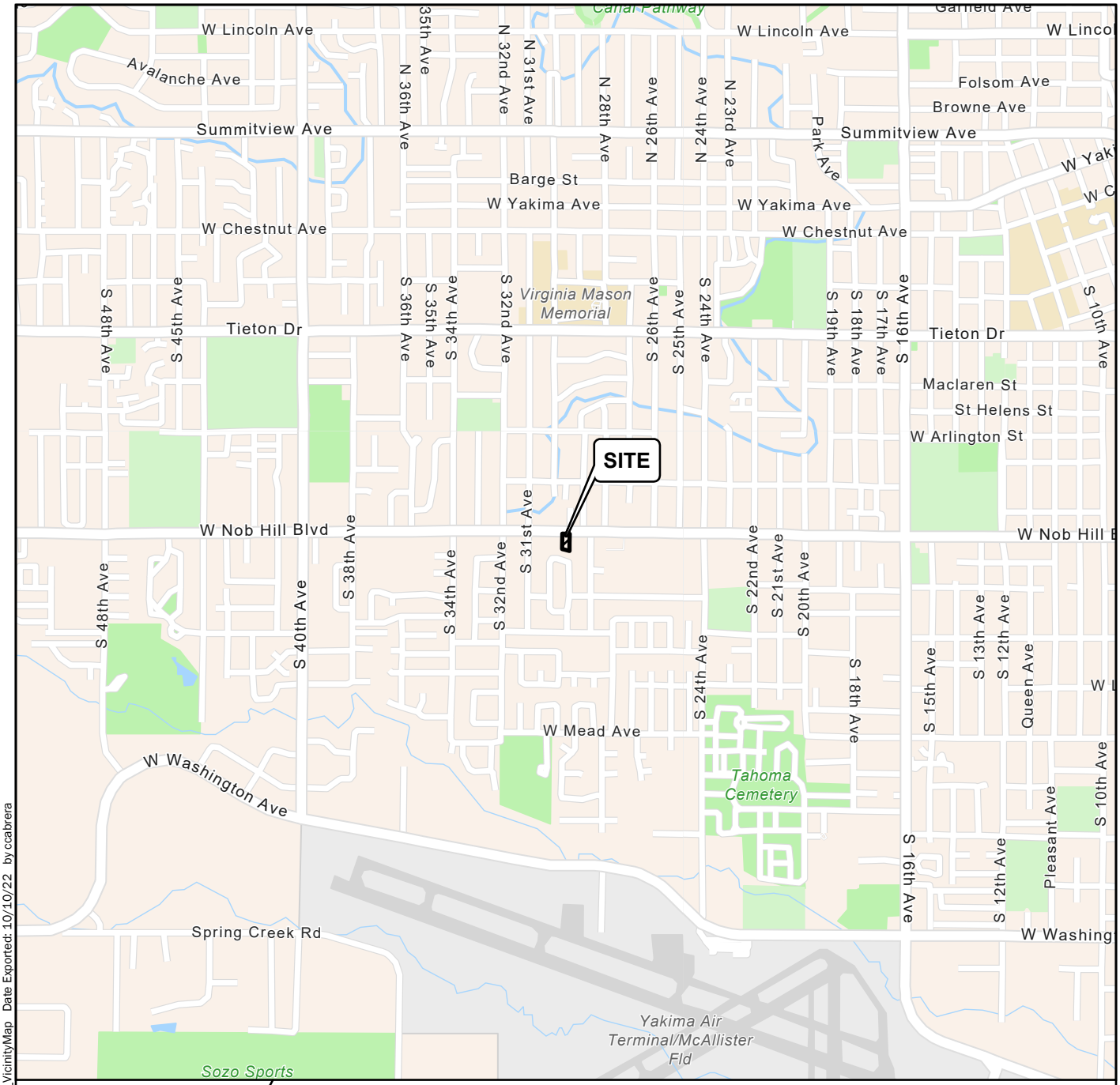
The fieldwork will be conducted during the 4th Quarter of 2022 and completed in up to 2 days. We expect to receive analytical data within 2 weeks after submitting the samples to the laboratory. Our report will be completed within a month following receipt of the laboratory analytical reports.

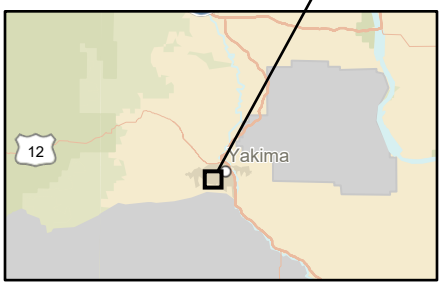
5.0 REFERENCES

CH2M Hill. 1997. "Summary of Soil Sampling Activities at WESTCO's Nob Hill Facility in Yakima, Washington." June 30, 1997.

FIGURES

GeoEngineers





N

0 2,000

Feet

Source(s):
- ESRI

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

Vicinity Map

Yakima Dry Cleaner
Yakima, Washington

GeoEngineers

Figure 1

P:\0\0504183\GIS\0504183_Project\0504183_Project.aprx\0504183300_F01_VicinityMap Date Exported: 10/10/22 by ccabrera

P:\0\0504183\GIS\0504183_Project\0504183_Project.aprx\0504183_Project Date Exported: 10/10/22 by ccabrera

Legend

- Project Area
- Proposed Sonic Boring Location
- Proposed Soil Vapor Point Location
- Proposed Subslab Vapor Point Location

N

0 30

Feet

Source(s):
- Yakima County GIS
- Bing Imagery

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Site Plan

Yakima Dry Cleaner
Yakima, Washington

GeoEngineers

Figure 2

APPENDICES

GeoEngineers

APPENDIX A
Field Assessment Procedures

APPENDIX A
FIELD ASSESSMENT PROCEDURES

STANDARD PROCEDURES

This section contains standard procedures for field data collection that are anticipated during the site assessment at the Yakima Dry Cleaner site in Yakima, Washington, including the following:

- Collecting soil samples from sonic soil borings;
- Sub-slab vapor pin construction;
- Soil vapor point construction;
- Monitoring well construction;
- Groundwater sampling – grab sampling and monitoring well sampling (if encountered);
- Soil vapor sampling;
- Field screening methods;
- Decontamination procedures;
- Handling of investigation-derived waste (IDW);
- Sample location control;
- Sample handling and custody requirements;
- Field measurement and observation documentation; and
- Sample identification.

Collecting Soil Samples from Soil Borings

Drilling will be conducted by a State of Washington licensed driller and supervised by a trained GeoEngineers field engineer or geologist. Soil samples will be collected continuously during drilling (sonic) using 5- or 10-foot core barrels and disposable plastic sleeves.

Each boring will be monitored by a GeoEngineers field representative to observe and classify the soil encountered and prepare a detailed log of each boring. Soil encountered in the borings will be classified in the field in general accordance with ASTM International (ASTM) D2488-17, the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

Soil samples from each sampling interval will be field screened for the presence of contaminants using the procedures described below to determine which sample will be submitted for chemical analysis. Based on field indicators, a minimum of one soil sample from each boring exhibiting the greatest level of contamination, as indicted by field screening, will be submitted for laboratory analysis. If field screening does not indicate the presence of contamination, the sample collected closest to and above the groundwater interface will be submitted for analysis. Additional samples may be submitted, based on field screening results and as approved by the Washington State Department of Ecology (Ecology).

Soil selected for analysis will be removed from the sampler using a new or decontaminated soil knife, clean nitrile gloves, transferred into a laboratory-prepared container, labeled with a waterproof pen, and placed on "blue ice" or wet ice in a clean plastic-lined cooler. Each sample will be documented on a boring log and chain-of-custody (COC) and will include sample name, sample collection date and time, sample type, sample depth (relative to ground surface), requested analyses and sampler name. Soil samples for volatile organic compounds (VOCs) and gasoline-range petroleum hydrocarbons (GRPH) analyses will be collected consistent with Environmental Protection Agency (EPA) Method 5035A (EPA 2002) and preserved in accordance with Ecology Implementation Memorandum 5 (Ecology 2004) and EPA (1998).

Sampling equipment will be decontaminated between each sampling attempt as described in the Decontamination Procedures Section. The sample coolers will be delivered to the analytical laboratory under standard COC procedures described in the Quality Assurance Project Plan (QAPP) (Appendix B).

Sub-Slab Vapor Pin Construction

Up to 2 sub-slab Vapor Pins® will be installed within the former dry cleaner building concrete slab according to the manufacturer's instructions. This will include drilling a hole through the building slab. The Vapor Pin® will then be hammered into the hole drilled in the slab. The Vapor Pin® will be recessed into the building slab to allow for future monitoring.

Soil Vapor Point Construction

To assess potential soil vapor migration into the site structure, a soil vapor point will be placed on the south side of the building, outside the building footprint. The soil vapor point will be comprised of a 6-inch long stainless steel screen attached to Teflon™ tubing installed to a depth of at least 5 feet bgs, as recommended by Ecology's VI Guidance (Ecology, 2022). The tubing will be connected to a sampling manifold at the ground surface. Hydrated bentonite will be placed around the soil vapor probe where it enters the ground surface. The sampling manifold will be vacuum-tested (shut-in test) by briefly introducing a vacuum to the aboveground portion of the sampling train and checking for loss of vacuum. If vacuum loss is observed, connections and fittings in the sample train will be checked and adjusted. The soil vapor point will be completed with a flush-mounted monument and a concrete surface seal will be placed around the monument at the ground surface to divert surface water away from the vapor point location.

If shallow groundwater precludes soil vapor sample collection at a depth of at least 5 feet bgs, the assessment report will indicate that there is uncertainty associated with using analytical results associated with the shallow (that is, less than 5 feet bgs) samples to estimate indoor air concentrations.

Monitoring Well Construction

If deemed necessary and field-approved by Ecology, up to three borings will be completed as monitoring wells in accordance with Chapter 173-160 WAC, Minimum Standards for Construction and Maintenance of Wells. Monitoring well installation records will be submitted in accordance with these standards. GeoEngineers' field representative will observe and document the monitoring well installation, including maintaining a detailed log of the well construction materials, depths of materials and depths of each well. Well construction details will be recorded on a monitoring well construction log.

The groundwater wells will have about a 5-foot screened interval, with at least 1 foot of screen above the observed depth to groundwater level. Each monitoring well will be constructed using 2-inch-diameter, schedule 40 polyvinyl chloride (PVC) well casing and well screens.

Each monitoring well will be completed with a bentonite seal and a flush-mounted monument. A lockable cap will be installed at the top of the PVC well casing. A concrete surface-seal will be placed around the monument at the ground surface to divert surface water away from the monitoring well location.

The monitoring wells will be developed to remove water introduced into the well during drilling (if any), stabilize the filter pack and formation materials surrounding the well screen, and restore the hydraulic connection between the well screen and the surrounding soil. The depth to water in the monitoring well will be measured prior to development. The total depth of the well also will be measured and recorded. The monitoring wells will be developed by pumping, surging, bailing or a combination of these methods after construction. Development of each well will continue until the water is as free of sediment as practicable with respect to the composition of the subsurface materials within the screened interval. The removal rate and amount of groundwater removed will be recorded during well development procedures. Water generated during development will be drummed, labeled and stored in a safe location on site until chemical analytical results are obtained. After development, wells will be allowed to equilibrate a minimum of 72 hours prior to sampling.

The horizontal locations and relative elevations of the monitoring wells will be surveyed by GeoEngineers. A fixed location (such as a fire hydrant or lamp post base) will be assigned an arbitrary elevation of 100.00. The ground surface and top of well casing of each well will be surveyed relative to this fixed location to quantitatively understand relative groundwater elevations and groundwater flow direction. A survey reference mark will be established on the north side of each monitoring well casing as a reference for measuring groundwater elevations and at the fixed location.

Groundwater Sampling

Groundwater (if encountered) will be collected as a grab sample from the soil borings and newly constructed monitoring wells.

Grab Sampling

If groundwater is encountered in the soil borings, grab samples will be collected and analyzed in the field as described below. Depth to groundwater relative to the ground surface will be measured to the nearest 0.01 foot using an electronic interface probe and recorded in the field notes. The interface probe will be decontaminated with Liquinox® solution wash and a distilled water rinse prior to use in each boring.

Following depth to groundwater measurement, a groundwater sample will be collected from the open boring consistent with the EPA's low-flow groundwater sampling procedure, as described in EPA (2017) and Puls and Barcelona (1996). Dedicated tubing and a peristaltic pump will be used for groundwater purging and sampling. During purging activities, water quality parameters, including pH, temperature, conductivity, dissolved oxygen (DO), oxygen-reduction potential (ORP) and turbidity, will be measured using a multi-parameter meter equipped with a flow-through cell. Each boring will be purged until turbidity is stable for three consecutive readings, or for a maximum of 15 minutes, whichever occurs first, before collecting the sample. Stability is defined as the following:

- Turbidity: +/- 10% NTUs (when turbidity is greater than 10 NTUs)

Samples will not be collected from the boring if it has measurable free product. Field water quality measurements and depth-to-water measurements will be recorded on a Well Purging-Field Water Quality Measurement Form. Groundwater samples will be transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. COC procedures will be observed from the time of sample collection to delivery to the testing laboratory consistent with the QAPP.

Monitoring Well Sampling

If deemed necessary and field-approved by Ecology, up to three soil borings will be completed as groundwater monitoring wells, and groundwater samples will be collected and analyzed as described below. Depth to groundwater relative to the top of the PVC well casing will be measured to the nearest 0.01 foot using an electronic interface probe and recorded in the field notes. The interface probe will be decontaminated with Liquinox® solution wash and a distilled water rinse prior to use in each monitoring well.

Following depth to groundwater measurement, a groundwater sample will be collected from the open boring consistent with the EPA's low-flow groundwater sampling procedure, as described in EPA (2017) and Puls and Barcelona (1996). Dedicated tubing and a peristaltic pump will be used for groundwater purging and sampling. During purging activities, water quality parameters, including pH, temperature, conductivity, DO, ORP and turbidity, will be measured using a multi-parameter meter equipped with a flow-through cell. Each boring will be purged until parameters stabilize, or a maximum of 30 minutes, whichever occurs first, before collecting the sample. Stability is defined as the following:

- pH: +/- 0.1 pH units
- Conductivity: +/- 3% mS/cm
- ORP: +/- 10 mV
- Turbidity: +/- 10% NTUs (when turbidity is greater than 10 NTUs)
- DO: +/- 0.3 mg/L
- Temperature: +/- 3% degrees Celsius

Samples will not be collected from the monitoring well if it has measurable free product. Field water quality measurements and depth-to-water measurements will be recorded on a Well Purging-Field Water Quality Measurement Form. Groundwater samples will be transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. COC procedures will be observed from the time of sample collection to delivery to the testing laboratory consistent with the QAPP.

Soil Vapor Sampling

The soil vapor sample point and sub-slab vapor sample point(s) will be collected as described below. Prior to sampling, each vapor sample location will be leak tested using a helium shroud. Teflon™ or Tygon® tubing will be connected to the sample port and a portable air pump will be attached the end of the tubing. The sample point will be purged using the portable air pump for 1 minute and the pump exhaust will be monitored for helium during purging using a helium detector. If a helium is detected in the pump

exhaust, the leak will be repaired, and the port will be resampled before a Summa cannister is connected to the sample line.

If helium is not detected in the exhaust port, a 1-liter Summa canister fitted with a flow controller will be attached to the Teflon™ or Tygon® tubing. The flow controllers will be set to approximately 200 milliliters per min (ml/min) by the analytical laboratory. Valves on the cannister will be opened and air from the sampling port will be drawn into the cannister. Air will be drawn for about 5 minutes until the cannister is filled, but before atmospheric pressure is reached. The flow controller will automatically stop the flow of air before atmospheric pressure is reached. The samples will be submitted to Eurofins for analysis of VOCs by EPA Method TO-15. GeoEngineers will request below reporting limit/calibration curve, estimated concentration "method detection limit" reporting from the selected laboratory.

Consistent with Ecology's VI Guidance, soil vapor samples will not be obtained during or immediately after a significant rain event. For the purposes of this Work Plan, a significant rain event is defined as ½-inch or greater during the preceding 24-hour period (DTSC, 2012).

Field Screening Methods

Field screening methods will be used to select samples for laboratory chemical analysis.

A GeoEngineers field representative will perform visual and physical field screening tests on soil samples and record the observations on the field boring log and in the field notebook. Field screening results will be used to aid in the selection of soil samples for laboratory chemical analysis. The sample from each boring showing the highest likelihood of contamination, based on field screening, will be selected for laboratory analysis. The remaining samples may be submitted to the laboratory and held, pending the results of the samples submitted for analysis.

Screening methods will include (1) visual examination; (2) water-sheen screening; and (3) headspace vapor screening using a photoionization detector (PID). Visual screening consists of inspecting the soil for discoloration indicative of the presence of petroleum-impacted material or other contaminants in the sample.

Water-sheen screening involves placing soil in water and observing the water surface for signs of sheen. Sheen classifications are as follows:

- **No Sheen (NS)** No visible sheen on the water surface;
- **Slight Sheen (SS)** Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly. Natural organic matter in the soil might produce a slight sheen;
- **Moderate Sheen (MS)** Light to heavy sheen; might have some color/iridescence; spread is irregular to flowing, may be rapid; few remaining areas of no sheen on water surface; and
- **Heavy Sheen (HS)** Heavy sheen with color/iridescence; spread is rapid; entire water surface might be covered with sheen.

Water sheen testing equipment will be disposable or decontaminated before field screening each sample using a Liquinox® soap solution with a water rinse. Used testing equipment and/or decontamination

water will be stored on-site in a labeled Washington State Department of Transportation (DOT)-approved drum pending disposal with other IDW.

Headspace vapor screening involves placing a soil sample into a sealed plastic bag and measuring the airspace VOC vapor concentrations in parts per million (ppm) with a PID. Once a soil sample is placed in a sealed plastic bag with air space, the bag is shaken to expose the soil to the air trapped in the bag. The probe of the PID, calibrated to isobutylene following the manufacturer's instructions, is inserted into a small opening in the bag seal and the VOC concentration is measured. The PID typically is designed to quantify VOC vapor concentrations in the range between 1 ppm and 2,000 ppm with an accuracy of ±10 percent of the reading, and between 2,000 ppm and 5,000 ppm with an accuracy of ±20 percent of the reading.

Decontamination Procedures

The objective of the decontamination procedures described herein is to minimize the potential for cross-contamination between sample locations. A designated decontamination area will be established for decontamination of drilling equipment and reusable sampling equipment. Drilling equipment will be cleaned by water jetting using high-pressure/low-volume cleaning equipment.

Sampling equipment will be decontaminated in accordance with the following procedures before each sampling attempt or measurement.

1. Brush equipment with a nylon brush to remove large particulate matter.
2. Wash with non-phosphate detergent solution (Liquinox® and potable tap water).
3. Rinse with distilled water.

Handling of IDW

IDW, which consists mainly of drill cuttings and decontamination/purge water, typically will be placed in Department of Transportation (DOT)-approved 55-gallon drums. Each drum will be labeled with the project name, general contents and generated date. The drummed IDW will be stored on site at a location approved by the site owner pending analysis and disposal.

Disposable items, such as sample tubing, disposable bailers, bailer line, gloves and protective overalls, paper towels, etc., will be placed in plastic bags after use and deposited in trash receptacles for disposal.

Sample Location Control

Horizontal sample control will be maintained throughout the project. Horizontal control will be established using measuring tapes or a hand-held global positioning system (GPS) meter accurate to approximately ±15 lateral feet. Boring locations also will be established by measuring their distance relative to permanent site features.

Sample Handling and Custody Requirements

Samples will be handled in accordance with the QAPP (Appendix B). A complete discussion of the sample identification and custody procedures is provided in the QAPP.

Field Measurements and Observations Documentation

Field measurements and observations will be recorded in a project field notebook. Daily field logs will be dated, and pages will be consecutively numbered. Entries will be recorded directly and legibly in the daily field log and signed and dated by the person conducting the work. If changes are made, the changes will not obscure the previous entry, and the changes will be signed and dated. At a minimum, the following data will be recorded in the project field notebook:

- Purpose and location of investigation;
- Location of activity;
- Site or sampling area sketch showing sample locations and distances to fixed reference points;
- Date and time of sampling;
- Type of sample (matrix);
- Designation as a discrete or composite sample;
- Sample identification number (should match with what is on jar and COC);
- Soil sample top and bottom depth (bgs);
- Sample preservation (if any);
- Sampling equipment used;
- Field measurements and screening observations (e.g., odor, color, staining, sheens, etc.);
- Field conditions that are pertinent to the integrity of the samples (e.g., weather conditions, performance of the sampling equipment, sample depth control, sample disturbance, etc.);
- Relevant comments regarding field activities; and
- Shipping arrangements (including overnight air bill number, if applicable) and receiving laboratory.

Information will be recorded in the project field notebook with enough detail so that field activities can be reconstructed without reliance on personnel memory. In addition to the sampling information, the following specific information also will be recorded in the field log for each day of sampling:

- Team members and their responsibilities
- Time of arrival/entry on site and time of site departure
- Other personnel present at the site
- Summary of pertinent meetings or discussions with regulatory agency or contractor personnel
- Deviations from sampling plans, site safety plans and QAPP procedures
- Changes in personnel and responsibilities with reasons for the changes
- Levels of safety protection
- Weather conditions
- Calibration readings for any equipment used and equipment model and serial number

Sample Identification

Sample identification is important to provide concise data management and to quickly determine sample location and date when comparing multiple samples. Soil samples for each site will adhere to the following general format:

Site Number - Location ID (Depth)

Site numbers are established by Ecology's work assignment number in the format GEIxxx. For example, a soil sample collected at the Yakima Dry Cleaner site (work assignment No. GEI040) at boring location B-1 at a depth interval of 5 to 6 feet shall be labeled as GEI040-B1(5-6).

Grab groundwater samples will have the following general format:

Site Number-Location ID-Date

For example, groundwater sampled from boring location B-1 at the Yakima Dry Cleaner on November 1, 2022 will be labeled as GEI040-B1-110122.

Groundwater sampled from wells will be labelled similarly, with the well number replacing the location number. Following the example above, groundwater sampled from MW-1 will be labelled as GEI040-MW1-110122.

Soil vapor point (SVP) and sub-slab vapor (SSV) samples will have the following general format:

Site Number-Point ID-Date

For example, soil vapor sampled from soil vapor point SVP-1 at the Yakima Dry Cleaner on November 1, 2022 will be labeled as GEI040-SVP1-110122.

REFERENCES

ASTM D2488. 2017. Standard Practice for Description and Identification of Soils (Visual-Manual Procedures).

Department of Toxic Substances Control. 2012. "Advisory Active Soil Gas Investigation. Department of Toxic Substances Control, California Environmental Protection Agency. Los Angeles Regional Water Quality Control Board. San Francisco Regional Water Quality Control Board." April 2012.

Washington State Department of Ecology. 2009. "Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action." Publication No. 09-09-047. March 2022.

Puls, R. W. and M.J. Barcelona. 1996. "Low-flow (Minimal Drawdown) Ground-water Sampling Procedures." EPA Ground Water Issue. April. p.1-9.

U.S. Environmental Protection Agency. 2017. Region 1, "Low Stress (Low-Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells." EPA SOP No. GW4, Revision No. 4., September 19, 2017.

U.S. Environmental Protection Agency. 1998. "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW_846)." Revision 5, April.

U.S. Environmental Protection Agency. 2002. Method 5035A (SW-846). Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. Draft Revision 1. Washington, D.C. July 2002.

Washington State Department of Ecology. 2004. "Collecting and Preparing Soil Samples for VOC Analysis."

APPENDIX B
Quality Assurance Project Plan

APPENDIX B
QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPP) was developed to guide laboratory analyses for soil, groundwater and vapor samples collected as part of the assessment conducted for the Washington State Department of Ecology (Ecology) under Ecology Contract C1900044, individual work assignment GEI040. The QAPP presents the objectives, procedures, organization, functional activities and specific Quality Assurance (QA) and Quality Control (QC) activities designed to achieve data quality goals established for the projects. This QAPP is based on Ecology guidelines (Ecology 2016) and the Environmental Protection Agency (EPA) Requirements for Quality Assurance Project Plans (EPA 2001) and related guidelines (EPA 2002).

Throughout the projects, environmental measurements will be conducted to produce data that are scientifically valid, of known and acceptable quality and meet established objectives. QA/QC procedures will be implemented so that precision, accuracy, representativeness, completeness and comparability (PARCC) of data generated meet the specified data quality objectives to the extent possible.

PROJECT ORGANIZATION AND RESPONSIBILITY

Descriptions of the responsibilities, lines of authority and communication for the key positions to QA/QC are provided below. This organization facilitates the efficient production of project work, allows for an independent quality review and permits resolution of QA issues before submittal.

Project Leadership and Management

The Project Manager's (PM) duties consist of providing concise technical work statements for project tasks, selecting project team members, determining subcontractor participation, establishing budgets and schedules, adhering to budgets and schedules, providing technical oversight, and providing overall production and review of project deliverables. Justin Orr, Licensed Geologist (LG) is the PM for activities at the site. The Principal-in-Charge, Bruce Williams, is responsible to Ecology for fulfilling contractual and administrative control of the project.

Field Coordinator

The Field Coordinator is responsible for the daily management of activities in the field. Specific responsibilities include the following:

- Provides technical direction to the field staff.
- Develops schedules and allocates resources for field tasks.
- Coordinates data collection activities to be consistent with information requirements.
- Supervises the compilation of field data and laboratory analytical results.
- Assures that data are correctly and completely reported.
- Implements and oversees field sampling in accordance with project plans.
- Supervises field personnel.
- Coordinates work with on-site subcontractors.

- Schedules sample shipment, if necessary, with the analytical laboratory.
- Monitors that appropriate sampling, testing and measurement procedures are followed.
- Coordinates the transfer of field data, sample tracking forms, and log books to the PM for data reduction and validation.
- Participates in QA corrective actions, as required.

The Field Coordinator for each work assignment will be drawn from our pool of experienced staff since fieldwork will be conducted concurrently at multiple sites. Staff that will serve as Field Coordinator could include Bryce Hanson and Justin Orr.

QA Leader

The GeoEngineers QA Leader is under the direction of Justin Orr and Bruce Williams, who are responsible for the project's overall QA. The QA Leader is responsible for coordinating QA/QC activities as they relate to the acquisition of field data. Denell Warren is the QA Leader. The QA Leader has the following responsibilities:

- Serves as the official contact for laboratory data QA concerns.
- Responds to laboratory data, QA needs, resolves issues, and answers requests for guidance and assistance.
- Reviews the implementation of the QAPP and the adequacy of the data generated from a quality perspective.
- Maintains the authority to implement corrective actions, as necessary.
- Reviews and approves the laboratory QA Plan.
- Evaluates the laboratory's final QA report for any condition that adversely impacts data generation.
- Ensures that appropriate sampling, testing and analysis procedures are followed and that correct QC checks are implemented.
- Monitors subcontractor compliance with data quality requirements.

Laboratory Management

The Ecology-accredited subcontracted laboratory (Eurofins Environment Testing [Eurofins] of Spokane Valley, Washington) conducting sample analyses for this project is required to obtain approval from the QA Leader before the initiation of sample analysis to assure that the laboratory QA plan complies with the project QA objectives. The Laboratory's QA Coordinator (Randee Arrington) administers the Laboratory QA Plan and is responsible for QC. Specific responsibilities of this position include:

- Ensures implementation of the QA Plan.
- Serves as the laboratory point of contact.
- Activates corrective action for out-of-control events.
- Issues the final laboratory QA/QC report.
- Administers QA sample analysis.

- Complies with the specifications established in the project plans as related to laboratory services.
- Participates in QA audits and compliance inspections.

DATA QUALITY OBJECTIVES

The QA objective for technical data is to collect environmental monitoring data of known, acceptable and documentable quality. The QA objectives established for the project are:

- Implement the procedures outlined herein for field sampling, sample custody, equipment operation and calibration, laboratory analysis, and data reporting that will facilitate consistency and thoroughness of data generated.
- Achieve the acceptable level of confidence and quality required so that data generated are scientifically valid and of known and documented quality. This will be performed by establishing criteria for PARCC, and by testing data against these criteria.

The sampling design, field procedures, laboratory procedures and QC procedures are set up to provide high-quality data for use in this project. Specific data quality factors that may affect data usability include quantitative factors (precision, bias, accuracy, completeness and reporting limits) and qualitative factors (representativeness and comparability). The measurement quality objectives (MQO) associated with these data quality factors are summarized in Tables B-1 (soil), B-2 (groundwater) and B-3 (vapor) and are discussed below.

Analytes and Matrices of Concern

Samples of soil and/or groundwater will be collected from up to twelve sonic explorations during the assessment. Samples of soil vapor will be collected from up to three soil vapor points/subslab vapor points. Tables B-4 (soil), B-5 (groundwater) and B-6 (vapor) summarize the analyses to be performed at the site for soil, groundwater and vapor, respectively.

Detection Limits

Analytical methods have quantitative limitations at a given statistical level of confidence that are often expressed as the method detection limit (MDL). Individual instruments often can detect but not accurately quantify compounds at concentrations lower than the MDL, referred to as the instrument detection limit (IDL). Although results reported near the MDL or IDL provide insight to site conditions, QA dictates that analytical methods achieve a consistently reliable level of detection known as the practical quantitation limit (PQL). The contract laboratory will provide numerical results for all analytes and report them as detected above the PQL or undetected at the PQL.

Achieving a stated detection limit for a given analyte is helpful in providing statistically useful data. Intended data uses, such as comparison to numerical criteria or risk assessments, typically dictate specific project target reporting limits (TRLs) necessary to fulfill stated objectives. The PQL for contaminants of potential concern (COPCs) at the site is presented in Tables B-1, B-2 and B-3 for soil, groundwater and vapor, respectively. These reporting limits were obtained from Eurofins, the Ecology-accredited lab that will be analyzing the samples. Other criteria include State of Washington (WAC 173-201) water quality criteria and federal ambient water quality criteria (AWQC). The analytical methods and processes selected will provide

PQLs less than the TRLs under ideal conditions. However, the reporting limits in Tables B-1 through B-3 are considered targets because several factors may influence final detection limits. First, moisture and other physical conditions of soil affect detection limits. Second, analytical procedures may require sample dilutions or other practices to accurately quantify a particular analyte at concentrations above the range of the instrument. The effect is that other analytes could be reported as undetected but at a value much higher than a specified TRL. Data users must be aware that high non-detect values, although correctly reported, can bias statistical summaries and careful interpretation is required to correctly characterize site conditions.

Precision

Precision is the measure of mutual agreement among replicate or duplicate measurements of an analyte from the same sample and applies to field duplicate or split samples, replicate analyses and duplicate spiked environmental samples (matrix spike duplicates). The closer the measured values are to each other, the more precise the measurement process. Precision error may affect data usefulness. Good precision is indicative of relative consistency and comparability between different samples. Precision will be expressed as the relative percent difference (RPD) for spike sample comparisons of various matrices and field duplicate comparisons for water samples. This value is calculated by:

$$RPD\,(\%) = \frac{|D_1 - D_2|}{(D_1 + D_2)/2} X\ 100,$$

Where

D_1 = Concentration of analyte in sample.

D_2 = Concentration of analyte in duplicate sample.

The calculation applies to split samples, replicate analyses, duplicate spiked environmental samples (matrix spike duplicates) and laboratory control duplicates. The RPD will be calculated for samples and compared to the applicable criteria. Precision can also be expressed as the percent difference (%D) between replicate analyses. Persons performing the evaluation must review one or more pertinent documents (EPA 2017a,b) that address criteria exceedances and courses of action. Relative percent difference goals for this effort are no greater than 30 percent in groundwater, 40 percent in soil, and 25 percent in vapor for all analyses, unless the duplicate sample values are within 5 times the reporting limit. In this case, the absolute difference is used instead of the RPD. The absolute difference control limit is equal to the lowest reporting limit of the two samples for water and two times the lowest reporting limit of the two samples for soil.

Accuracy

Accuracy is a measure of bias in the analytic process. The closer the measurement value is to the true value, the greater the accuracy. This measure is defined as the difference between the reported value versus the actual value and is often measured with the addition of a known compound to a sample. The amount of known compound reported in the sample, or percent recovery, assists in determining the performance of the analytical system in correctly quantifying the compounds of interest. Since most environmental data collected represent one point spatially and temporally rather than an average of values, accuracy plays a greater role than precision in assessing the results. In general, if the percent recovery is low, non-detect results may indicate that compounds of interest are not present when in fact, these

compounds are present. Detected compounds may be biased low or reported at a value less than actual environmental conditions. The reverse is true when recoveries are high. Non-detect values are considered accurate while detected results may be higher than the true value.

Accuracy will be expressed as the percent recovery of a surrogate compound (also known as "system monitoring compound"), a matrix spike (MS) result, or from a standard reference material where:

$$Recovery\,(\%) = \frac{Sample\ Result}{Spike\ Amount}\ X\ 100$$

Persons performing the evaluation must review one or more pertinent documents (EPA 2017a,b) that address criteria exceedances and courses of action. Accuracy criteria for surrogate spikes, MS and laboratory control spikes (LCS) are found in Tables B-1 through B-3 of this QAPP.

Representativeness, Completeness and Comparability

Representativeness expresses the degree to which data accurately and precisely represent the actual site conditions. The determination of the representativeness of the data will be performed by completing the following:

- Comparing actual sampling procedures to those delineated within the Work Plan and this QAPP.
- Comparing analytical results of field duplicates to determine the variations in the analytical results.
- Invalidating non-representative data or identifying data to be classified as questionable or qualitative. Only representative data will be used in subsequent data reduction, validation and reporting activities.

Completeness establishes whether a sufficient amount of valid measurements were obtained to meet project objectives. The number of samples and results expected establishes the comparative basis for completeness. Completeness goals are 90 percent useable data for samples/analyses planned. If the completeness goal is not achieved, an evaluation will be made to determine if the data are adequate to meet study objectives.

Comparability expresses the confidence with which one set of data can be compared to another. Although numeric goals do not exist for comparability, a statement on comparability will be prepared to determine overall usefulness of data sets, following the determination of both precision and accuracy.

Holding Times

Holding times are defined as the time between sample collection and extraction, sample collection and analysis, or sample extraction and analysis. Some analytical methods specify a holding time for analysis only. For many methods, holding times may be extended by sample preservation techniques in the field. If a sample exceeds a holding time, then the results may be biased low. For example, if the extraction holding time for volatile analysis of soil sample is exceeded, then the possibility exists that some of the organic constituents have volatilized from the sample or degraded. Results for that analysis will be qualified as estimated to indicate that the reported results may be lower than actual site conditions. Holding times are presented in Tables B-4 through B-6.

Blanks

According to the *National Functional Guidelines for Organic Data Review* (EPA 2017b), "The purpose of laboratory (or field) blank analysis is to determine the existence and magnitude of contamination resulting from laboratory (or field) activities. The criteria for evaluation of blanks apply to any blank associated with the samples (e.g., method blanks, instrument blanks, trip blanks and equipment blanks)." Trip blanks are placed with samples during shipment; method blanks are created during sample preparation and follow samples throughout the analysis process.

Analytical results for blanks will be interpreted in general accordance with *National Functional Guidelines for Organic Data Review* and professional judgment.

SAMPLE COLLECTION, HANDLING AND CUSTODY

Sampling procedures are provided in Section 3 and Appendix A of this Work Plan.

Sampling Equipment Decontamination

Sampling equipment decontamination procedures are described in Appendix A of the Work Plan.

Sample Containers and Labeling

The Field Coordinator will establish field protocol to manage field sample collection, handling and documentation. Soil, groundwater and vapor samples obtained during this study will be placed in appropriate laboratory-prepared containers. Sample containers and preservatives are listed in Tables B-4 through B-6.

Sample containers will be labeled with the following information at the time of collection:

- Project name and number;
- Sample name, which will include a reference to depth if appropriate; and
- Date and time of collection.

The sample collection activities will be noted in the field log books. The Field Coordinator will monitor consistency between the Work Plan, sample containers/labels, field log books and the chain-of-custody (COC).

Sample Storage

Samples will be placed in a cooler with "blue ice" or double-bagged "wet ice" immediately after they are collected. The objective of the cold storage will be to attain a sample temperature of 4 degrees Celsius (within plus/minus 2 degrees Celsius). Holding times will be observed during sample storage. Holding times for the project analyses are summarized in Tables B-4 through B-6.

Sample Shipment

The samples will be transported and delivered to the analytical laboratory in the coolers. Field personnel will transport and hand-deliver samples that are being submitted to a local laboratory for analysis. Samples that are being submitted from a remote location for analysis will be transported by a commercial express

mailing service on an overnight basis or returning field personnel. The Field Coordinator will monitor that the shipping container (cooler) has been properly secured using clear packing tape and custody seals.

Measures will be implemented to minimize the potential for sample breakage, which includes packaging materials and placing sample bottles in the cooler in a manner intended to minimize damage. Sample bottles will be wrapped with bubble wrap or other protective material before being place in coolers. Trip blanks will be included in coolers with groundwater samples.

Chain-of-Custody Records

Field personnel are responsible for the security of samples from the time the samples are taken until the samples have been received by the shipper or laboratory. A COC form will be completed at the end of each field day for samples being shipped to the laboratory. Information to be included on the COC form includes:

- Project name and number.
- Sample identification number.
- Date and time of sampling.
- Sample matrix (soil, water, etc.) and number of containers from each sampling point, including preservatives used.
- Depth of subsurface soil sample.
- Analyses to be performed.
- Names of sampling personnel and transfer of custody acknowledgment spaces.
- Shipping information including shipping container number.

The original COC record will be signed by a member of the field team and bear a unique tracking number. Field personnel shall retain carbon copies and place the original and remaining copies in a sealed plastic bag, placed within the cooler or taped to the inside lid of the cooler before sealing the container for shipment. This record will accompany the samples during transit by carrier to the laboratory.

Laboratory Custody Procedures

The laboratory will follow their standard operating procedures (SOPs) to document sample handling from time of receipt (sample log-in) to reporting. Documentation will include at a minimum, the analyst's name or initial, time and date.

CALIBRATION PROCEDURES

Field Instrumentation

Equipment and instrumentation calibration facilitate accurate and reliable field measurements. Field and laboratory equipment used on the project will be calibrated and adjusted in general accordance with the manufacturer's recommendations. Methods and intervals of calibration and maintenance will be based on the type of equipment, stability characteristics, required accuracy, intended use and environmental conditions. The basic calibration frequencies are described below.

The photoionization detector (PID) used for vapor measurements will be calibrated daily, if required (based on the model used), for site safety monitoring purposes in general accordance with the manufacturer's specifications. If daily calibration is not required for a specific PID model, calibration of the PID will be checked to make sure it is up to date. The calibration results will be recorded in the field log book.

Laboratory Instrumentation

For analytical chemistry, calibration procedures will be performed in general accordance with the methods cited and laboratory SOPs. Calibration documentation will be retained at the laboratory and readily available for a period of 6 months.

DATA REPORTING AND LABORATORY DELIVERABLES

Laboratories will report data in formatted hardcopy and digital form. Analytical laboratory measurements will be recorded in standard formats that display, at a minimum, the field sample identification, the laboratory identification, reporting units, qualifiers, analytical method, analyte tested, analytical result, extraction and analysis dates, and detection limit (PQL only). Each sample delivery group will be accompanied by sample receipt forms and a case narrative identifying data quality issues. Laboratory electronic data deliverable (EDD) formats will be established by GeoEngineers, Inc., with the contract laboratory. Final results will be sent to the PM.

Chromatograms will be provided for samples analyzed by Northwest Methods NWTPH-Gx. The laboratory will assure the full heights of all peaks appear on the chromatograms and the same horizontal time scale is used to allow for comparisons to other chromatograms.

INTERNAL QC

Table B-7 summarizes the types and frequency of QC samples to be collected during the site characterization, including both field QC and laboratory QC samples.

Field QC

Field QC samples serve as a control and check mechanism to monitor the consistency of sampling methods and the influence of off-site factors on environmental samples. Off-site factors include airborne volatile organic compounds (VOCs) and potable water used in drilling activities.

Field Duplicates

In addition to replicate analyses performed in the laboratory, field duplicates also serve as measures for precision. Under ideal field conditions, field duplicates (referred to as splits), are created when a volume of the sample matrix is thoroughly mixed, placed in separate containers and identified as different samples. Analysis of duplicates test both the precision and consistency of laboratory analytical procedures and methods, and the consistency of the sampling techniques used by field personnel.

One field duplicate will be collected during each groundwater sampling event, including groundwater samples collected from direct-push borings. The duplicate sample will be analyzed for the COPCs specified for the given well.

Trip Blanks

Trip blanks will accompany soil and groundwater sample containers submitted for VOC analyses during shipment and sampling periods. Trip blanks will be analyzed on a one per cooler basis.

Laboratory QC

Laboratory QC procedures will be evaluated through a formal data validation process. The analytical laboratory will follow standard method procedures that include specified QC monitoring requirements. These requirements will vary by method but generally include:

- Method blanks
- Internal standards
- Calibrations
- MS/matrix spike duplicates (MSD)
- LCS/laboratory control spike duplicates (LCSD)
- Laboratory replicates or duplicates
- Surrogate spikes

Laboratory Blanks

Laboratory procedures employ the use of several types of blanks but the most commonly used blank for QA/QC assessments are method blanks. Method blanks are laboratory QC samples that consist of either a soil-like material having undergone a contaminant destruction process or high-performance liquid-chromatography (HPLC) water. Method blanks are extracted and analyzed with each batch of environmental samples undergoing analysis. Method blanks are particularly useful during volatiles analysis since VOCs can be transported in the laboratory through the vapor phase. If a substance is found in the method blank, then one (or more) of the following occurred:

- Measurement apparatus or containers were not properly cleaned and contained contaminants.
- Reagents used in the process were contaminated with a substance(s) of interest.
- Contaminated analytical equipment was not properly cleaned.
- Volatile substances in the air with high solubility or affinities toward the sample matrix contaminated the samples during preparation or analysis.

It is difficult to determine which of the above scenarios took place if blank contamination occurs. However, it is assumed that the conditions that affected the blanks also likely affected the project samples. Given method blank results, validation rules assist in determining which substances in samples are considered "real," and which ones are attributable to the analytical process. Furthermore, the guidelines state, ". . . there may be instances where little or no contamination was present in the associated blank, but qualification of the sample is deemed necessary. Contamination introduced through dilution water is one example."

Calibrations

Several types of calibrations are used, depending on the method, to determine whether the methodology is 'in control' by verifying the linearity of the calibration curve and to assure that the sample results reflect accurate and precise measurements. The main calibrations used are initial calibrations, daily calibrations and continuing calibration verification.

MS/MSD

MS/MSD samples are used to assess influences or interferences caused by the physical or chemical properties of the sample itself. For example, extreme pH affects the results of semivolatile organic compounds (SVOCs). Or the presence of a compound may interfere with accurate quantitation of another analyte. MS/MSD data is reviewed in combination with other QC monitoring data to determine matrix effects. In some cases, matrix affects cannot be determined due to dilution and/or high levels of related substances in the sample. A MS is evaluated by spiking a known amount of one or more of the target analytes ideally at a concentration of 5 to 10 times higher than the sample result. A percent recovery is calculated by subtracting the sample result from the spike result, dividing by the spiked amount and multiplying by 100.

The samples for the MS and MSD analyses should be collected from a boring or sampling location that is believed to exhibit low-level contamination. A sample from an area of low-level contamination is needed because the objective of MS/MSD analyses is to determine the presence of matrix interferences, which can best be achieved with low levels of contaminants. Additional sample volume will be collected for these analyses. This MS/MSD sample will be a composite to achieve a level of representativeness and reproducibility in the data.

LCS/LCSD

Also known as blanks spikes, LCSs are similar to MSs in that a known amount of one or more of the target analytes are spiked into a prepared media and a percent recovery of the spiked substances are calculated. The primary difference between a MS and LCS is that the LCS media is considered "clean" or contaminant free. For example, HPLC water is typically used for LCS water analyses. The purpose of an LCS is to help assess the overall accuracy and precision of the analytical process including sample preparation, instrument performance and analyst performance. LCS data must be reviewed in context with other controls to determine if out-of-control events occur.

Laboratory Replicates/Duplicates

Laboratories often utilize MS/MSDs, LCS/LCSDs and/or replicates to assess precision. Replicates are a second analysis of a field-collected environmental sample. Replicates can be split at varying stages of the sample preparation and analysis process, but most commonly occur as a second analysis on the extracted media.

Surrogate Spikes

The purposes of using a surrogate are to verify the accuracy of the instrument being used and extraction procedures. Surrogates are substances similar to, but not one of, the target analytes. A known concentration of surrogate is added to the sample and passed through the instrument, noting the surrogate recovery. Each surrogate used has an acceptable range of percent recovery. If a surrogate recovery is low,

sample results may be biased low and depending on the recovery value, a possibility of false negatives may exist. Conversely, when recoveries are above the specified range of acceptance a possibility of false positives exist, although non-detected results are considered accurate.

DATA REDUCTION AND ASSESSMENT PROCEDURES

Data Reduction

Data reduction involves the conversion or transcription of field and analytical data to a useable format. The laboratory personnel will reduce the analytical data for review by the QA Leader and PM.

Field Measurement Evaluation

Field data will be reviewed at the end of each day by following the QC checks outlined below and procedures in the Work Plan. Field data documentation will be checked against the applicable criteria as follows:

- Sample collection information.
- Field instrumentation and calibration.
- Sample collection protocol.
- Sample containers, preservation and volume.
- Field QC samples collected at the frequency specified.
- Sample documentation and COC protocols.
- Sample shipment.

Cooler receipt forms and sample condition forms provided by the laboratory will be reviewed for out-of-control incidents. The final report will contain what effects, if any, an incident has on data quality. Sample collection information will be reviewed for correctness before inclusion in a final report.

Field QC Evaluation

A field QC evaluation will be conducted by reviewing field log books and daily reports, discussing field activities with staff and reviewing field QC samples (trip blanks and field duplicates). Trip blanks will be evaluated using the same criteria as method blanks.

Precision for field duplicate soil will not be evaluated because even a well-mixed sample is not entirely homogenous due to sampling procedures, soil conditions and contaminant transport mechanisms. Grab groundwater duplicate samples are also highly variable because of sampling procedures and borehole conditions and are therefore not reliable measures of precision.

Laboratory Data QC Evaluation

The laboratory data assessment will consist of a formal review of the following QC parameters:

- Holding times
- Method blanks

- MS/MSD
- LCS/LCSD
- Surrogate spikes
- Replicates

In addition to these QC mechanisms, other documentation such as cooler receipt forms and case narratives will be reviewed to fully evaluate laboratory QA/QC.

REFERENCES

U.S. Environmental Protection Agency). 2001. EPA Requirements for Quality Assurance Project Plans. EPA QA/R-5. EPA/240/B-01/003. Office of Environmental Information, Washington, D.C. March 2001.

U.S. Environmental Protection Agency). 2002. Guidance for Quality Assurance Project Plans. EPA QA/G-5. EPA/240/R-02/009. Office of Environmental Information, Washington, D.C. December 2002.

U.S. Environmental Protection Agency. 2017a. National Functional Guidelines for Inorganic Superfund Methods Data Review. 540-R-2017-001. Office of Superfund Remediation and Technology Innovation. Washington, D.C. January 2017.

U.S. Environmental Protection Agency. 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation. Washington, D.C. 540-R-2017-002. January 2017.

Washington State Department of Ecology. 2016. Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies. Publication No. 04-03-030. July 2004 (revised December 2016).

Table B-1

Soil Measurement Quality Objective and Target Reporting Limits

Yakima Dry Cleaner

Yakima, Washington

Analyte	Method	MDL (mg/kg)	PQL (mg/kg)	LCS/LCSD			MS/MSD			MTCA Method A Cleanup Level (mg/kg)
				Lower	Upper	RPD	Lower	Upper	RPD	
VOCs										
Tetrachloroethene (PCE)	EPA 8260D	0.0176	0.04	77	149	10	77	149	10	0.05
Trichloroethene (TCE)	EPA 8260D	0.0076	0.025	79	144	13	79	144	13	0.03
1,1-Dichloroethene (1,1-DCE)	EPA 8260D	0.0341	0.1	63	150	40	63	150	40	NE
cis-1,2-Dichloroethene (cis-1,2-DCE)	EPA 8260D	0.0208	0.1	80	144	15	80	144	15	NE
trans-1,2-Dichloroethene (trans-1,2-DCE)	EPA 8260D	0.0229	0.1	80	138	16	80	138	16	NE
Vinyl chloride (VC)	EPA 8260D	0.0202	0.06	66	129	20	66	129	20	NE
TPH										
Gasoline Range Organics	NWTPH-Gx	1.80	5	74	124	20	50	133	20	30/100[1]

Notes:

[1]MTCA Method A cleanup level for gasoline-range petroleum hydrocarbons is 100 mg/kg if benzene is not detected and the total concentrations of ethylbenzene, toluene and xylenes are less than 1 percent of the gasoline mixture; otherwise, the cleanup level is 30 mg/kg.

Practical quantitation limits (PQLs) based on information provided by Eurofins Environment Testing.

mg/kg = milligrams per kilogram; NE = Not established;

MDL = method detection limit; LCS = laboratory control spike; LCSD = laboratory control spike duplicate; MS = matrix spike; MSD = matrix spike duplicate; RPD = relative percent difference;

EPA = Environmental Protection Agency; VOCs = volatile organic compounds; TPH = total petroleum hydrocarbons; MTCA = Model Toxics Control Act

Table B-2

Groundwater Measurement Quality Objective and Target Reporting Limits

Yakima Dry Cleaner

Yakima, Washington

				LCS/LCSD			MS/MSD			DUP	MTCA Method A Cleanup Level (µg/L)
Analyte	Method	MDL (µg/L)	PQL (µg/L)	Lower	Upper	RPD	Lower	Upper	RPD	RPD	
VOCs											
Tetrachloroethene (PCE)	EPA 8260D	0.217	1	77	124	22	77	124	22	--	5
Trichloroethene (TCE)	EPA 8260D	0.199	1	75	129	17	75	129	17	--	5
1,1-Dichloroethene (1,1-DCE)	EPA 8260D	0.202	1	75	140	24	75	140	24	--	NE
cis-1,2-Dichloroethene (DCE)	EPA 8260D	0.227	1	80	121	18	80	121	18	--	NE
trans-1,2-Dichloroethene (DCE)	EPA 8260D	0.201	1	75	132	17	75	132	17	--	NE
Vinyl chloride (VC)	EPA 8260D	0.13	0.4	47	150	18	47	150	18	--	0.20
TPH											
Gasoline Range Organics	NWTPH-Gx	30.5	150	80	120	20	56	126	20	35	1,000/800[1]

Notes:

[1]MTCA Method A cleanup level for gasoline-range petroleum hydrocarbons is 1,000 µg/L if benzene is not detected and the total concentrations of ethylbenzene, toluene and xylenes are less than 1 percent of the gasoline mixture; otherwise the cleanup level is 800 µg/L.

Practical quantitation limits (PQLs) based on information provided by Eurofins Environment Testing.

µg/L = micrograms per liter; NE = Not established; DUP = duplicate; MCL = maximum contaminant level

MDL = method detection limit; LCS = laboratory control spike; LCSD = laboratory control spike duplicate; MS = matrix spike; MSD = matrix spike duplicate; RPD = relative percent difference; EPA = Environmental Protection Agency; VOCs = volatile organic compounds; TPH = total petroleum hydrocarbons

MTCA = Model Toxics Control Act

Table B-3

Soil Vapor Measurement Quality Objective and Target Reporting Limits

Yakima Dry Cleaner

Yakima, Washington

Analyte	Method	MDL ($\mu g/m^3$)	PQL ($\mu g/m^3$)	LCS/LCSD Lower	LCS/LCSD Upper	LCS/LCSD RPD	MTCA Method B Cleanup Level ($\mu g/m^3$)
VOCs							
Tetrachloroethene (PCE)	EPA TO-15	1.5	7.4	70	130	25	18.3
Trichloroethene (TCE)	EPA TO-15	1.5	5.9	70	130	25	0.91
1,1-Dichloroethene (1,1-DCE)	EPA TO-15	1.5	4.4	70	130	25	NE
cis-1,2-Dichloroethene (cis-1,2-DCE)	EPA TO-15	0.88	4.4	70	130	25	NE
trans-1,2-Dichloroethene (tans-1,2-DCE)	EPA TO-15	1.3	4.4	70	130	25	NE
Vinyl chloride (VC)	EPA TO-15	0.75	2.8	70	130	25	45.7

Notes:

Practical quantitation limits (PQLs) based on information provided by Eurofins Environment Testing.

$\mu g/m^3$ = micrograms per cubic meter; NE = Not established;

MDL = method detection limit; LCS = laboratory control spike; LCSD = laboratory control spike duplicate; RPD = relative percent difference;

EPA = Environmental Protection Agency; VOCs = volatile organic compounds; MTCA = Model Toxics Control Act

MTCA = Washington State Model Toxics Control Act

Table B-4

Soil Test Methods, Sample Containers, Preservation and Holding Time[1]

Yakima Dry Cleaner
Yakima, Washington

Analysis	Matrix	Method	Minimum Sample Size	Sample Containers	Sample Preservation	Holding Times
VOCs	Soil	EPA 8260D	30 g	2 pre-weighed 40 mL VOA vials preserved with MeOH 4 oz jar (for dry-weight correction)	MeOH; <Cool 6°C	14 days from collection to analysis
GRPH	Soil	NWTPH-Gx	30 g	2 pre-weighed 40 mL VOA vials preserved with MeOH; 4 oz jar (for dry-weight correction)	MeOH; Cool <6°C	14 days from collection to analysis

Notes:

[1]Holding times are based on elapsed time from date of collection.

VOCs = volatile organic compounds; MeOH = Methanol; VOA = volatile organic analysis

g = gram; oz = ounce; C = Celsius

GRPH = gasoline-range petroleum hydrocarbons

EPA = Environmental Protection Agency

Table B-5

Water Test Methods, Sample Containers, Preservation and Holding Time[1]

Yakima Dry Cleaner
Yakima, Washington

Analysis	Matrix	Method	Minimum Sample Size	Sample Containers	Sample Preservation	Holding Times
VOCs	Water	EPA 8260D	120 ml	3 - 40 mL VOA	HCL pH<2, Cool <6°C	14 days from collection to analysis
GRPH	Water	NWTPH-Gx	80 ml	3 - 40 mL VOA	HCL pH<2, Cool <6°C	14 days from collection to analysis

Notes:

[1]Holding times are based on elapsed time from date of collection.

VOC = volatile organic compound; VOA = volatile organic analysis; HCl = hydrochloric acid;

mL = milliliters; C = Celsius

GRPH = gasoline-range petroleum hydrocarbons

EPA = Environmental Protection Agency

Table B-6

Soil Vapor Test Methods, Sample Containers, Preservation and Holding Time[1]

Yakima Dry Cleaner
Yakima, Washington

Analysis	Matrix	Method	Minimum Sample Size	Sample Containers	Sample Preservation	Holding Times
VOCs	Air	EPA TO-15	1 L	Summa Canister	None	28 days

Notes:

[1]Holding times are based on elapsed time from date of collection.

VOC = volatile organic compound

L = liter

EPA = Environmental Protection Agency

Table B-7

Quality Control Samples Type and Frequency

Yakima Dry Cleaner

Yakima, Washington

Parameter	Field QC		Laboratory QC			
	Field Duplicate	Trip Blanks	Method Blanks	LCS	MS / MSD	Lab Duplicates
VOCs	1 per groundwater event	1 per soil event and 1 per water event	1/batch	1/batch	1/batch	1/batch
GRPH	1 per groundwater event	1 per soil event and 1 per water event	1/batch	1/batch	1/batch	1/batch

Notes:

No more than 20 field samples can be contained in one batch.

QC = quality control

VOCs = volatile organic compounds

GRPH = gasoline-range petroleum hydrocarbons

LCS = Laboratory control sample; MS = Matrix spike sample; MSD = Matrix spike duplicate sample

APPENDIX C
Health and Safety Plan

APPENDIX C
GEOENGINEERS, INC.
SITE HEALTH AND SAFETY PLAN
YAKIMA DRY CLEANER
FILE NO. 0504-183-00

This Health and Safety Plan (HASP) is to be used in conjunction with the GeoEngineers, Inc. (GeoEngineers) Safety Programs. Together, the written GeoEngineers' safety programs and this HASP constitute the site safety plan for this subject site. This HASP is required by the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation (29 CFR 1910.120) when performing mandatory or voluntary clean-up operations and initial investigations conducted to determine the presence or absence of hazardous substances unless the employer can demonstrate that the work does not involve employee exposure to safety and health hazards from hazardous substances at the site. This HASP is to be used by GeoEngineers personnel on this site and must be available on site, as well as in the project Safety folder on Sharepoint.

Standard HASPs will have to be reviewed and approved at least by the GeoEngineers Project Manager and the Site Safety Officer. The Project Manager will need to send an email to GeoEngineers Health and Safety Manager indicating the availability of the final copy of the approved standard HASP on SharePoint for review and/or reference.

All HASPs and/or Habitat Conservation Plans (HCPs) are to be used in conjunction with current standards and policies outlined in the GeoEngineers Health and Safety Programs.

Liability Clause: If requested by subcontractors, this site HASP may be provided for informational purposes only. In this case, Form 1 of this HASP shall be signed by the subcontractor. Please be advised that this site-specific HASP is intended for use by GeoEngineers employees only. Nothing herein shall be construed as granting rights to GeoEngineers' subcontractors or any other contractors working on this site to use or legally rely on this HASP. GeoEngineers specifically disclaims any responsibility for the health and safety of any person not employed by the company.

1.0 GENERAL PROJECT INFORMATION

Project Name:	Yakima Dry Cleaner
Project Number:	0504-183-00
Type of Project:	Sonic Drilling Site Assessment
Start/Completion:	October 2022/January 2023
Subcontractors:	Utilities Plus, AEC, Eurofins
Client:	Washington State Department of Ecology

Chain of Command	Title	Name	Telephone Numbers (O & C)
1	**Current Property Owner (c/o Ecology Project Manager)**	John Mefford	O: 509.731.9613
2	**Principal-in-Charge**	Bruce Williams	O: 509.363.2814 C: 509.954.6614
3	**Health and Safety Manager (HSM)**	Lucas Miller	O: 509.209.2830 C: 270.978.6222
4	**Health and Safety Specialist (HSS)**	Connor Jordan	O: 253.722.2426 C: 530.210.5462
6	**Project Manager (PM)**	Justin Orr	O: 509.570.0779 C: 406.890.1310
7	**Site Safety Officer (SSO)**	Justin Orr Bryce Hanson	See above C: 360.269.3237
8	**Field Personnel**	Justin Orr Bryce Hanson	See above See above
10	**Subcontractor(s)**	Utilities Plus AEC Eurofins	509.985.4355 360.577.9194 509.924.9200

1.1. Functional Responsibility

Health and Safety Manager (HSM)

GeoEngineers' Health and Safety Manager (HSM) is responsible for implementing and promoting employee participation in the company Health and Safety Program. The HSM has overall responsibility for the general health and safety of GeoEngineers personnel. The HSM issues directives, advisories and information regarding health and safety to the technical staff. Additionally, the HSM has the authority to audit on-site compliance with HASPs, suspend work or modify work practices for safety reasons, and dismiss from the site any GeoEngineers or subcontractor employees whose conduct on the site endangers the health and safety of themselves or others.

Health and Safety Specialist (HSS)

GeoEngineers' Health and Safety Specialist (HSS) is a designated safety specialist. The HSS is provides technical support to the PM and Site Safety Officer (SSO) to ensure that that GeoEngineers staff are following GeoEngineers safety program and safe work practices during site activities. The HSS works with the PM and SSO to ensure the subcontractors' crews are following the site general HASPs, the activities HASP/JHAs and safe work practices. The HSS may periodically go on-site to perform safety observations and mentor on-site personnel on safety behavior practices. Additionally, the HSS has the authority to suspend work or modify work practices for safety reasons and dismiss from the site any GeoEngineers or subcontractor employees whose conduct on the site endangers the health and safety of themselves or others. The HSS shall keep the PM and HSM informed of the project's health- and safety-related matters, as necessary.

Project Manager (PM)

A PM is assigned to manage the activities of various projects and is responsible to the principal-in-charge of the project. The PM has the responsibility of ensuring the safety of all GeoEngineers personnel on job sites. The PM is responsible for assessing the hazards present at a job site and incorporating the appropriate safety measures for field staff protection into the field briefing and/or Site Safety Plan. He or she is also responsible for assuring that appropriate HASPs are developed. The PM will provide a summary of chemical analysis to personnel completing the HASP. PMs shall also see that their project budgets consider health and safety costs. The PM shall keep the HSM and HSS or HSC informed of the project's health- and safety-related matters, as necessary. The PM shall designate the project Site Safety Officer (SSO) and help the SSO implement the specifications of the HASP. The PM is responsible for communicating information in site safety plans and checklists to appropriate field personnel. Additionally, the PM and SSO shall hold a site safety briefing before any field activities begin. The PM is responsible for transmitting health and safety information to the Site Safety Officer (SSO) when appropriate.

Site Safety Officer/HAZWOPER (SSO)

The SSO will have the on-site responsibility and authority to modify and stop work, or remove GeoEngineers personnel from the site if working conditions change that may affect on-site and off-site health and safety. The SSO will be the main contact for any on-site emergency situation. The SSO is First Aid and CPR qualified and has current Hazardous Waste Operations and Emergency Response (HAZWOPER) training when working at hazardous waste sites. The SSO is responsible for implementing and enforcing the project safety program and safe work practices during site activities. The SSO shall conduct daily safety meetings, perform air monitoring as required, conduct site safety inspections as required, coordinate emergency medical care, and ensure personnel are wearing the appropriate personal protective equipment (PPE). The SSO shall have advanced fieldwork experience and shall be familiar with health and safety requirements specific to the project. The SSO has the authority to suspend site activities if unsafe conditions are reported or observed.

Duties of the SSO include the following:

- Implementing the HASP in the field and monitoring staff compliance with its guidelines.
- Ensuring that all GeoEngineers field personnel have met the training and medical examination requirements. Advising other contractor employees of these requirements.
- Maintaining adequate and functioning safety supplies and equipment at the site.
- Setting up work zones, markers, signs and security systems, if necessary.
- Performing or supervising air quality measurements. Communicating information on these measurements to GeoEngineers field staff and subcontractor personnel.
- Lead the pre-entry briefing (at the beginning of the site activities) and the site safety meetings (daily and/or weekly), with onsite personnel. These meetings should include a discussion of emergency response, site communications and site hazards associated with the planned activities
- Communicating health and safety requirements and site hazards to field personnel, subcontractors and contractor employees, and site visitors.
- Directing personnel to wear PPE and guiding compliance with all health and safety practices in the field.

- Consulting with the PM regarding new or unanticipated site conditions, including emergency response activities. If monitoring detects concentrations of potentially hazardous substances at or above the established exposure limits, notify/consult with the PM. Consult with the PM, the HSC or HSS, and the HSM regarding new or unanticipated site conditions, including emergency response activities. If field monitoring indicates concentrations of potentially hazardous substances at or above the established exposure limits, the HSM must be notified, and corrective action taken.
- Documenting all site accidents, injuries, illnesses and unsafe activities or conditions and/or near misses, and reporting them to the PM, HSC or HSC and the HSM as soon as practical, but no later than the end of the day.
- Directing decontamination operations of equipment and personnel.

Field Employees

All employees working on site that have the potential of coming in contact with hazardous substances or chemical, biological and/or physical hazards are responsible for participating in the health and safety program and complying with the site-specific health and safety plans. These employees are required to:

- Read, participate and be familiar with the GeoEngineers health and safety programs located in SharePoint. Attend to applicable specific safety training.
- Notify the SSO that when there is need to stop work to address an unsafe situation.
- Comply with the HASP and acknowledge understanding of the plan discussed during the health and safety pre-entry briefing
- Review applicable Job Hazard Analysis (JHAs) prior starting a new activity and follow the recommended critical actions to mitigate hazards.
- Perform Task Safety Analysis (TSA) at the beginning of a new task, before changing tasks, when conditions changes and after a near miss or incident.
- Report to the SSO, PM or HSM any unsafe conditions and all facts pertaining to near misses, incidents or accidents that could result in physical injury or exposure to hazardous materials and/or equipment damage.
- Participate in health and safety training, including initial 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) course, annual 8-hour HAZWOPER refresher, and First Aid/cardiopulmonary resuscitation (CPR) training.
- Participate in the medical surveillance program, if applicable.
- Schedule and take a respirator fit test annually.
- Any field employee working on site may stop work if the employee believes the work is unsafe.

Contractors Under GeoEngineers Supervision

GeoEngineers will hire contractors for this project? Yes ☒ No ☐

Contractors working on the site directly for the Client will have their own Health and Safety Plans or Job Hazard Analysis. Sub-contractors working on the site under GeoEngineers supervision that have the potential of coming in contact with hazardous substances or chemical, biological and/or physical hazards

shall have their own health and safety programs and safety plan that is generally consistent with the requirements of this HASP.

Contractor Name		Predicted start/end dates
1. Utilities Plus, LLC		11/1 – 12/31/2022
Contractor Scope Summary:	Private utility locating	
2. Anderson Environmental Consulting, LLC		11/1 – 12/31/2022
Contractor Scope Summary:	Sonic drilling	
3. Eurofins Environment Testing		11/1 – 12/31/2022
Contractor Scope Summary:	Laboratory analysis	

1.2. GeoEngineers Field Personnel Qualifications and Readiness Status

Name of Employee on Site	Level of HAZWOPER Training (24-hr/40-hr)	Date of last 8-Hr Refresher Training	Last First Aid/ CPR Training Date
Justin Orr	40-hr	1/10/2022	11/12/2020
Bryce Hanson	40-hr	4/18/2022	1/12/2021

1.3. Personnel Medical Surveillance

Field personnel on this job site are ☐; are not ☒ entered in a GeoEngineers provided medical surveillance program.

2.0 WORK SITE

2.1. Site Description

The site is located at 2904 West Nob Hill Boulevard in Yakima, Washington. The site is bound by West Nob Hill Boulevard to the north and residential and/or commercial properties to the south, east and west. The site is paved with a building in the northeast corner. The site started operating as a dry-cleaning facility in the 1970s and is currently occupied by a Mexican Bakery.

The Washington State Department of Ecology (Ecology) determined the site to be a likely source of groundwater contamination based on site investigation and remedial action data collected from a gas station facility (Tiger Oil) site located approximately ¼-mile hydrogeologically downgradient to the dry cleaners.

There are no known existing groundwater monitoring wells at the site. Groundwater at the Tiger Oil facility was measured between 5 and 15 feet below ground surface (bgs) based on seasonal fluctuations.

To assess the potential extent of chlorinated dry-cleaning chemicals (tetrachloroethylene [PCE], trichloroethylene [TCE] and daughter products) and Stoddard Solvent, we plan to advance soil borings and install temporary well points, collect soil, groundwater and soil gas samples from the borings and temporary wells, and submit the samples for chemical analyses of the above listed analytes. Temporary well points will only be installed, and groundwater samples will only be collected if observed field conditions indicate the potential for groundwater contamination.

2.2. Site Map

Refer to the Site Plan, Figure 2, included with the Work Plan for the site layout and work areas.

2.3. Site History

The site operated as a dry-cleaning facility since the 1970s and is currently occupied by a Mexican Bakery. Ecology determined the site to be a likely source of groundwater contamination based on site investigation and remedial action data collected from a gas station facility (Tiger Oil) site located approximately ¼-mile hydrogeologically downgradient to the dry cleaners.

There are no existing groundwater monitoring wells at the site. Groundwater at the Tiger Oil facility was measured between 5 and 15 feet below ground surface (bgs) based on seasonal fluctuations.

2.4. Previous Investigations

CH2M Hill conducted soil sampling at the site in 1997. The CH2M Hill investigation included hand-augering 10 borings in the soil/vegetated area on the south side of the dry-cleaning building. Soil samples were collected from approximately 6 inches bgs. Evidence of dry-cleaning chemicals was not reported. CH2M Hill also identified an underground storage tank (UST) vent located near the southwest corner of the building but did not investigate the tank.

The following table presents the most recent available data of contaminants of concern and was/were collected during the historical Site Investigation(s) conducted at the subject site and/or its vicinity in 1997 as presented in the following table..

2.4.1. Previous Investigation Contaminants Data - Worst Case Concentrations

Key Study (Name/Company/Date (year))	Main Contaminants of Concern (TPH, VOCs, PAHs, Metals, PCBs, PFAS etc.).,	Media (soil, groundwater, sediments, air) /Maximum Concentration Levels (units)
CH2M Hill, 1997	VOCs, Petroleum hydrocarbons	ND

3.0 GEOENGINEERS SCOPE OF WORK

3.1. Summary of Project Scope

To assess the potential extent of chlorinated dry-cleaning chemicals (tetrachloroethylene [PCE], trichloroethylene [TCE] and daughter products) and Stoddard Solvent, we plan to advance soil borings and install temporary well points, collect soil, groundwater and soil gas samples from the borings and temporary wells, and submit the samples for chemical analyses of the above listed analytes. Temporary well points will only be installed, and groundwater samples will only be collected if observed field conditions indicate the potential for groundwater contamination.

3.2. Primary Field Tasks

Indicate the primary field tasks to be completed during the scope of this project. Refer back to this table for development of hazard mitigation strategies in the sections that follow.

3.2.1. Primary Field Tasks to be Performed by GeoEngineers

Task No.	Primary Field Task		Predicted start/end dates
1	Exploratory Borings and Soil Sampling		11/1 – 12/31/22
	Task Description:	Advance up to 12 borings to depths ranging from 15 to 20 feet bgs using sonic drilling techniques. Soil will be field screened and sampled for VOCs and gasoline-range petroleum hydrocarbons (GRPH). If groundwater is encountered, grab groundwater samples will be collected.	
2	Monitoring Well Installation		11/1 – 12/31/22
	Task Description:	If deemed necessary and field approved by Ecology, up to three soil borings will be competed as 2-inch groundwater wells using Schedule-40 PVC with 0.01 factory slotted screen and completed with a flush-mounted protective steel monument.	
3	Monitoring Well Development		11/1 – 12/31/22
	Task Description:	If monitoring wells are installed, the wells will be developed following the applicable standards.	
4	Groundwater depth gauging		11/1 – 12/31/22
	Task Description:	Groundwater depth readings will be obtained before well development and before sampling.	
6	Groundwater Sampling		11/1 – 12/31/22
	Task Description:	Monitoring wells will be sampled using low-flow techniques.	
7	Soil Vapor Measurements and/or Sampling		11/1 – 12/31/22
	Task Description: one soil vapor point will be installed and sampled following the applicable standards.		

4.0 HAZARD ANALYSIS

From within the Primary Field Tasks (3.2.1 above), identify activities which may pose an elevated risk to worker's health. A list of activities that GeoEngineers recognizes as Elevated Risk Activities (ERA) are included in the dropdowns in table below. If this project has ERA that are not present there, they are to be added. Each ERA triggers the completion of a separate ERA Job Hazard Analysis (Form 3).

General Safe Work Practices

- Utility check: there may be site-specific procedures for preventing drilling or digging into utilities. Add these procedures to the standard GeoEngineers utility check list. Implement additional utilities clearance activities, if deemed necessary (typically if disturbing drilling work is within 2, 5 and/or 10 feet of underground utilities, for Lower, Medium and Higher Risks, respectively)
- Lifting hazards: use proper techniques, mechanical devices where appropriate.
- Terrain obstacles: Terrain could be soft, and activities will be conducted to minimize lawn damage and the potential for vehicles to get stuck.
- Personnel will wear high-visibility vests for increased visibility by vehicle and equipment operators.

- At the beginning of the day conduct a tail gate safety meeting discussing the jobs, the hazards, exclusion zone(s) surrounding work area(s), utilities clearance and actions that will be taken to prevent injury and reduce risk. Discuss "Stop Work Authority" as it applies to each site member. Discuss appropriate PPE including high visibility clothing such as reflective vest. Discuss Competent Person's responsibilities and support of excavation (SOE) protective system(s) and potential de-watering.

4.1. Elevated Risk Activities

Does this project have Elevated Risk Activities? Yes ☐ or No ☒

Elevated Risk Activities	Associated Primary Field Task(s)	Separate ERA JHA Completed?
Choose an item.		

Each JHA describes the activity being performed in a helpful chronological order, the inherent risks and their specific control measures. They must be completed before the activity begins and must be updated if any aspect is revised. Any single project may have multiple ERA JHAs.

4.2. General Hazard Review

The Primary Field Tasks (excluding the previously identified ERA) identified in Section 3.2.1 are to be included in the following Primary Field Task Hazard Analysis Tables. The Tables list the commonly encountered field hazards for the work we do at GeoEngineers. Hazards are divided in to three categories: (A) Chemical, (B) Biological, (C) Physical. Add others, as necessary. Review each of your Primary Filed Tasks (Section 3.2.1) and indicate which Tasks possess the hazards listed. Once assigned, the review is narrowed by focusing on only those hazards present on this site and how to avoid and/or mitigate them. If some hazards listed are not applicable, they can be removed from the Table. The final Table should include only those hazards and mitigations that are relevant to this project and associated activities.

4.3. Primary Field Task Hazard Analysis

Primary Field Tasks	
# 1	Chemical, Physical
# 2	Chemical, Physical
# 3	Chemical, Physical
# 4	Chemical, Physical
# 5	Chemical, Physical
# 6	Chemical, Physical
# 7	Chemical, Physical

Task Hazard Recognition – evaluate primary field tasks for hazards					
Chemical Hazards	**Task #s**	**Biological Hazards**	**Task #s**	**Physical Hazards**	**Task #s**
Dermal Exposure Potential	all			Heavy Equipment	1/2
				Noise	all
				Heat Exposure Risk	All
				Cold Exposure Risk	all
				Trip/Fall Hazards	all

Hazard Details and Controls - include those items checked above		
Chemical Hazards		
Hazard	**When/How Exposure May Occur**	**Critical Actions to Mitigate Hazards**
Known or Expected Human Carcinogens	Anytime during drilling or sampling activities, especially when handling soil or groundwater	Where gloves when handling potentially contaminated media Wash hands prior to leaving site and/or eating or drinking
Dermal Exposure Potential	Anytime during drilling or sampling activities, especially when handling soil or groundwater	Where gloves when handling potentially contaminated media

Biological Hazards		
Hazard	**When/How Exposure May Occur**	**Critical Actions to Mitigate Hazards**
Choose an item.		See COVID-19 Field JHA

Physical Hazard		
Hazard	**When/How Exposure May Occur**	**Critical Actions to Mitigate Hazards**
Heavy Equipment	During drilling operations.	Maintain communication with the drillers/helpers.

	When approaching to obtain soil sample from core.	Check before approaching drill rig.
Noise	During drilling operations. When approaching to obtain soil sample from core.	Wear hearing protection during drilling activities.
Heat Exposure Risk	Work days may be hot	Take breaks and monitor hydration. Know the symptoms of heat stress/exhaustion/stroke
Cold Exposure Risk	Work days may be cold	Dress in layers. Take breaks when necessary.

PPE	Task #s	Equipment	Task #s	Tools	Task #s
☒ Hard Hat	1/2	☐ Safety Beacons		☒ Cell Phone/Satellite	All
☒ Eye Protection	All	☒ First Aid Kit	All	☒ Digital Camera	All
☒ Hearing Protection	1/2	☒ Fire Extinguisher	All	☐ Radio/Spare Batteries	
☒ Gloves	All	☒ Sunglasses/Sunscreen	All	☐ Flashlight	
☒ High Visibility Vest	All	☐ Drinking Water		☒ Hands Tools	All
☒ Steel Toe Boots	All	☐ Survival Gear		☐ Other	
☐ Face Shield		☒ Eye Wash Kit	All	☐	
☐		☐ Other		☐	

4.4. Chemical Hazards

The following table is a summary of the chemicals known to be historically or currently present on the site and their associated occupational exposure limits (OEL). Once Table 4.4.1 is filled out, highlight which of the identified exposure limits will be utilized on this project. GeoEngineers typically uses the most conservative (lowest) of the limits published for the protection of its' workers. Chemicals without published limits should be discussed with the Health and Safety Department.

4.4.1. Summary of Chemical Hazard Exposure Limits

Chemical Compound/CAS #	Primary Field Task or Elevated Risk Activity With Potential Exposures	OSHA Permisible Exposure Limit (PEL)	Applicable* State OSHA Plan (PEL)	ACGIH Exposure Limits (TLV and/or TWA)	NIOSH Exposure Limits (REL and/or IDLH)
Gasoline	All	None established by OSHA	PEL: 300 ppm STEL: 500 ppm	TWA: 300 ppm STEL: 500 ppm	

Chemical Compound/CAS #	Primary Field Task or Elevated Risk Activity With Potential Exposures	OSHA Permisible Exposure Limit (PEL)	Applicable* State OSHA Plan (PEL)	ACGIH Exposure Limits (TLV and/or TWA)	NIOSH Exposure Limits (REL and/or IDLH)
Tetrachloroethene (PCE, PERC, perchloroethylene)	All	OSHA = TWA 100 ppm, C 200 ppm	WA L&I PEL: TWA – 50 ppm STEL – 200 ppm	TLV-TWA = 10 ppm TLV-STEL = 25 ppm	NIOSH = 100 ppm, C 200 ppm, IDLH 150 ppm TLV TWA = 25 ppm, STEL = 100 ppm
Trichloroethene (TCE)	All	OSHA = TWA 100 ppm C 200 ppm	WA L&I PEL: TWA – 50 ppm STEL – 200 ppm	TLV-TWA = 10 ppm TLV-STEL = 25 ppm	NIOSH = 100 ppm, C 200 ppm, IDLH 150 ppm TLV TWA = 25 ppm, STEL = 100 ppm
Vinyl Chloride	All	TLV = 1 ppm Ceiling = 5 ppm		TLV = 1 ppm	

Notes:

*If a State has established a PEL more restrictive than the OSHA limits, then the applicable State limit becomes the legal limit.
IDLH = immediately dangerous to life or health
OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Governmental Industrial Hygienists
NIOSH = National Institute of Occupational Safety & Health
mg/m^3 = milligrams per cubic meter (dust or particulate conc.)
TWA = time-weighted average (Over 8 hrs.), basis of most exposure limits
PEL = permissible exposure limit, legally enforceable
TLV = threshold limit value (over 8 hrs)
REL= recommended exposure limit (over 10 hrs)
STEL = short-term exposure limit (15 min)
Ceiling (C) – concentration never to be exceeded
ppm = parts per million (vapor conc.)

4.4.2. Descriptive Summaries of Chemicals Present

For those chemicals on site either historically or currently, complete the following table. For chemicals without a direct pathway for exposure or those cleaned or removed from the site in previous site activities, indicate these conditions or actions. Most of our projects are shorter in duration. In these instances, it is more relevant to provide the acute symptoms of exposure rather than the chronic. Discuss the difference with the Health and Safety Department if unsure.

Chemical Compound	Physical Characteristics of Chemical	Acute ☒ and/or Chronic ☒ Symptoms of Exposure
Gasoline	Clear liquid with a characteristic odor. Motor fuel, motor spirits, natural gasoline. A complex mixture of volatile hydrocarbons (paraffins, cycloparafinns and aromatics)	Irritation eyes, skin, mucous membrane; dermatitis, headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred-speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)
Where and how exposure may occur:	Handling potentially contaminated media while logging soil or purging groundwater and while collecting soil and groundwater samples	
PCE	Colorless liquid widely used for dry cleaning of fabrics, hence it is sometimes called "dry-cleaning fluid"	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]
Where and how exposure may occur:	Handling potentially contaminated media while logging soil or purging groundwater and while collecting soil and groundwater samples	
TCE	Clear, colorless non-flammable liquid with a chloroform-like[1] sweet smell	Sleepiness, fatigue, headache, confusion, tissue damage to kidneys, lungs, hearts, nervous tissue damage
Where and how exposure may occur:	Handling potentially contaminated media while logging soil or purging groundwater and while collecting soil and groundwater samples	
VC	Colorless liquid or gas with a pleasant odor	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; (potential occupational carcinogen)
Where and how exposure may occur:	Handling potentially contaminated media while logging soil or purging groundwater and while collecting soil and groundwater samples	

5.0 AIR MONITORING PLAN

Air monitoring for personal exposures will ☐, will not ☒ be implemented as part of this HASP.

An air monitoring plan is based on the results of the chemical hazard assessment and the potential for exposures above occupational exposure limits during work tasks. The air monitoring plan provides a framework for limiting worker airborne exposures while on the job site. If air monitoring will not be used, provide short summary justification for this decision below.

Air Monitoring Instrumentation

Personal exposure instrumentation will be used to: estimate exposures ☐; calculate time weighted averages (TWA) ☐; or both ☐.

Reasoning for Absence of Air Monitoring
Concentrations above exposure limits not expected

All deployed instrumentation will be calibrated, and field verified according to manufacturer's recommendation and recorded on the attached form (Attachment 5).

The following table is a list of all instrumentation to be used to monitor air parameters while on site. This list will be updated if new chemicals or other airborne hazards are identified, or scope of work changes necessitate enhanced monitoring. (delete or add to this table)

Instrumentation to be Used	Chemicals from Hazard Assessment to be Detected with Instrument	Brand, Model, Calibration and any additional attachments
Choose an item.		

Air Monitoring Action Levels

Instrument action levels protect field staff by predetermining how they will respond to the collected field or laboratory exposure data. The action levels for each instrument are organized by the field task performed. It is possible for more than one air hazard to be present during each work task. Examples of completed air monitoring action level tables can be provided upon request by the Health and Safety Team.

Review the Primary Field Tasks (and ER Activities) for air monitoring needs.

Tasks or Activities Requiring Personal Exposure Air Monitoring

Field Task or ER Activities	Duration of Task	Location(s) of Task on Site

5.1. Action Level Table

Will an Action Level Table be used during this project? Yes ☐ No ☒

5.2. Respirator Selection, Use and Maintenance

Respirators will ☐, will not ☒ be utilized to maintain safe work conditions during this project.

If respirators are prescribed in the Action Level Table, site personnel shall be trained before use on the proper use, maintenance and limitations of respirators. Additionally, they must be medically qualified to

wear respiratory protection in accordance with 29 CFR 1910.134 (in WA, Chapter 296-842 WAC). Site personnel who will use a tight-fitting respirator must have passed a qualitative or quantitative fit test conducted in accordance with an OSHA-accepted fit test protocol. Fit testing must be repeated annually or whenever a new type of respirator is used.

5.3. Work Tasks with Potential Respirator Use

Work Task	Duration of Task	Chemicals/Contaminants Assoc.

5.4. Respirator Use Details

Respirator Type	Cartridge Type	Chemical or Hazard Associated	Cartridge Change Out Frequency

6.0 OTHER PERSONAL PROTECTIVE EQUIPMENT

The appropriate personal protective equipment (PPE) will be selected on a daily or task-specific basis. These PPE selections will be communicated to field personnel during the pre-work briefing before the start of site operations.

Gloves	Clothing
☒ Nitrile ☐ Latex ☐ Liners ☒ Cold Weather	☒ High-vis Vest ☐ Tyvek ☐ Saranex ☐ Snake Chaps
☐ Leather ☒ General Construction Gloves ☐ Cut resistant/Kevlar ☐ Rubber ☐ Other	☐ Fire Retardant Clothing ☒ Long Pants ☒ Rain gear ☐ Long Sleeve Shirt ☐ Other
Head	**Eye & Face**
☒ Hard Hat ☐ Climbing Helmut ☐ Sunhat	☒ Safety Glasses ☐ Face Shield ☐ Goggles ☐ Sun Glasses
Hearing Protection	**Feet**
☒ Ear Plugs ☐ Ear Muffs ☐ Flanges	☒ Safety Toe Work Boot/Shoe ☐ Safety Toe Rubber Boot ☐ Hiking Boot ☐ Hip Wader ☐ Chest Wader

6.1. Personal Protective Equipment Inspections

PPE ensemble shall be selected daily or before each separate task to provide protection against known or anticipated hazards. To obtain maximum performance from PPE, site personnel shall be trained in the proper use and inspection of PPE.

7.0 SITE CONTROL PLAN

7.1. Traffic or Vehicle Access Control Plans

Will vehicles, heavy equipment and/or pedestrian traffic be controlled on this site? Yes ☐ No ☒.

7.2 Site Work Zones

Exclusion zones will be established within approximately 10 to 15 feet around each working area. Only persons with the appropriate training will enter this perimeter while work is being conducted in these exclusion zones.

In addition, an exclusion zone, contamination reduction zone and support zone should be established when the project involves significant chemical contamination and potential of for exposure to contaminants to on-site personnel. Passage through zones or out of the site should be consistent with the level of decontamination required.

Decontamination, at a minimum, should include removing and disposing of PPE when exiting the exclusion zone and washing your hands. Decontamination may also consist of removing outer protective gloves and washing soiled boots and gloves using bucket and brush provided on site in the contamination reduction zone. If needed, inner gloves will then be removed, and hands and face will be washed in either a portable wash station or a bathroom facility at the site. Employees will perform decontamination procedures and wash before eating, drinking or leaving the site.

The contamination reduction zone, at a minimum, should consist of garbage bags into which used PPE should be disposed. Personnel should wash hands before eating or leaving the reduction zone.

Drinking, eating, smoking and using phone are not allowed in the Exclusion and Reduction Zones.

A site control / site layout map was included in Section 2.2. Yes ☒ or No ☐.

7.1.1. Work Zone Parameters and Decontamination Procedures

Zone	Size/Location of Zone	Steps Required to Enter	Steps Required to Exit
Exclusion	15 feet around current boring	1. Level D PPE and nitrile gloves 2. Eye contact with driller	1. Discard nitrile gloves, make sure boots are clean
Reduction	Trash bags	1. Throw away disposable PPE and sampling equipment	1. Wash hands
Support Zone	Site area more than 15 feet from current boring	1. Notify SSO	1. Notify SSO

Equipment or tools operated or maintained by GeoEngineers on a contaminated site may need to undergo decon procedures as they travel through site work zones. The following table summarizes the steps needed to safely move these items through zones.

7.1.2. Work Zone Parameters for Equipment or Tools

Zone	Steps Required to Enter	Steps Required to Exit
Exclusion		Knock large debris off equipment near the borehole
Reduction	Large debris has been removed from equipment	Decontaminate equipment per instructions in the Work Plan
Support Zone		

7.3 Buddy System

Personnel on site should use the buddy system (pairs), particularly whenever communication is restricted. If only one GeoEngineers employee is on site, a buddy system can be arranged with subcontractor/ contractor personnel.

7.4 Site Communication Plan

Communication Equipment	Location Used	Phone #s/Channels
Cell phones	Site	See contact information (Section 1.0)

Positive communications (within sight and hearing distance or via radio) should be maintained between workers on site, with the pair remaining in proximity to assist each other in case of emergencies. The field team should prearrange other emergency signals for communication when voice communication becomes impaired (including cases of dropped cell phone or radio breakdown) and an agreed upon location for an emergency assembly area.

All personnel from GeoEngineers and subcontractor(s) should be made aware of safety features during safety tailgate meeting (drill rig shutoff switch, location of fire extinguishers, cell phone numbers, etc.).

On-site personnel will be visible to the operator at all times and will remain out of the swing and/or direction of the equipment apparatus. (drilling rig, CPT unit and/or excavator) only when they are certain the operator has indicated it is safe to do so. (“Show My Hands Technic” or another agreed sign language).

7.5. Investigative Derived Waste (IDW) Disposal or Storage

IDW Type	Action
Drilling Tailings/Cores	☒ On site, pending analysis and further action
	☐ Secured (list method):
	☐ Other (describe destination, responsible parties):
Well Water	☒ On site, pending analysis and further action
	☐ Secured (list method):
	☐ Other (describe destination, responsible parties):
PPE	☐ On site, pending analysis and further action
	☐ Secured (list method):

IDW Type	Action
	☒ Other (describe destination, responsible parties): placed in black contractor bags and disposed in trash receptacle

7.6. Spill Containment Plans

Will spill containment contingencies be needed on this project? Yes ☐ or No ☒

7.7. Sampling, Managing and Handling Drums and Containers

Will there be drums or sealed containers on site during this project? Yes ☒ or No ☐

Drums and containers used during the investigation and/or cleanup activities shall meet the appropriate Department of Transportation (DOT), OSHA, U.S. Environmental Protection Agency (EPA) and applicable state regulations for the waste that they contain. Site operations shall be organized to minimize the amount of drum or container on-site temporary storage and movement. When practicable, drums and containers shall be inspected, and their integrity shall be ensured before they are moved. Unlabeled drums and containers shall be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled. Before drums or containers are moved, all employees involved in the transfer operation shall be warned of the potential hazards associated with the contents. Personnel involved with the coordination of the drum or container's off-site disposal shall ensure that the off-site disposal facility is approved by the GeoEngineers Project manager and the Client.

Drums or containers and suitable quantities of proper absorbent shall be kept available and used where spills, leaks or rupturing may occur. Where major spills may occur, a spill containment program shall be implemented to contain and isolate the entire volume of the hazardous substance being transferred.

Fire extinguishing equipment shall be on hand and ready for use to control incipient fires.

7.8. Sanitation

Field staff and subcontractors must go off site to access sanitation facilities or may use the on-site building restroom.

7.9. Lighting

Work is anticipated to be performed during daylight hours. Work may extend slightly into the evening provided adequate lighting is used (e.g., portable flood lights).

8.0 EMERGENCY RESPONSE

For each potential site emergency indicate what site-specific procedures you will implement to address the occurrence.

Emergency Event	Response Plan
Medical	Get injured personnel to the hospital. If life-threatening, call 911.

8.1. General Response Guidance

- If any member of the field crew experiences any adverse exposure symptoms while on site or an injury, the entire field crew should immediately halt work and act according to the instructions provided by the SSO.
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated should result in the evacuation of the field team, contact of the PM, and reevaluation of the hazard and the level of protection required.
- As soon as feasible, notify GeoEngineers' PM and follow the GeoEngineers' Incident Reporting and Investigation Program, and Health and Safety Injury Management Procedures Flowchart (see copy attached to this HASP).
- If an accident occurs, the Site Safety Officer and the injured person are to complete, within 24 hours, an Incident Report (Form 4) for submittal to the PM, the HSPM, and HR. The PM should ensure that follow-up action is taken to correct the situation that caused the accident or exposure.

Hospital Name and Address:	**Yakima Valley Memorial** 2811 Tieton Dr, Yakima, WA
Phone Numbers (Hospital ER):	509.575.8000
Distance:	1.0 miles

Route to Hospital:

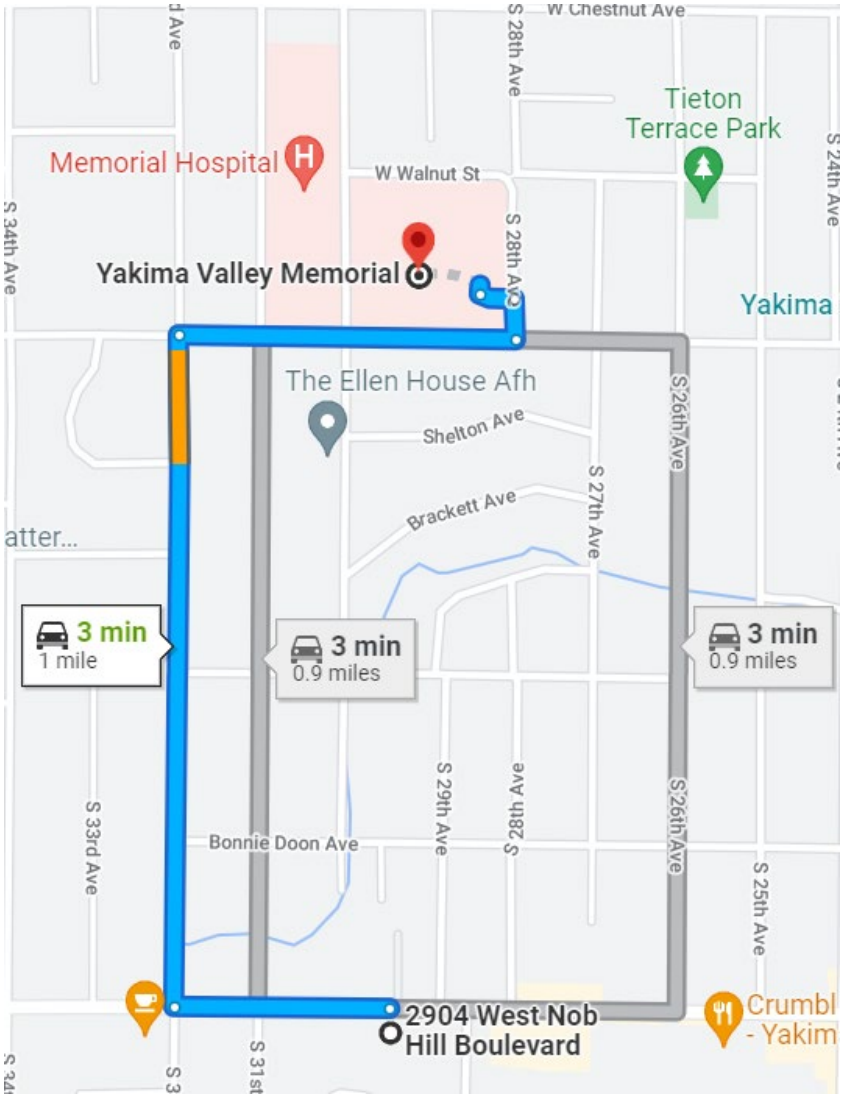
Head west on W Nob Hill Blvd toward S 32nd Street for 0.2 mi

Turn right onto S 32nd Street and proceed to W Tieton Dr in 0.3 mi

Turn right onto W Tieton Dr and proceed to 28th Ave in 0.3 mi

Turn left on 28th Ave. The hospital will be on the left.

Map to Hospital:



Ambulance:	9-1-1
Poison Control:	Seattle (206) 253-2121; Other (800) 732-6985
Police:	9-1-1
Fire:	9-1-1
Location of Nearest Telephone:	Cell phones are carried by field personnel. Check connectivity at work site location.
Nearest Fire Extinguisher:	Located in the GeoEngineers vehicle on site.
Nearest First-Aid Kit:	Located in the GeoEngineers vehicle on site.

Standard Emergency Procedures

Get help

- Send another worker to phone 9-1-1 (if necessary)
- As soon as feasible, notify the GeoEngineers' Project Manager and/or GeoEngineers HSM and follow the GeoEngineers' Incident Reporting and Investigation Program, and Health and Safety Injury Management Procedures Flowchart (see copy attached to this HASP).

Reduce risk to injured person

- Turn off equipment.
- Move person from injury location to safer area (if in life-threatening situation only)
- Keep person warm
- Perform CPR (if necessary)

Transport injured person to medical treatment facility (if necessary)

- By ambulance (if necessary) or GeoEngineers vehicle.
- Stay with person at medical facility.
- Keep GeoEngineers Project Manager apprised of situation and notify Human Resources Manager of situation
- Accidents involving injuries requiring professional medical attention must be reported within one hour of occurrence to the Safety Officer.
- First aid cases not involving professional medical attention must be reported within 24 hours after occurrence.
- Incidents involving property damage must be reported within 24 hours of occurrence.
- After hours illnesses must be reported within 24 hours (i.e., flu, rashes)

9.0 DOCUMENTATION TO BE COMPLETED FOR HAZWOPER PROJECTS

- PM Checklist
- Daily Field Log
- FORM 1—Health and Safety Pre-Entry Briefing and Acknowledgment of Site Health and Safety Plan for use by employees, subcontractors and visitors
- FORM 2—Safety Meeting Record
- FORM 3—Elevated Risk Job Hazard Analyses (ERA-JHA) Form (as needed)
- FORM 4—Near Miss Form (as needed)
- FORM 4—Incident Report Form (as needed)
- FORM 5—Direct Reading Instrument Monitoring Log (as needed)

10.0 APPROVALS - HASP for Yakima Dry Cleaners

NOTE: THIS HASP IS NOT CONSIDERED APPROVED OR ACTIVE UNTIL AT LEAST LINES 1 THROUGH 2 HAVE BEEN SIGNED by the designated personnel. For HASPs with elevated risk tasks including but not limited to confined spaces, working over water, hazardous atmospheres, chemical hazards, extreme weather conditions, fall protection/rope access, or respirator usage the Health and Safety Team must review and sign lines 3 and 4. The Health and Safety Team may review other JHAs/HASPs as they have time upon request and will sign lines 3 and/or 4.

1. Plan Prepared by

Signature — October 26, 2022 — Date

2. Project Manager Plan Approval

PM Signature — October 26, 2022 — Date

3. Health and Safety Specialist or Consultant

HSS or HSC Signature — October 26, 2022 — Date

4. Health and Safety Manager

HSM Signature — October 26, 2022 — Date

5. GeoEngineers Laboratory Manager

GLM Signature — Date

Attachments:

Form 1: HEALTH AND SAFETY PRE-ENTRY BRIEFING AND ACKNOWLEDGEMENT

Form 2: SITE SAFETY MEETING RECORD (Daily or weekly)

Form 3: ELEVATED RISK ACTIVITY JHA FORM

Form 4: NEAR MISS OR INCIDENT REPORT FORM

FORM 1
HEALTH AND SAFETY PRE-ENTRY BRIEFING AND ACKNOWLEDGEMENT

FOR GEOENGINEERS' EMPLOYEES, SUBCONTRACTORS AND VISITORS
Yakima Dry Cleaner, 2904 West Nob Hill Boulevard, Yakima, Washington
File No. 0504-183-00

Inform GeoEngineers employees, contractors and subcontractors or their representatives about:

- The nature, level and degree of exposure to hazardous substances and other hazards they are likely to encounter;
- All site-related emergency response procedures; and
- Any identified potential fire, explosion, health, safety or other hazards.

Conduct safety pre-entry briefing meeting with GeoEngineers on-site employees, contractors and subcontractors, or their representatives as follows:

- A pre-entry briefing before any site activity is started.
- Additional briefings, as needed, to make sure that the Site-specific HASP is followed, especially prior starting new activities and/or when new on-site personnel is planning to work at the site.
- Make sure all employees (GeoEngineers, contractors, subcontractors and equipment/material delivery companies) working on the Site are informed of any risks identified and trained on how to protect themselves and other workers against the Site hazards and risks.
- Update all information to reflect current site activities and hazards.
- All personnel participating in this project must receive "initial" health and safety orientation. Thereafter, brief daily or weekly tailgate safety meetings will be held as deemed necessary by the SSO.
- The orientation and the tailgate safety meetings shall include a discussion of emergency response, site communications and site hazards associated with the planned activities and activities performed concurrently by others at the site in the vicinity of the working areas.
- Have all personnel attending the pre-entry briefing meeting sign Form 2 of the HASP.

(All of GeoEngineers' Site workers shall complete this Form 1, which should remain attached to the HASP and be filed with other project documentation). Please be advised that this site-specific HASP is intended for use by GeoEngineers employees only. Nothing herein shall be construed as granting rights to GeoEngineers' subcontractors or any other contractors working on this site to use or legally rely on this HASP. GeoEngineers specifically disclaims any responsibility for the health and safety of any person not employed by the company.

I hereby verify that a copy of the current HASP has been provided by GeoEngineers, Inc., for my review and personal use. I have read the document completely and acknowledge an understanding of the safety procedures and protocol for my responsibilities on site. I agree to comply with all required, specified safety regulations and procedures.

Print Name	Company	Signature	Date

FORM 1 (CONT.)
HEALTH AND SAFETY PRE-ENTRY BRIEFING AND ACKNOWLEDGEMENT

Yakima Dry Cleaner, 2904 West Nob Hill Boulevard, Yakima, Washington
File No. 0504-183-00

Print Name	Company	Signature	Date

FORM 2
SITE SAFETY MEETING RECORD (Daily or weekly)

Yakima Dry Cleaner, 2904 West Nob Hill Boulevard, Yakima, Washington
File No. 0504-183-00

Site Safety meetings should include a discussion of emergency response, site communications and site hazards associated with the planned activities. Site safety meeting should be completed prior implementing site activities at a minimum in the beginning of each day and/or at a minimum weekly for similar activities performed few consecutive days.

- Use in conjunction with the HASP Hazard Review and ERA Job Hazard Analyses (JHA) Form 3 to help identify hazards with the planned activities and activities performed concurrently by others at the site in the vicinity of the working areas.

Date: _____ **Site Safety Officer (SSO)**:_____

Topics: _____

_____

Attendees:

Print Name	**Company**	**Signature**

FORM 3
ELEVATED RISK ACTIVITY JHA FORM

Yakima Dry Cleaner, 2904 West Nob Hill Boulevard, Yakima, Washington

This ERA JHA Form is to be used when the project's Principal Field Tasks (Section 4.1) include elevated risk activities. Complete a separate ERA JHA for each identified elevated risk activity. Add activities manually if not included in drop down. Activity Phases may include staging/set-up/initiation/operations/shutdown/ clean-up or others specific to this project. If all phases of this activity have the same controls, indicate this by including all applicable phase names in single row.

Elevated Risk Activity:	Choose an item.		
Written by:	**Position/Title:**	**Reviewed by:**	**Position/Title:**

Required Planning Actions Prior to Arriving on Site:	
1.	2.
3.	4.
5.	6.

Activity Phase	**How Risk May Occur**	**Phase Based Hazard Mitigations**
Set-up	Unfamiliar locations, congestion, unpaved roads, Mechanical Failure, Flat Tires Vehicle Fire, Exhaust Leaks, Vehicle Collision, Internal Projectiles	Actions • Test equipment • Reset starter • Clear road of fallen trees PPE • Equipment • Tools •
Operations - Shut-down - Cleanup	Slipping into waste water pond from shore	Actions • PPE • Equipment • Tools •

Communication Plan			
Activity Phase	Mode Communication During Task Phase	Frequency of Communication	Related Reference Material or Plan
Set-up	Cellular Phone	Continuous	Action Level Table
Operations		Every 4 hours	River Map

FORM 4
NEAR MISS OR INCIDENT REPORT FORM

Yakima Dry Cleaner
File No. 0504-183-00

Electronic Version Available at: https://safety.geoengineers.com/nearmisses/new or https://safety.geoengineers.com/incidents/new

NEAR MISS

Near Miss Date

Reported By

Location

Location Type

Incident Details

How did the incident happen?

What led to the Near Miss occurring? (Contributing factors, constraints, the setting, behaviors, etc.)

What is the most important thing you learned from this Near Miss that others could learn from?

INCIDENT REPORT

Basic Information

Incident Date

Reported By

Location

Location Type

Business Unit

Office Information

Project Manager

Group Leader

Office Manager

Other Emails

Incident Type (more than one OK)

_____ Injury

_____ Vehicle

_____ Utility Strike

_____ Damaged Property

_____ Stolen Equipment

Incident Details

What happened? Describe how the incident occurred. Where the employee was located at the time of the incident.

Project Number (if project related)

Date & Time employee started working

Date & Time supervisor notified

Supervisor Name

Notified Project Manager/PA ___ Yes ___ No

Client Notified ___ Yes ___ No

Supervisor Comments (Optional. These are usually filled out later.)

Supervisor Comments Date

Project Manager Comments (Optional. These are usually filled out later.)

Project Manager Comments Date

Health and Safety Comments (Optional. These are usually filled out later.)

Health & Safety Rep Name

Health & Safety Comments Date

Corrective Action (Optional. These are usually filled out later.)

GeoEngineers

APPENDIX C
Chemical Analytical Laboratory Reports and Data Validation

eurofins | Air Toxics

1/12/2023
Mr. Justin Orr
GeoEngineers, Inc.
523 E. Second Avenue

Spokane WA 99202

Project Name: Yakima Dry Cleaner
Project #: 0504-183-00
Workorder #: 2212705

Dear Mr. Justin Orr

The following report includes the data for the above referenced project for sample(s) received on 12/30/2022 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Monica Tran at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Monica Tran

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2212705

Work Order Summary

CLIENT:	Mr. Justin Orr GeoEngineers, Inc. 523 E. Second Avenue Spokane, WA 99202	**BILL TO:**	CORP Accounts Payables GeoEngineers, Inc. 8410 154th Avenue NE Redmond, WA 98052
PHONE:	509-363-3125	**P.O. #**	
FAX:		**PROJECT #**	0504-183-00 Yakima Dry Cleaner
DATE RECEIVED:	12/30/2022	**CONTACT:**	Monica Tran
DATE COMPLETED:	01/12/2023		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	GEI040-SSV1-122822	Modified TO-15	4.9 "Hg	9.9 psi
02A	GEI040-SSV2-122822	Modified TO-15	5.5 "Hg	10 psi
03A	GEI040-SVP1-122822	Modified TO-15	3.5 "Hg	9.9 psi
04A	Lab Blank	Modified TO-15	NA	NA
04B	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
05B	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA
06B	LCS	Modified TO-15	NA	NA
06BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 01/12/23

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP – 209222, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP – T104704434-22-18, UT NELAP – CA009332022-14, VA NELAP - 12240, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-017, Effective date: 10/18/2022, Expiration date: 10/17/2023.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified TO-15
GeoEngineers, Inc.
Workorder# 2212705

Three 1 Liter Summa Canister (100% Certified) samples were received on December 30, 2022. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	***TO-15***	***ATL Modifications***
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in CCV analyses have not been flagged.

Sample GEI040-SVP1-122822 was transferred from Low Level analysis to full scan TO-15 due to high levels of target compounds.

Dilution was performed on all samples due to the presence of high level target species.

The presence of a closely eluting non-target peak in samples GEI040-SSV1-122822 and GEI040-SSV2-122822 is interfering with the quantitation mass ion for 4-Ethyltoluene. The reported 4-Ethyltoluene concentration is flagged with a "CN" flag to indicate a high bias due to matrix contribution.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SSV1-122822		
Lab ID:	2212705-01A	**Date/Time Analyzed:**	1/9/23 08:42 PM
Date/Time Collected:	12/28/22 11:35 AM	**Dilution Factor:**	20.0
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010917

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	1.5	7.6	11	10 J
1,1,2,2-Tetrachloroethane	79-34-5	2.6	9.6	14	Not Detected
1,1,2-Trichloroethane	79-00-5	1.7	7.6	11	Not Detected
1,1-Dichloroethane	75-34-3	1.1	5.7	8.1	Not Detected
1,1-Dichloroethene	75-35-4	1.7	5.6	7.9	Not Detected
1,2,4-Trichlorobenzene	120-82-1	18	44	74	Not Detected
1,2,4-Trimethylbenzene	95-63-6	2.9	6.9	9.8	Not Detected
1,2-Dibromoethane (EDB)	106-93-4	2.6	11	15	Not Detected
1,2-Dichlorobenzene	95-50-1	1.4	8.4	12	Not Detected
1,2-Dichloroethane	107-06-2	1.8	5.7	8.1	Not Detected
1,2-Dichloropropane	78-87-5	1.5	6.5	9.2	Not Detected
1,3,5-Trimethylbenzene	108-67-8	2.0	6.9	9.8	Not Detected
1,3-Butadiene	106-99-0	0.43	3.1	4.4	Not Detected
1,3-Dichlorobenzene	541-73-1	1.4	8.4	12	Not Detected
1,4-Dichlorobenzene	106-46-7	4.6	8.4	12	Not Detected
1,4-Dioxane	123-91-1	1.1	5.0	36	Not Detected
2,2,4-Trimethylpentane	540-84-1	7.5	28	47	Not Detected
2-Butanone (Methyl Ethyl Ketone)	78-93-3	4.5	18	120	Not Detected
2-Hexanone	591-78-6	6.4	24	41	Not Detected
2-Propanol	67-63-0	5.5	15	98	10 J
3-Chloropropene	107-05-1	6.2	19	31	Not Detected
4-Ethyltoluene	622-96-8	1.9	6.9	9.8	2.1 JCN
4-Methyl-2-pentanone	108-10-1	2.9	5.7	8.2	Not Detected
Acetone	67-64-1	11	14	95	90 J

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

eurofins | Air Toxics

Client ID:	GEI040-SSV1-122822		
Lab ID:	2212705-01A	**Date/Time Analyzed:**	1/9/23 08:42 PM
Date/Time Collected:	12/28/22 11:35 AM	**Dilution Factor:**	20.0
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010917

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
alpha-Chlorotoluene	100-44-7	1.9	7.2	10	Not Detected
Benzene	71-43-2	0.93	4.5	6.4	2.3 J
Bromodichloromethane	75-27-4	2.1	9.4	13	Not Detected
Bromoform	75-25-2	5.7	14	21	Not Detected
Bromomethane	74-83-9	11	23	390	Not Detected
Carbon Disulfide	75-15-0	8.9	19	310	Not Detected
Carbon Tetrachloride	56-23-5	2.2	8.8	12	Not Detected UJ
Chlorobenzene	108-90-7	0.72	6.4	9.2	Not Detected
Chloroethane	75-00-3	5.8	16	26	Not Detected
Chloroform	67-66-3	1.4	6.8	9.8	4.6 J
Chloromethane	74-87-3	3.1	12	21	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.1	5.6	7.9	Not Detected
cis-1,3-Dichloropropene	10061-01-5	1.8	6.4	9.1	Not Detected
Cumene	98-82-8	1.2	6.9	9.8	Not Detected
Cyclohexane	110-82-7	3.3	21	34	Not Detected
Dibromochloromethane	124-48-1	3.0	12	17	Not Detected
Ethanol	64-17-5	9.1	11	75	140
Ethyl Benzene	100-41-4	1.8	6.1	8.7	Not Detected
Freon 11	75-69-4	0.89	7.9	11	3.1 J
Freon 113	76-13-1	2.6	11	15	Not Detected
Freon 114	76-14-2	1.9	9.8	14	Not Detected
Freon 12	75-71-8	5.4	30	49	Not Detected
Heptane	142-82-5	5.0	24	41	Not Detected
Hexachlorobutadiene	87-68-3	11	64	110	Not Detected

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SSV1-122822		
Lab ID:	2212705-01A	**Date/Time Analyzed:**	1/9/23 08:42 PM
Date/Time Collected:	12/28/22 11:35 AM	**Dilution Factor:**	20.0
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010917

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	110-54-3	5.5	21	35	Not Detected
m,p-Xylene	108-38-3	0.99	6.1	8.7	4.8 J
Methyl tert-butyl ether	1634-04-4	1.3	5.0	7.2	Not Detected
Methylene Chloride	75-09-2	7.9	21	35	Not Detected
o-Xylene	95-47-6	1.3	6.1	8.7	1.4 J
Propylbenzene	103-65-1	2.2	6.9	9.8	Not Detected
Styrene	100-42-5	1.2	6.0	8.5	Not Detected
Tetrachloroethene	127-18-4	1.8	9.5	14	3900
Tetrahydrofuran	109-99-9	4.8	18	29	Not Detected
Toluene	108-88-3	1.3	5.3	7.5	4.3 J
trans-1,2-Dichloroethene	156-60-5	1.7	5.6	7.9	Not Detected
trans-1,3-Dichloropropene	10061-02-6	2.2	6.4	9.1	Not Detected
Trichloroethene	79-01-6	2.5	7.5	11	9.6 J
Vinyl Chloride	75-01-4	0.58	3.6	5.1	Not Detected

J = Estimated value.
UJ = Analyte associated with low bias in the CCV.
CN =See Case Narrative explanation
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	91
Toluene-d8	2037-26-5	70-130	91

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SSV2-122822		
Lab ID:	2212705-02A	**Date/Time Analyzed:**	1/9/23 09:20 PM
Date/Time Collected:	12/28/22 11:57 AM	**Dilution Factor:**	3.46
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010918

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.26	1.3	1.9	Not Detected
1,1,2,2-Tetrachloroethane	79-34-5	0.46	1.7	2.4	Not Detected
1,1,2-Trichloroethane	79-00-5	0.29	1.3	1.9	Not Detected
1,1-Dichloroethane	75-34-3	0.19	0.98	1.4	Not Detected
1,1-Dichloroethene	75-35-4	0.29	0.96	1.4	Not Detected
1,2,4-Trichlorobenzene	120-82-1	3.2	7.7	13	Not Detected
1,2,4-Trimethylbenzene	95-63-6	0.51	1.2	1.7	2.0
1,2-Dibromoethane (EDB)	106-93-4	0.44	1.9	2.6	Not Detected
1,2-Dichlorobenzene	95-50-1	0.25	1.4	2.1	Not Detected
1,2-Dichloroethane	107-06-2	0.30	0.98	1.4	Not Detected
1,2-Dichloropropane	78-87-5	0.26	1.1	1.6	Not Detected
1,3,5-Trimethylbenzene	108-67-8	0.34	1.2	1.7	0.52 J
1,3-Butadiene	106-99-0	0.074	0.54	0.76	1.5
1,3-Dichlorobenzene	541-73-1	0.24	1.4	2.1	Not Detected
1,4-Dichlorobenzene	106-46-7	0.79	1.4	2.1	Not Detected
1,4-Dioxane	123-91-1	0.20	0.87	6.2	0.78 J
2,2,4-Trimethylpentane	540-84-1	1.3	4.8	8.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.78	3.1	20	2.7 J
2-Hexanone	591-78-6	1.1	4.2	7.1	Not Detected
2-Propanol	67-63-0	0.96	2.6	17	7.2 J
3-Chloropropene	107-05-1	1.1	3.2	5.4	Not Detected
4-Ethyltoluene	622-96-8	0.33	1.2	1.7	0.97 JCN
4-Methyl-2-pentanone	108-10-1	0.51	0.99	1.4	0.66 J
Acetone	67-64-1	1.9	2.5	16	220

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

eurofins | Air Toxics

Client ID:	GEI040-SSV2-122822		
Lab ID:	2212705-02A	**Date/Time Analyzed:**	1/9/23 09:20 PM
Date/Time Collected:	12/28/22 11:57 AM	**Dilution Factor:**	3.46
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010918

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
alpha-Chlorotoluene	100-44-7	0.33	1.2	1.8	Not Detected
Benzene	71-43-2	0.16	0.77	1.1	8.6
Bromodichloromethane	75-27-4	0.36	1.6	2.3	Not Detected
Bromoform	75-25-2	0.99	2.5	3.6	Not Detected
Bromomethane	74-83-9	1.9	4.0	67	Not Detected
Carbon Disulfide	75-15-0	1.5	3.2	54	Not Detected
Carbon Tetrachloride	56-23-5	0.37	1.5	2.2	0.39 JJ0
Chlorobenzene	108-90-7	0.12	1.1	1.6	Not Detected
Chloroethane	75-00-3	1.0	2.7	4.6	Not Detected
Chloroform	67-66-3	0.25	1.2	1.7	1.6 J
Chloromethane	74-87-3	0.54	2.1	3.6	0.57 J
cis-1,2-Dichloroethene	156-59-2	0.19	0.96	1.4	Not Detected
cis-1,3-Dichloropropene	10061-01-5	0.31	1.1	1.6	Not Detected
Cumene	98-82-8	0.22	1.2	1.7	Not Detected
Cyclohexane	110-82-7	0.58	3.6	6.0	2.0 J
Dibromochloromethane	124-48-1	0.52	2.1	2.9	Not Detected
Ethanol	64-17-5	1.6	2.0	13	140
Ethyl Benzene	100-41-4	0.30	1.0	1.5	0.75 J
Freon 11	75-69-4	0.15	1.4	1.9	2.4
Freon 113	76-13-1	0.46	1.8	2.6	0.59 J
Freon 114	76-14-2	0.33	1.7	2.4	Not Detected
Freon 12	75-71-8	0.93	5.1	8.6	Not Detected
Heptane	142-82-5	0.87	4.2	7.1	Not Detected
Hexachlorobutadiene	87-68-3	1.8	11	18	Not Detected

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SSV2-122822		
Lab ID:	2212705-02A	**Date/Time Analyzed:**	1/9/23 09:20 PM
Date/Time Collected:	12/28/22 11:57 AM	**Dilution Factor:**	3.46
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msd21.i / 21010918

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	110-54-3	0.95	3.6	6.1	Not Detected
m,p-Xylene	108-38-3	0.17	1.0	1.5	3.2
Methyl tert-butyl ether	1634-04-4	0.23	0.87	1.2	Not Detected
Methylene Chloride	75-09-2	1.4	3.6	6.0	Not Detected
o-Xylene	95-47-6	0.22	1.0	1.5	1.3 J
Propylbenzene	103-65-1	0.38	1.2	1.7	Not Detected
Styrene	100-42-5	0.21	1.0	1.5	0.32 J
Tetrachloroethene	127-18-4	0.30	1.6	2.3	840
Tetrahydrofuran	109-99-9	0.83	3.1	5.1	Not Detected
Toluene	108-88-3	0.23	0.91	1.3	2.9
trans-1,2-Dichloroethene	156-60-5	0.30	0.96	1.4	Not Detected
trans-1,3-Dichloropropene	10061-02-6	0.39	1.1	1.6	Not Detected
Trichloroethene	79-01-6	0.43	1.3	1.8	0.69 J
Vinyl Chloride	75-01-4	0.10	0.62	0.88	Not Detected

J = Estimated value.
J0 = Estimated value due to bias in the CCV.
CN =See Case Narrative explanation
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	104
4-Bromofluorobenzene	460-00-4	70-130	92
Toluene-d8	2037-26-5	70-130	91

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SVP1-122822		
Lab ID:	2212705-03A	**Date/Time Analyzed:**	1/11/23 01:37 AM
Date/Time Collected:	12/28/22 12:21 PM	**Dilution Factor:**	5.05
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdj.i / j011023

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	2.6	6.9	14	280
1,1,2,2-Tetrachloroethane	79-34-5	3.2	13	17	Not Detected
1,1,2-Trichloroethane	79-00-5	2.0	10	14	Not Detected
1,1-Dichloroethane	75-34-3	2.1	5.1	10	Not Detected
1,1-Dichloroethene	75-35-4	2.5	7.5	10	Not Detected
1,2,4-Trichlorobenzene	120-82-1	27	67	75	Not Detected
1,2,4-Trimethylbenzene	95-63-6	4.4	9.3	12	Not Detected
1,2-Dibromoethane (EDB)	106-93-4	4.4	14	19	Not Detected
1,2-Dichlorobenzene	95-50-1	5.0	11	15	Not Detected
1,2-Dichloroethane	107-06-2	2.3	7.7	10	Not Detected
1,2-Dichloropropane	78-87-5	2.3	8.8	12	Not Detected
1,3,5-Trimethylbenzene	108-67-8	4.2	9.3	12	Not Detected
1,3-Butadiene	106-99-0	2.3	4.2	5.6	Not Detected
1,3-Dichlorobenzene	541-73-1	3.3	11	15	Not Detected
1,4-Dichlorobenzene	106-46-7	5.4	11	15	Not Detected
1,4-Dioxane	123-91-1	2.0	14	36	Not Detected
2,2,4-Trimethylpentane	540-84-1	2.6	8.8	12	Not Detected
2-Butanone (Methyl Ethyl Ketone)	78-93-3	3.6	27	30	Not Detected
2-Hexanone	591-78-6	15	37	41	Not Detected
2-Propanol	67-63-0	7.8	22	25	21 J
3-Chloropropene	107-05-1	4.2	12	32	Not Detected
4-Ethyltoluene	622-96-8	3.0	9.3	12	Not Detected
4-Methyl-2-pentanone	108-10-1	6.2	7.8	10	Not Detected
Acetone	67-64-1	22	30	60	40 J

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SVP1-122822		
Lab ID:	2212705-03A	**Date/Time Analyzed:**	1/11/23 01:37 AM
Date/Time Collected:	12/28/22 12:21 PM	**Dilution Factor:**	5.05
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdj.i / j011023

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
alpha-Chlorotoluene	100-44-7	4.4	9.8	13	Not Detected
Benzene	71-43-2	1.8	6.0	8.1	Not Detected
Bromodichloromethane	75-27-4	3.0	8.4	17	Not Detected
Bromoform	75-25-2	6.7	20	26	Not Detected
Bromomethane	74-83-9	29	35	98	Not Detected
Carbon Disulfide	75-15-0	24	28	31	Not Detected
Carbon Tetrachloride	56-23-5	2.9	12	16	Not Detected
Chlorobenzene	108-90-7	1.8	5.8	12	Not Detected
Chloroethane	75-00-3	8.6	24	27	Not Detected
Chloroform	67-66-3	1.9	6.2	12	17
Chloromethane	74-87-3	7.9	19	52	Not Detected
cis-1,2-Dichloroethene	156-59-2	2.2	7.5	10	Not Detected
cis-1,3-Dichloropropene	10061-01-5	2.9	8.6	11	Not Detected
Cumene	98-82-8	4.4	9.3	12	Not Detected
Cyclohexane	110-82-7	1.7	6.5	8.7	Not Detected
Dibromochloromethane	124-48-1	4.5	16	22	Not Detected
Ethanol	64-17-5	20	24	48	Not Detected
Ethyl Benzene	100-41-4	2.4	8.2	11	Not Detected
Freon 11	75-69-4	2.8	11	14	Not Detected
Freon 113	76-13-1	4.4	14	19	Not Detected
Freon 114	76-14-2	5.4	13	18	Not Detected
Freon 12	75-71-8	1.8	9.4	12	2.8 J
Heptane	142-82-5	2.9	7.8	10	Not Detected
Hexachlorobutadiene	87-68-3	39	97	110	Not Detected

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	GEI040-SVP1-122822		
Lab ID:	2212705-03A	**Date/Time Analyzed:**	1/11/23 01:37 AM
Date/Time Collected:	12/28/22 12:21 PM	**Dilution Factor:**	5.05
Media:	1 Liter Summa Canister (100% Certified)	**Instrument/Filename:**	msdj.i / j011023

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	110-54-3	2.5	6.7	8.9	Not Detected
m,p-Xylene	108-38-3	3.8	8.2	11	Not Detected
Methyl tert-butyl ether	1634-04-4	2.2	14	36	Not Detected
Methylene Chloride	75-09-2	6.2	32	88	Not Detected
o-Xylene	95-47-6	2.0	8.2	11	Not Detected
Propylbenzene	103-65-1	1.6	9.3	12	Not Detected
Styrene	100-42-5	2.2	8.1	11	Not Detected
Tetrachloroethene	127-18-4	3.2	13	17	5400
Tetrahydrofuran	109-99-9	2.3	5.6	7.4	Not Detected
Toluene	108-88-3	2.4	7.1	9.5	2.8 J
trans-1,2-Dichloroethene	156-60-5	2.3	7.5	10	Not Detected
trans-1,3-Dichloropropene	10061-02-6	2.0	8.6	11	Not Detected
Trichloroethene	79-01-6	3.0	10	14	3.3 J
Vinyl Chloride	75-01-4	1.5	4.8	6.4	Not Detected

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	103
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	102

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	Lab Blank		
Lab ID:	2212705-04A	**Date/Time Analyzed:**	1/9/23 12:54 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010906c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.077	0.38	0.54	Not Detected
1,1,2,2-Tetrachloroethane	79-34-5	0.13	0.48	0.69	Not Detected
1,1,2-Trichloroethane	79-00-5	0.085	0.38	0.54	Not Detected
1,1-Dichloroethane	75-34-3	0.055	0.28	0.40	Not Detected
1,1-Dichloroethene	75-35-4	0.083	0.28	0.40	Not Detected
1,2,4-Trichlorobenzene	120-82-1	0.91	2.2	3.7	Not Detected
1,2,4-Trimethylbenzene	95-63-6	0.15	0.34	0.49	Not Detected
1,2-Dibromoethane (EDB)	106-93-4	0.13	0.54	0.77	Not Detected
1,2-Dichlorobenzene	95-50-1	0.071	0.42	0.60	0.092 J
1,2-Dichloroethane	107-06-2	0.088	0.28	0.40	Not Detected
1,2-Dichloropropane	78-87-5	0.076	0.32	0.46	Not Detected
1,3,5-Trimethylbenzene	108-67-8	0.098	0.34	0.49	Not Detected
1,3-Butadiene	106-99-0	0.022	0.15	0.22	Not Detected
1,3-Dichlorobenzene	541-73-1	0.068	0.42	0.60	Not Detected
1,4-Dichlorobenzene	106-46-7	0.23	0.42	0.60	Not Detected
1,4-Dioxane	123-91-1	0.057	0.25	1.8	Not Detected
2,2,4-Trimethylpentane	540-84-1	0.38	1.4	2.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.22	0.88	5.9	Not Detected
2-Hexanone	591-78-6	0.32	1.2	2.0	Not Detected
2-Propanol	67-63-0	0.28	0.74	4.9	Not Detected
3-Chloropropene	107-05-1	0.31	0.94	1.6	Not Detected
4-Ethyltoluene	622-96-8	0.095	0.34	0.49	Not Detected
4-Methyl-2-pentanone	108-10-1	0.15	0.29	0.41	0.15 J
Acetone	67-64-1	0.54	0.71	4.8	Not Detected

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	Lab Blank		
Lab ID:	2212705-04A	**Date/Time Analyzed:**	1/9/23 12:54 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010906c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
alpha-Chlorotoluene	100-44-7	0.095	0.36	0.52	Not Detected
Benzene	71-43-2	0.046	0.22	0.32	Not Detected
Bromodichloromethane	75-27-4	0.10	0.47	0.67	Not Detected
Bromoform	75-25-2	0.29	0.72	1.0	Not Detected
Bromomethane	74-83-9	0.56	1.2	19	Not Detected
Carbon Disulfide	75-15-0	0.44	0.93	16	0.46 J
Carbon Tetrachloride	56-23-5	0.11	0.44	0.63	Not Detected UJ
Chlorobenzene	108-90-7	0.036	0.32	0.46	Not Detected
Chloroethane	75-00-3	0.29	0.79	1.3	Not Detected
Chloroform	67-66-3	0.072	0.34	0.49	Not Detected
Chloromethane	74-87-3	0.16	0.62	1.0	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.056	0.28	0.40	Not Detected
cis-1,3-Dichloropropene	10061-01-5	0.089	0.32	0.45	Not Detected
Cumene	98-82-8	0.062	0.34	0.49	Not Detected
Cyclohexane	110-82-7	0.17	1.0	1.7	Not Detected
Dibromochloromethane	124-48-1	0.15	0.60	0.85	Not Detected
Ethanol	64-17-5	0.46	0.56	3.8	Not Detected
Ethyl Benzene	100-41-4	0.088	0.30	0.43	Not Detected
Freon 11	75-69-4	0.044	0.39	0.56	Not Detected
Freon 113	76-13-1	0.13	0.54	0.77	Not Detected
Freon 114	76-14-2	0.096	0.49	0.70	Not Detected
Freon 12	75-71-8	0.27	1.5	2.5	Not Detected
Heptane	142-82-5	0.25	1.2	2.0	Not Detected
Hexachlorobutadiene	87-68-3	0.53	3.2	5.3	Not Detected

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	Lab Blank		
Lab ID:	2212705-04A	**Date/Time Analyzed:**	1/9/23 12:54 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010906c

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	110-54-3	0.27	1.0	1.8	Not Detected
m,p-Xylene	108-38-3	0.049	0.30	0.43	Not Detected
Methyl tert-butyl ether	1634-04-4	0.067	0.25	0.36	Not Detected
Methylene Chloride	75-09-2	0.40	1.0	1.7	Not Detected
o-Xylene	95-47-6	0.065	0.30	0.43	Not Detected
Propylbenzene	103-65-1	0.11	0.34	0.49	Not Detected
Styrene	100-42-5	0.062	0.30	0.42	Not Detected
Tetrachloroethene	127-18-4	0.088	0.47	0.68	Not Detected
Tetrahydrofuran	109-99-9	0.24	0.88	1.5	Not Detected
Toluene	108-88-3	0.067	0.26	0.38	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.086	0.28	0.40	Not Detected
trans-1,3-Dichloropropene	10061-02-6	0.11	0.32	0.45	Not Detected
Trichloroethene	79-01-6	0.12	0.38	0.54	Not Detected
Vinyl Chloride	75-01-4	0.029	0.18	0.26	Not Detected

J = Estimated value.
UJ = Analyte associated with low bias in the CCV.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	96
Toluene-d8	2037-26-5	70-130	101

Client ID:	Lab Blank		
Lab ID:	2212705-04B	**Date/Time Analyzed:**	1/10/23 11:41 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011005a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	71-55-6	0.51	1.4	2.7	Not Detected
1,1,2,2-Tetrachloroethane	79-34-5	0.63	2.6	3.4	Not Detected
1,1,2-Trichloroethane	79-00-5	0.40	2.0	2.7	Not Detected
1,1-Dichloroethane	75-34-3	0.42	1.0	2.0	Not Detected
1,1-Dichloroethene	75-35-4	0.50	1.5	2.0	Not Detected
1,2,4-Trichlorobenzene	120-82-1	5.3	13	15	Not Detected
1,2,4-Trimethylbenzene	95-63-6	0.86	1.8	2.4	Not Detected
1,2-Dibromoethane (EDB)	106-93-4	0.88	2.9	3.8	Not Detected
1,2-Dichlorobenzene	95-50-1	0.98	2.2	3.0	Not Detected
1,2-Dichloroethane	107-06-2	0.46	1.5	2.0	Not Detected
1,2-Dichloropropane	78-87-5	0.45	1.7	2.3	Not Detected
1,3,5-Trimethylbenzene	108-67-8	0.84	1.8	2.4	Not Detected
1,3-Butadiene	106-99-0	0.46	0.83	1.1	Not Detected
1,3-Dichlorobenzene	541-73-1	0.65	2.2	3.0	Not Detected
1,4-Dichlorobenzene	106-46-7	1.1	2.2	3.0	Not Detected
1,4-Dioxane	123-91-1	0.40	2.7	7.2	Not Detected
2,2,4-Trimethylpentane	540-84-1	0.51	1.8	2.3	0.95 J
2-Butanone (Methyl Ethyl Ketone)	78-93-3	0.71	5.3	5.9	Not Detected
2-Hexanone	591-78-6	2.9	7.4	8.2	Not Detected
2-Propanol	67-63-0	1.5	4.4	4.9	Not Detected
3-Chloropropene	107-05-1	0.84	2.3	6.3	Not Detected
4-Ethyltoluene	622-96-8	0.60	1.8	2.4	Not Detected
4-Methyl-2-pentanone	108-10-1	1.2	1.5	2.0	Not Detected
Acetone	67-64-1	4.4	5.9	12	Not Detected

Client ID:	Lab Blank		
Lab ID:	2212705-04B	**Date/Time Analyzed:**	1/10/23 11:41 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011005a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
alpha-Chlorotoluene	100-44-7	0.87	1.9	2.6	Not Detected
Benzene	71-43-2	0.35	1.2	1.6	Not Detected
Bromodichloromethane	75-27-4	0.60	1.7	3.4	Not Detected
Bromoform	75-25-2	1.3	3.9	5.2	Not Detected
Bromomethane	74-83-9	5.8	7.0	19	Not Detected
Carbon Disulfide	75-15-0	4.8	5.6	6.2	Not Detected
Carbon Tetrachloride	56-23-5	0.58	2.4	3.1	Not Detected
Chlorobenzene	108-90-7	0.35	1.2	2.3	Not Detected
Chloroethane	75-00-3	1.7	4.7	5.3	Not Detected
Chloroform	67-66-3	0.38	1.2	2.4	Not Detected
Chloromethane	74-87-3	1.6	3.7	10	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.45	1.5	2.0	Not Detected
cis-1,3-Dichloropropene	10061-01-5	0.57	1.7	2.3	Not Detected
Cumene	98-82-8	0.88	1.8	2.4	Not Detected
Cyclohexane	110-82-7	0.33	1.3	1.7	Not Detected
Dibromochloromethane	124-48-1	0.88	3.2	4.2	Not Detected
Ethanol	64-17-5	4.0	4.7	9.4	Not Detected
Ethyl Benzene	100-41-4	0.48	1.6	2.2	Not Detected
Freon 11	75-69-4	0.55	2.1	2.8	Not Detected
Freon 113	76-13-1	0.88	2.9	3.8	Not Detected
Freon 114	76-14-2	1.1	2.6	3.5	Not Detected
Freon 12	75-71-8	0.36	1.8	2.5	Not Detected
Heptane	142-82-5	0.57	1.5	2.0	Not Detected
Hexachlorobutadiene	87-68-3	7.8	19	21	Not Detected

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	Lab Blank		
Lab ID:	2212705-04B	**Date/Time Analyzed:**	1/10/23 11:41 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011005a

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Hexane	110-54-3	0.50	1.3	1.8	Not Detected
m,p-Xylene	108-38-3	0.76	1.6	2.2	Not Detected
Methyl tert-butyl ether	1634-04-4	0.44	2.7	7.2	Not Detected
Methylene Chloride	75-09-2	1.2	6.2	17	Not Detected
o-Xylene	95-47-6	0.40	1.6	2.2	Not Detected
Propylbenzene	103-65-1	0.32	1.8	2.4	Not Detected
Styrene	100-42-5	0.43	1.6	2.1	Not Detected
Tetrachloroethene	127-18-4	0.64	2.5	3.4	Not Detected
Tetrahydrofuran	109-99-9	0.45	1.1	1.5	Not Detected
Toluene	108-88-3	0.48	1.4	1.9	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.45	1.5	2.0	Not Detected
trans-1,3-Dichloropropene	10061-02-6	0.40	1.7	2.3	Not Detected
Trichloroethene	79-01-6	0.59	2.0	2.7	Not Detected
Vinyl Chloride	75-01-4	0.30	0.96	1.3	Not Detected

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	105
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	CCV		
Lab ID:	2212705-05A	**Date/Time Analyzed:**	1/9/23 08:47 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010902

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	88
1,1,2,2-Tetrachloroethane	79-34-5	90
1,1,2-Trichloroethane	79-00-5	83
1,1-Dichloroethane	75-34-3	84
1,1-Dichloroethene	75-35-4	87
1,2,4-Trichlorobenzene	120-82-1	126
1,2,4-Trimethylbenzene	95-63-6	127
1,2-Dibromoethane (EDB)	106-93-4	90
1,2-Dichlorobenzene	95-50-1	91
1,2-Dichloroethane	107-06-2	87
1,2-Dichloropropane	78-87-5	87
1,3,5-Trimethylbenzene	108-67-8	118
1,3-Butadiene	106-99-0	89
1,3-Dichlorobenzene	541-73-1	95
1,4-Dichlorobenzene	106-46-7	92
1,4-Dioxane	123-91-1	89
2,2,4-Trimethylpentane	540-84-1	88
2-Butanone (Methyl Ethyl Ketone)	78-93-3	86
2-Hexanone	591-78-6	90
2-Propanol	67-63-0	74
3-Chloropropene	107-05-1	85
4-Ethyltoluene	622-96-8	100
4-Methyl-2-pentanone	108-10-1	93
Acetone	67-64-1	84

Client ID:	CCV		
Lab ID:	2212705-05A	**Date/Time Analyzed:**	1/9/23 08:47 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010902

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	94
Benzene	71-43-2	89
Bromodichloromethane	75-27-4	85
Bromoform	75-25-2	103
Bromomethane	74-83-9	108
Carbon Disulfide	75-15-0	85
Carbon Tetrachloride	56-23-5	66 Q
Chlorobenzene	108-90-7	85
Chloroethane	75-00-3	83
Chloroform	67-66-3	85
Chloromethane	74-87-3	77
cis-1,2-Dichloroethene	156-59-2	87
cis-1,3-Dichloropropene	10061-01-5	92
Cumene	98-82-8	95
Cyclohexane	110-82-7	87
Dibromochloromethane	124-48-1	89
Ethanol	64-17-5	78
Ethyl Benzene	100-41-4	94
Freon 11	75-69-4	87
Freon 113	76-13-1	82
Freon 114	76-14-2	90
Freon 12	75-71-8	92
Heptane	142-82-5	93
Hexachlorobutadiene	87-68-3	90

Client ID:	CCV		
Lab ID:	2212705-05A	**Date/Time Analyzed:**	1/9/23 08:47 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010902

Compound	CAS#	%Recovery
Hexane	110-54-3	85
m,p-Xylene	108-38-3	90
Methyl tert-butyl ether	1634-04-4	84
Methylene Chloride	75-09-2	85
o-Xylene	95-47-6	91
Propylbenzene	103-65-1	96
Styrene	100-42-5	96
Tetrachloroethene	127-18-4	89
Tetrahydrofuran	109-99-9	82
Toluene	108-88-3	93
trans-1,2-Dichloroethene	156-60-5	85
trans-1,3-Dichloropropene	10061-02-6	96
Trichloroethene	79-01-6	86
Vinyl Chloride	75-01-4	87

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	101
4-Bromofluorobenzene	460-00-4	70-130	115
Toluene-d8	2037-26-5	70-130	108

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	CCV		
Lab ID:	2212705-05B	**Date/Time Analyzed:**	1/10/23 10:04 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011002

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	103
1,1,2,2-Tetrachloroethane	79-34-5	100
1,1,2-Trichloroethane	79-00-5	97
1,1-Dichloroethane	75-34-3	100
1,1-Dichloroethene	75-35-4	104
1,2,4-Trichlorobenzene	120-82-1	107
1,2,4-Trimethylbenzene	95-63-6	113
1,2-Dibromoethane (EDB)	106-93-4	102
1,2-Dichlorobenzene	95-50-1	108
1,2-Dichloroethane	107-06-2	104
1,2-Dichloropropane	78-87-5	100
1,3,5-Trimethylbenzene	108-67-8	109
1,3-Butadiene	106-99-0	104
1,3-Dichlorobenzene	541-73-1	108
1,4-Dichlorobenzene	106-46-7	107
1,4-Dioxane	123-91-1	111
2,2,4-Trimethylpentane	540-84-1	115
2-Butanone (Methyl Ethyl Ketone)	78-93-3	102
2-Hexanone	591-78-6	108
2-Propanol	67-63-0	98
3-Chloropropene	107-05-1	101
4-Ethyltoluene	622-96-8	112
4-Methyl-2-pentanone	108-10-1	114
Acetone	67-64-1	98

Client ID:	CCV		
Lab ID:	2212705-05B	**Date/Time Analyzed:**	1/10/23 10:04 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011002

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	116
Benzene	71-43-2	101
Bromodichloromethane	75-27-4	98
Bromoform	75-25-2	105
Bromomethane	74-83-9	185 Q
Carbon Disulfide	75-15-0	101
Carbon Tetrachloride	56-23-5	104
Chlorobenzene	108-90-7	99
Chloroethane	75-00-3	110
Chloroform	67-66-3	99
Chloromethane	74-87-3	121
cis-1,2-Dichloroethene	156-59-2	106
cis-1,3-Dichloropropene	10061-01-5	108
Cumene	98-82-8	118
Cyclohexane	110-82-7	110
Dibromochloromethane	124-48-1	100
Ethanol	64-17-5	94
Ethyl Benzene	100-41-4	109
Freon 11	75-69-4	101
Freon 113	76-13-1	101
Freon 114	76-14-2	98
Freon 12	75-71-8	103
Heptane	142-82-5	113
Hexachlorobutadiene	87-68-3	105

Client ID:	CCV		
Lab ID:	2212705-05B	**Date/Time Analyzed:**	1/10/23 10:04 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011002

Compound	CAS#	%Recovery
Hexane	110-54-3	111
m,p-Xylene	108-38-3	110
Methyl tert-butyl ether	1634-04-4	110
Methylene Chloride	75-09-2	98
o-Xylene	95-47-6	115
Propylbenzene	103-65-1	112
Styrene	100-42-5	119
Tetrachloroethene	127-18-4	100
Tetrahydrofuran	109-99-9	98
Toluene	108-88-3	101
trans-1,2-Dichloroethene	156-60-5	104
trans-1,3-Dichloropropene	10061-02-6	105
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	109

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	100

Client ID:	LCS		
Lab ID:	2212705-06A	**Date/Time Analyzed:**	1/9/23 10:01 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010903

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	91
1,1,2,2-Tetrachloroethane	79-34-5	96
1,1,2-Trichloroethane	79-00-5	92
1,1-Dichloroethane	75-34-3	88
1,1-Dichloroethene	75-35-4	88
1,2,4-Trichlorobenzene	120-82-1	123
1,2,4-Trimethylbenzene	95-63-6	136 Q
1,2-Dibromoethane (EDB)	106-93-4	95
1,2-Dichlorobenzene	95-50-1	96
1,2-Dichloroethane	107-06-2	87
1,2-Dichloropropane	78-87-5	91
1,3,5-Trimethylbenzene	108-67-8	126
1,3-Butadiene	106-99-0	100
1,3-Dichlorobenzene	541-73-1	98
1,4-Dichlorobenzene	106-46-7	93
1,4-Dioxane	123-91-1	90
2,2,4-Trimethylpentane	540-84-1	93
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	97
2-Propanol	67-63-0	90
3-Chloropropene	107-05-1	99
4-Ethyltoluene	622-96-8	109
4-Methyl-2-pentanone	108-10-1	98
Acetone	67-64-1	87

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCS		
Lab ID:	2212705-06A	**Date/Time Analyzed:**	1/9/23 10:01 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010903

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	99
Benzene	71-43-2	91
Bromodichloromethane	75-27-4	87
Bromoform	75-25-2	106
Bromomethane	74-83-9	107
Carbon Disulfide	75-15-0	93
Carbon Tetrachloride	56-23-5	90
Chlorobenzene	108-90-7	90
Chloroethane	75-00-3	91
Chloroform	67-66-3	87
Chloromethane	74-87-3	82
cis-1,2-Dichloroethene	156-59-2	93
cis-1,3-Dichloropropene	10061-01-5	97
Cumene	98-82-8	101
Cyclohexane	110-82-7	96
Dibromochloromethane	124-48-1	96
Ethanol	64-17-5	81
Ethyl Benzene	100-41-4	98
Freon 11	75-69-4	90
Freon 113	76-13-1	89
Freon 114	76-14-2	99
Freon 12	75-71-8	96
Heptane	142-82-5	97
Hexachlorobutadiene	87-68-3	92

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	LCS		
Lab ID:	2212705-06A	**Date/Time Analyzed:**	1/9/23 10:01 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010903

Compound	CAS#	%Recovery
Hexane	110-54-3	92
m,p-Xylene	108-38-3	98
Methyl tert-butyl ether	1634-04-4	90
Methylene Chloride	75-09-2	88
o-Xylene	95-47-6	98
Propylbenzene	103-65-1	108
Styrene	100-42-5	102
Tetrachloroethene	127-18-4	94
Tetrahydrofuran	109-99-9	92
Toluene	108-88-3	95
trans-1,2-Dichloroethene	156-60-5	93
trans-1,3-Dichloropropene	10061-02-6	103
Trichloroethene	79-01-6	90
Vinyl Chloride	75-01-4	96

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	95
4-Bromofluorobenzene	460-00-4	70-130	111
Toluene-d8	2037-26-5	70-130	102

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCSD		
Lab ID:	2212705-06AA	**Date/Time Analyzed:**	1/9/23 10:51 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010904

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	88
1,1,2,2-Tetrachloroethane	79-34-5	98
1,1,2-Trichloroethane	79-00-5	96
1,1-Dichloroethane	75-34-3	88
1,1-Dichloroethene	75-35-4	91
1,2,4-Trichlorobenzene	120-82-1	127
1,2,4-Trimethylbenzene	95-63-6	129
1,2-Dibromoethane (EDB)	106-93-4	98
1,2-Dichlorobenzene	95-50-1	93
1,2-Dichloroethane	107-06-2	82
1,2-Dichloropropane	78-87-5	90
1,3,5-Trimethylbenzene	108-67-8	119
1,3-Butadiene	106-99-0	99
1,3-Dichlorobenzene	541-73-1	95
1,4-Dichlorobenzene	106-46-7	92
1,4-Dioxane	123-91-1	89
2,2,4-Trimethylpentane	540-84-1	92
2-Butanone (Methyl Ethyl Ketone)	78-93-3	92
2-Hexanone	591-78-6	100
2-Propanol	67-63-0	92
3-Chloropropene	107-05-1	99
4-Ethyltoluene	622-96-8	103
4-Methyl-2-pentanone	108-10-1	95
Acetone	67-64-1	87

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCSD		
Lab ID:	2212705-06AA	**Date/Time Analyzed:**	1/9/23 10:51 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010904

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	97
Benzene	71-43-2	90
Bromodichloromethane	75-27-4	88
Bromoform	75-25-2	111
Bromomethane	74-83-9	110
Carbon Disulfide	75-15-0	92
Carbon Tetrachloride	56-23-5	87
Chlorobenzene	108-90-7	92
Chloroethane	75-00-3	93
Chloroform	67-66-3	86
Chloromethane	74-87-3	81
cis-1,2-Dichloroethene	156-59-2	92
cis-1,3-Dichloropropene	10061-01-5	95
Cumene	98-82-8	98
Cyclohexane	110-82-7	96
Dibromochloromethane	124-48-1	98
Ethanol	64-17-5	88
Ethyl Benzene	100-41-4	99
Freon 11	75-69-4	88
Freon 113	76-13-1	88
Freon 114	76-14-2	98
Freon 12	75-71-8	92
Heptane	142-82-5	93
Hexachlorobutadiene	87-68-3	86

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCSD		
Lab ID:	2212705-06AA	**Date/Time Analyzed:**	1/9/23 10:51 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd21.i / 21010904

Compound	CAS#	%Recovery
Hexane	110-54-3	91
m,p-Xylene	108-38-3	97
Methyl tert-butyl ether	1634-04-4	89
Methylene Chloride	75-09-2	90
o-Xylene	95-47-6	94
Propylbenzene	103-65-1	101
Styrene	100-42-5	101
Tetrachloroethene	127-18-4	97
Tetrahydrofuran	109-99-9	87
Toluene	108-88-3	92
trans-1,2-Dichloroethene	156-60-5	94
trans-1,3-Dichloropropene	10061-02-6	104
Trichloroethene	79-01-6	90
Vinyl Chloride	75-01-4	95

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	90
4-Bromofluorobenzene	460-00-4	70-130	108
Toluene-d8	2037-26-5	70-130	95

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCS		
Lab ID:	2212705-06B	**Date/Time Analyzed:**	1/10/23 10:35 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011003

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	105
1,1,2,2-Tetrachloroethane	79-34-5	98
1,1,2-Trichloroethane	79-00-5	100
1,1-Dichloroethane	75-34-3	102
1,1-Dichloroethene	75-35-4	109
1,2,4-Trichlorobenzene	120-82-1	104
1,2,4-Trimethylbenzene	95-63-6	107
1,2-Dibromoethane (EDB)	106-93-4	100
1,2-Dichlorobenzene	95-50-1	104
1,2-Dichloroethane	107-06-2	96
1,2-Dichloropropane	78-87-5	98
1,3,5-Trimethylbenzene	108-67-8	104
1,3-Butadiene	106-99-0	107
1,3-Dichlorobenzene	541-73-1	102
1,4-Dichlorobenzene	106-46-7	99
1,4-Dioxane	123-91-1	105
2,2,4-Trimethylpentane	540-84-1	114
2-Butanone (Methyl Ethyl Ketone)	78-93-3	105
2-Hexanone	591-78-6	111
2-Propanol	67-63-0	111
3-Chloropropene	107-05-1	103
4-Ethyltoluene	622-96-8	111
4-Methyl-2-pentanone	108-10-1	116
Acetone	67-64-1	104

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCS		
Lab ID:	2212705-06B	**Date/Time Analyzed:**	1/10/23 10:35 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011003

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	107
Benzene	71-43-2	99
Bromodichloromethane	75-27-4	95
Bromoform	75-25-2	100
Bromomethane	74-83-9	170 Q
Carbon Disulfide	75-15-0	103
Carbon Tetrachloride	56-23-5	101
Chlorobenzene	108-90-7	95
Chloroethane	75-00-3	113
Chloroform	67-66-3	97
Chloromethane	74-87-3	118
cis-1,2-Dichloroethene	156-59-2	108
cis-1,3-Dichloropropene	10061-01-5	109
Cumene	98-82-8	112
Cyclohexane	110-82-7	112
Dibromochloromethane	124-48-1	98
Ethanol	64-17-5	100
Ethyl Benzene	100-41-4	108
Freon 11	75-69-4	102
Freon 113	76-13-1	101
Freon 114	76-14-2	99
Freon 12	75-71-8	104
Heptane	142-82-5	112
Hexachlorobutadiene	87-68-3	102

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	LCS		
Lab ID:	2212705-06B	**Date/Time Analyzed:**	1/10/23 10:35 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011003

Compound	CAS#	%Recovery
Hexane	110-54-3	111
m,p-Xylene	108-38-3	109
Methyl tert-butyl ether	1634-04-4	114
Methylene Chloride	75-09-2	98
o-Xylene	95-47-6	111
Propylbenzene	103-65-1	108
Styrene	100-42-5	115
Tetrachloroethene	127-18-4	96
Tetrahydrofuran	109-99-9	100
Toluene	108-88-3	96
trans-1,2-Dichloroethene	156-60-5	108
trans-1,3-Dichloropropene	10061-02-6	108
Trichloroethene	79-01-6	97
Vinyl Chloride	75-01-4	110

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCSD		
Lab ID:	2212705-06BB	**Date/Time Analyzed:**	1/10/23 11:07 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011004

Compound	CAS#	%Recovery
1,1,1-Trichloroethane	71-55-6	102
1,1,2,2-Tetrachloroethane	79-34-5	95
1,1,2-Trichloroethane	79-00-5	96
1,1-Dichloroethane	75-34-3	100
1,1-Dichloroethene	75-35-4	110
1,2,4-Trichlorobenzene	120-82-1	102
1,2,4-Trimethylbenzene	95-63-6	102
1,2-Dibromoethane (EDB)	106-93-4	97
1,2-Dichlorobenzene	95-50-1	98
1,2-Dichloroethane	107-06-2	93
1,2-Dichloropropane	78-87-5	96
1,3,5-Trimethylbenzene	108-67-8	100
1,3-Butadiene	106-99-0	104
1,3-Dichlorobenzene	541-73-1	96
1,4-Dichlorobenzene	106-46-7	94
1,4-Dioxane	123-91-1	105
2,2,4-Trimethylpentane	540-84-1	111
2-Butanone (Methyl Ethyl Ketone)	78-93-3	105
2-Hexanone	591-78-6	108
2-Propanol	67-63-0	110
3-Chloropropene	107-05-1	100
4-Ethyltoluene	622-96-8	106
4-Methyl-2-pentanone	108-10-1	115
Acetone	67-64-1	102

* % Recovery is calculated using unrounded analytical results.

Client ID:	LCSD		
Lab ID:	2212705-06BB	**Date/Time Analyzed:**	1/10/23 11:07 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011004

Compound	CAS#	%Recovery
alpha-Chlorotoluene	100-44-7	103
Benzene	71-43-2	98
Bromodichloromethane	75-27-4	92
Bromoform	75-25-2	97
Bromomethane	74-83-9	162 Q
Carbon Disulfide	75-15-0	100
Carbon Tetrachloride	56-23-5	99
Chlorobenzene	108-90-7	92
Chloroethane	75-00-3	109
Chloroform	67-66-3	94
Chloromethane	74-87-3	108
cis-1,2-Dichloroethene	156-59-2	106
cis-1,3-Dichloropropene	10061-01-5	107
Cumene	98-82-8	109
Cyclohexane	110-82-7	112
Dibromochloromethane	124-48-1	94
Ethanol	64-17-5	104
Ethyl Benzene	100-41-4	104
Freon 11	75-69-4	99
Freon 113	76-13-1	98
Freon 114	76-14-2	96
Freon 12	75-71-8	102
Heptane	142-82-5	109
Hexachlorobutadiene	87-68-3	101

* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN
Yakima Dry Cleaner

Client ID:	LCSD		
Lab ID:	2212705-06BB	**Date/Time Analyzed:**	1/10/23 11:07 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msdj.i / j011004

Compound	CAS#	%Recovery
Hexane	110-54-3	111
m,p-Xylene	108-38-3	106
Methyl tert-butyl ether	1634-04-4	112
Methylene Chloride	75-09-2	95
o-Xylene	95-47-6	107
Propylbenzene	103-65-1	104
Styrene	100-42-5	111
Tetrachloroethene	127-18-4	94
Tetrahydrofuran	109-99-9	101
Toluene	108-88-3	94
trans-1,2-Dichloroethene	156-60-5	106
trans-1,3-Dichloropropene	10061-02-6	101
Trichloroethene	79-01-6	96
Vinyl Chloride	75-01-4	107

Q = Exceeds Quality Control limits.
D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	99
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	99

* % Recovery is calculated using unrounded analytical results.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Orr
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 12/16/2022 2:16:37 PM

JOB DESCRIPTION

Yakima Dry Cleaner

JOB NUMBER

590-19376-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

See page two for job notes and contact information.

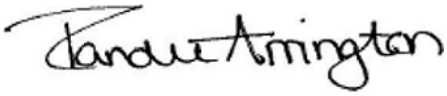
Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



Generated
12/16/2022 2:16:37 PM

Authorized for release by
Randee Arrington, Lab Director
Randee.Arrington@et.eurofinsus.com
(509)924-9200

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Job ID: 590-19376-1

Laboratory: Eurofins Spokane

Narrative

Receipt
The samples were received on 12/2/2022 1:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
Method 7471B: The method blank for preparation batch 590-39480 and 590-39480 and analytical batch 590-39493 contained Mercury above and/or equal to the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-19376-1	GEI040-B1 (10-11)	Solid	11/29/22 11:30	12/02/22 13:30
590-19376-2	GEI040-B2 (5-6)	Solid	11/29/22 14:10	12/02/22 13:30
590-19376-3	GEI040-B3 (14-15)	Solid	11/29/22 15:10	12/02/22 13:30
590-19376-4	GEI040-B4 (14-15)	Solid	11/29/22 15:50	12/02/22 13:30
590-19376-5	GEI040-B5 (10-11)	Solid	11/30/22 08:55	12/02/22 13:30
590-19376-6	GEI040-B6 (10-11)	Solid	11/30/22 09:40	12/02/22 13:30
590-19376-7	GEI040-B7 (10-11)	Solid	11/30/22 10:25	12/02/22 13:30
590-19376-8	GEI040-B8 (10-11)	Solid	11/30/22 10:55	12/02/22 13:30
590-19376-9	GEI040-B-DUP	Solid	11/30/22 08:00	12/02/22 13:30
590-19376-10	Trip Blank	Solid	11/29/22 10:00	12/02/22 13:30
590-19376-11	GEI040-WC	Solid	11/30/22 12:00	12/02/22 13:30

Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B1 (10-11)

Date Collected: 11/29/22 11:30
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-1

Matrix: Solid
Percent Solids: 68.5

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.26	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Chloromethane	ND		1.3	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Vinyl chloride	ND		0.16	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Bromomethane	ND		1.3	0.086	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Chloroethane	ND		0.52	0.15	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Trichlorofluoromethane	ND		0.52	0.086	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1-Dichloroethene	ND		0.26	0.089	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Methylene Chloride	ND		0.91	0.52	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
trans-1,2-Dichloroethene	ND		0.26	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1-Dichloroethane	ND		0.26	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
2,2-Dichloropropane	ND		0.26	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
cis-1,2-Dichloroethene	ND		0.26	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Bromochloromethane	ND		0.26	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Chloroform	ND		0.26	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1,1-Trichloroethane	ND		0.26	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Carbon tetrachloride	ND		0.26	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1-Dichloropropene	ND		0.26	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Benzene	ND		0.052	0.026	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2-Dichloroethane	ND		0.26	0.018	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Trichloroethene	ND		0.065	0.020	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2-Dichloropropane	ND		0.31	0.079	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Dibromomethane	ND		0.26	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Bromodichloromethane	ND		0.26	0.16	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
cis-1,3-Dichloropropene	ND		0.26	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Toluene	ND		0.26	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
trans-1,3-Dichloropropene	ND		0.26	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1,2-Trichloroethane	ND		0.26	0.092	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Tetrachloroethene	ND		0.10	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,3-Dichloropropane	ND		0.26	0.078	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Dibromochloromethane	ND		0.52	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2-Dibromoethane (EDB)	ND		0.26	0.087	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Chlorobenzene	ND		0.26	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Ethylbenzene	ND		0.26	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1,1,2-Tetrachloroethane	ND		0.26	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,1,2,2-Tetrachloroethane	ND		0.26	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
m,p-Xylene	ND		1.0	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
o-Xylene	ND		0.52	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Styrene	ND		0.26	0.062	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Bromoform	ND		0.52	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Isopropylbenzene	ND		0.26	0.081	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Bromobenzene	ND		0.26	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
N-Propylbenzene	ND		0.26	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2,3-Trichloropropane	ND		0.52	0.096	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
2-Chlorotoluene	ND		0.26	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,3,5-Trimethylbenzene	ND		0.26	0.084	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
4-Chlorotoluene	ND		0.26	0.023	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
tert-Butylbenzene	ND		0.26	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2,4-Trimethylbenzene	ND		0.26	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
sec-Butylbenzene	ND		0.26	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1

Client Sample ID: GEI040-B1 (10-11)

Lab Sample ID: 590-19376-1
Date Collected: 11/29/22 11:30
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 68.5

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		0.26	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
p-Isopropyltoluene	ND		0.26	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,4-Dichlorobenzene	ND		0.26	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
n-Butylbenzene	ND		0.26	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2-Dichlorobenzene	ND		0.26	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2-Dibromo-3-Chloropropane	ND		1.3	0.16	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2,4-Trichlorobenzene	ND		0.26	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
1,2,3-Trichlorobenzene	ND		0.26	0.087	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Hexachlorobutadiene	ND		0.26	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Naphthalene	ND		0.52	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1
Methyl tert-butyl ether	ND		0.13	0.078	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*	*12/09/22 10:44*	*12/09/22 16:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*76 - 122*	*12/09/22 10:44*	*12/09/22 16:27*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*	*12/09/22 10:44*	*12/09/22 16:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 129*	*12/09/22 10:44*	*12/09/22 16:27*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		13	4.7	mg/Kg	☼	12/09/22 10:44	12/09/22 16:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 16:27*	*1*

Client Sample ID: GEI040-B2 (5-6)

Lab Sample ID: 590-19376-2
Date Collected: 11/29/22 14:10
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 79.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.22	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Chloromethane	ND		1.1	0.091	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Vinyl chloride	ND		0.13	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Bromomethane	ND		1.1	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Chloroethane	ND		0.44	0.12	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Trichlorofluoromethane	ND		0.44	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1-Dichloroethene	ND		0.22	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Methylene Chloride	ND		0.77	0.44	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
trans-1,2-Dichloroethene	ND		0.22	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1-Dichloroethane	ND		0.22	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
2,2-Dichloropropane	ND		0.22	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
cis-1,2-Dichloroethene	ND		0.22	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Bromochloromethane	ND		0.22	0.087	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Chloroform	ND		0.22	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1,1-Trichloroethane	ND		0.22	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Carbon tetrachloride	ND		0.22	0.024	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1-Dichloropropene	ND		0.22	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Benzene	ND		0.044	0.022	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2-Dichloroethane	ND		0.22	0.015	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Trichloroethene	ND		0.055	0.017	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1

Client Sample ID: GEI040-B2 (5-6)
Date Collected: 11/29/22 14:10
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-2
Matrix: Solid
Percent Solids: 79.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND		0.26	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Dibromomethane	ND		0.22	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Bromodichloromethane	ND		0.22	0.14	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
cis-1,3-Dichloropropene	ND		0.22	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Toluene	ND		0.22	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
trans-1,3-Dichloropropene	ND		0.22	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1,2-Trichloroethane	ND		0.22	0.077	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Tetrachloroethene	**0.076**	**J**	0.088	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,3-Dichloropropane	ND		0.22	0.065	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Dibromochloromethane	ND		0.44	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2-Dibromoethane (EDB)	ND		0.22	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Chlorobenzene	ND		0.22	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Ethylbenzene	ND		0.22	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1,1,2-Tetrachloroethane	ND		0.22	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,1,2,2-Tetrachloroethane	ND		0.22	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
m,p-Xylene	ND		0.88	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
o-Xylene	ND		0.44	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Styrene	ND		0.22	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Bromoform	ND		0.44	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Isopropylbenzene	ND		0.22	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Bromobenzene	ND		0.22	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
N-Propylbenzene	ND		0.22	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2,3-Trichloropropane	ND		0.44	0.080	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
2-Chlorotoluene	ND		0.22	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,3,5-Trimethylbenzene	ND		0.22	0.070	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
4-Chlorotoluene	ND		0.22	0.019	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
tert-Butylbenzene	ND		0.22	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2,4-Trimethylbenzene	ND		0.22	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
sec-Butylbenzene	ND		0.22	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,3-Dichlorobenzene	ND		0.22	0.028	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
p-Isopropyltoluene	ND		0.22	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,4-Dichlorobenzene	ND		0.22	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
n-Butylbenzene	ND		0.22	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2-Dichlorobenzene	ND		0.22	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2-Dibromo-3-Chloropropane	ND		1.1	0.13	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2,4-Trichlorobenzene	ND		0.22	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
1,2,3-Trichlorobenzene	ND		0.22	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Hexachlorobutadiene	ND		0.22	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Naphthalene	ND		0.44	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1
Methyl tert-butyl ether	ND		0.11	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*	*12/09/22 10:44*	*12/09/22 16:48*	*1*
4-Bromofluorobenzene (Surr)	*93*		*76 - 122*	*12/09/22 10:44*	*12/09/22 16:48*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*12/09/22 10:44*	*12/09/22 16:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*75 - 129*	*12/09/22 10:44*	*12/09/22 16:48*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		11	3.9	mg/Kg	☼	12/09/22 10:44	12/09/22 16:48	1

Client Sample ID: GEI040-B2 (5-6)

Lab Sample ID: 590-19376-2
Date Collected: 11/29/22 14:10
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 79.1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 16:48*	*1*

Client Sample ID: GEI040-B3 (14-15)

Lab Sample ID: 590-19376-3
Date Collected: 11/29/22 15:10
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 71.5

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.25	0.070	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Chloromethane	ND		1.2	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Vinyl chloride	ND		0.15	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Bromomethane	ND		1.2	0.082	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Chloroethane	ND		0.50	0.14	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Trichlorofluoromethane	ND		0.50	0.082	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1-Dichloroethene	ND		0.25	0.085	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Methylene Chloride	ND		0.87	0.50	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
trans-1,2-Dichloroethene	ND		0.25	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1-Dichloroethane	ND		0.25	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
2,2-Dichloropropane	ND		0.25	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
cis-1,2-Dichloroethene	ND		0.25	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Bromochloromethane	ND		0.25	0.099	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Chloroform	ND		0.25	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1,1-Trichloroethane	ND		0.25	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Carbon tetrachloride	ND		0.25	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1-Dichloropropene	ND		0.25	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Benzene	ND		0.050	0.025	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2-Dichloroethane	ND		0.25	0.017	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Trichloroethene	ND		0.062	0.019	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2-Dichloropropane	ND		0.30	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Dibromomethane	ND		0.25	0.056	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Bromodichloromethane	ND		0.25	0.15	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
cis-1,3-Dichloropropene	ND		0.25	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Toluene	ND		0.25	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
trans-1,3-Dichloropropene	ND		0.25	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1,2-Trichloroethane	ND		0.25	0.088	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Tetrachloroethene	ND		0.10	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,3-Dichloropropane	ND		0.25	0.074	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Dibromochloromethane	ND		0.50	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2-Dibromoethane (EDB)	ND		0.25	0.083	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Chlorobenzene	ND		0.25	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Ethylbenzene	ND		0.25	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1,1,2-Tetrachloroethane	ND		0.25	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,1,2,2-Tetrachloroethane	ND		0.25	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
m,p-Xylene	ND		1.0	0.071	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
o-Xylene	ND		0.50	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Styrene	ND		0.25	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Bromoform	ND		0.50	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Isopropylbenzene	ND		0.25	0.077	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Bromobenzene	ND		0.25	0.056	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
N-Propylbenzene	ND		0.25	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1

Client Sample ID: GEI040-B3 (14-15)

Lab Sample ID: 590-19376-3

Date Collected: 11/29/22 15:10
Date Received: 12/02/22 13:30

Matrix: Solid
Percent Solids: 71.5

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50	0.091	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
2-Chlorotoluene	ND		0.25	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,3,5-Trimethylbenzene	ND		0.25	0.080	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
4-Chlorotoluene	ND		0.25	0.022	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
tert-Butylbenzene	ND		0.25	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2,4-Trimethylbenzene	ND		0.25	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
sec-Butylbenzene	ND		0.25	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,3-Dichlorobenzene	ND		0.25	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
p-Isopropyltoluene	ND		0.25	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,4-Dichlorobenzene	ND		0.25	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
n-Butylbenzene	ND		0.25	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2-Dichlorobenzene	ND		0.25	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2-Dibromo-3-Chloropropane	ND		1.2	0.15	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2,4-Trichlorobenzene	ND		0.25	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
1,2,3-Trichlorobenzene	ND		0.25	0.083	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Hexachlorobutadiene	ND		0.25	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Naphthalene	ND		0.50	0.070	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1
Methyl tert-butyl ether	ND		0.12	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:10*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 122*	*12/09/22 10:44*	*12/09/22 17:10*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 129*	*12/09/22 10:44*	*12/09/22 17:10*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		12	4.5	mg/Kg	☼	12/09/22 10:44	12/09/22 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 17:10*	*1*

Client Sample ID: GEI040-B4 (14-15)

Lab Sample ID: 590-19376-4

Date Collected: 11/29/22 15:50
Date Received: 12/02/22 13:30

Matrix: Solid
Percent Solids: 88.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.18	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Chloromethane	ND		0.89	0.074	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Vinyl chloride	ND		0.11	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Bromomethane	ND		0.89	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Chloroethane	ND		0.36	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Trichlorofluoromethane	ND		0.36	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1-Dichloroethene	ND		0.18	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Methylene Chloride	ND		0.62	0.36	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
trans-1,2-Dichloroethene	ND		0.18	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1-Dichloroethane	ND		0.18	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
2,2-Dichloropropane	ND		0.18	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
cis-1,2-Dichloroethene	ND		0.18	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Bromochloromethane	ND		0.18	0.071	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B4 (14-15)
Date Collected: 11/29/22 15:50
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-4
Matrix: Solid
Percent Solids: 88.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.18	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1,1-Trichloroethane	ND		0.18	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Carbon tetrachloride	ND		0.18	0.020	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1-Dichloropropene	ND		0.18	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Benzene	ND		0.036	0.018	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2-Dichloroethane	ND		0.18	0.012	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Trichloroethene	ND		0.044	0.013	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2-Dichloropropane	ND		0.21	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Dibromomethane	ND		0.18	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Bromodichloromethane	ND		0.18	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
cis-1,3-Dichloropropene	ND		0.18	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Toluene	**0.040**	**J**	0.18	0.024	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
trans-1,3-Dichloropropene	ND		0.18	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1,2-Trichloroethane	ND		0.18	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Tetrachloroethene	ND		0.071	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,3-Dichloropropane	ND		0.18	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Dibromochloromethane	ND		0.36	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2-Dibromoethane (EDB)	ND		0.18	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Chlorobenzene	ND		0.18	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Ethylbenzene	ND		0.18	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1,1,2-Tetrachloroethane	ND		0.18	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,1,2,2-Tetrachloroethane	ND		0.18	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
m,p-Xylene	ND		0.71	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
o-Xylene	ND		0.36	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Styrene	ND		0.18	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Bromoform	ND		0.36	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Isopropylbenzene	ND		0.18	0.055	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Bromobenzene	ND		0.18	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
N-Propylbenzene	ND		0.18	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2,3-Trichloropropane	ND		0.36	0.065	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
2-Chlorotoluene	ND		0.18	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,3,5-Trimethylbenzene	ND		0.18	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
4-Chlorotoluene	ND		0.18	0.015	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
tert-Butylbenzene	ND		0.18	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2,4-Trimethylbenzene	ND		0.18	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
sec-Butylbenzene	ND		0.18	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,3-Dichlorobenzene	ND		0.18	0.022	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
p-Isopropyltoluene	ND		0.18	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,4-Dichlorobenzene	ND		0.18	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
n-Butylbenzene	ND		0.18	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2-Dichlorobenzene	ND		0.18	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2-Dibromo-3-Chloropropane	ND		0.89	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2,4-Trichlorobenzene	ND		0.18	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
1,2,3-Trichlorobenzene	ND		0.18	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Hexachlorobutadiene	ND		0.18	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Naphthalene	ND		0.36	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1
Methyl tert-butyl ether	ND		0.089	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:31*	*1*

Client Sample ID: GEI040-B4 (14-15)

Lab Sample ID: 590-19376-4
Date Collected: 11/29/22 15:50
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 88.8

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*76 - 122*	*12/09/22 10:44*	*12/09/22 17:31*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*75 - 129*	*12/09/22 10:44*	*12/09/22 17:31*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.9	3.2	mg/Kg	☼	12/09/22 10:44	12/09/22 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 17:31*	*1*

Client Sample ID: GEI040-B5 (10-11)

Lab Sample ID: 590-19376-5
Date Collected: 11/30/22 08:55
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 81.6

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.19	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Chloromethane	ND		0.94	0.079	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Vinyl chloride	ND		0.11	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Bromomethane	ND		0.94	0.062	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Chloroethane	ND		0.38	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Trichlorofluoromethane	ND		0.38	0.062	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1-Dichloroethene	ND		0.19	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Methylene Chloride	ND		0.66	0.38	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
trans-1,2-Dichloroethene	ND		0.19	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1-Dichloroethane	ND		0.19	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
2,2-Dichloropropane	ND		0.19	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
cis-1,2-Dichloroethene	ND		0.19	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Bromochloromethane	ND		0.19	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Chloroform	ND		0.19	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1,1-Trichloroethane	ND		0.19	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Carbon tetrachloride	ND		0.19	0.021	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1-Dichloropropene	ND		0.19	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Benzene	ND		0.038	0.019	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2-Dichloroethane	ND		0.19	0.013	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Trichloroethene	ND		0.047	0.014	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2-Dichloropropane	ND		0.23	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Dibromomethane	ND		0.19	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Bromodichloromethane	ND		0.19	0.12	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
cis-1,3-Dichloropropene	ND		0.19	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Toluene	ND		0.19	0.025	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
trans-1,3-Dichloropropene	ND		0.19	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1,2-Trichloroethane	ND		0.19	0.067	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Tetrachloroethene	**0.28**		0.075	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,3-Dichloropropane	ND		0.19	0.056	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Dibromochloromethane	ND		0.38	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2-Dibromoethane (EDB)	ND		0.19	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Chlorobenzene	ND		0.19	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Ethylbenzene	ND		0.19	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1

Client Sample ID: GEI040-B5 (10-11)

Lab Sample ID: 590-19376-5
Date Collected: 11/30/22 08:55
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 81.6

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.19	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,1,2,2-Tetrachloroethane	ND		0.19	0.055	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
m,p-Xylene	ND		0.75	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
o-Xylene	ND		0.38	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Styrene	ND		0.19	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Bromoform	ND		0.38	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Isopropylbenzene	ND		0.19	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Bromobenzene	ND		0.19	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
N-Propylbenzene	ND		0.19	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2,3-Trichloropropane	ND		0.38	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
2-Chlorotoluene	ND		0.19	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,3,5-Trimethylbenzene	ND		0.19	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
4-Chlorotoluene	ND		0.19	0.016	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
tert-Butylbenzene	ND		0.19	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2,4-Trimethylbenzene	ND		0.19	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
sec-Butylbenzene	ND		0.19	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,3-Dichlorobenzene	ND		0.19	0.024	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
p-Isopropyltoluene	ND		0.19	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,4-Dichlorobenzene	ND		0.19	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
n-Butylbenzene	ND		0.19	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2-Dichlorobenzene	ND		0.19	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2-Dibromo-3-Chloropropane	ND		0.94	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2,4-Trichlorobenzene	ND		0.19	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
1,2,3-Trichlorobenzene	ND		0.19	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Hexachlorobutadiene	ND		0.19	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Naphthalene	ND		0.38	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1
Methyl tert-butyl ether	ND		0.094	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:53*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 122*	*12/09/22 10:44*	*12/09/22 17:53*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*	*12/09/22 10:44*	*12/09/22 17:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 129*	*12/09/22 10:44*	*12/09/22 17:53*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		9.4	3.4	mg/Kg	☼	12/09/22 10:44	12/09/22 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 17:53*	*1*

Client Sample ID: GEI040-B6 (10-11)

Lab Sample ID: 590-19376-6
Date Collected: 11/30/22 09:40
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 79.2

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.21	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Chloromethane	ND		1.1	0.090	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Vinyl chloride	ND		0.13	0.043	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Bromomethane	ND		1.1	0.071	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1

Client Sample ID: GEI040-B6 (10-11)
Date Collected: 11/30/22 09:40
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-6
Matrix: Solid
Percent Solids: 79.2

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		0.43	0.12	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Trichlorofluoromethane	ND		0.43	0.070	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1-Dichloroethene	ND		0.21	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Methylene Chloride	ND		0.75	0.43	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
trans-1,2-Dichloroethene	ND		0.21	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1-Dichloroethane	ND		0.21	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
2,2-Dichloropropane	ND		0.21	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
cis-1,2-Dichloroethene	ND		0.21	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Bromochloromethane	ND		0.21	0.086	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Chloroform	ND		0.21	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1,1-Trichloroethane	ND		0.21	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Carbon tetrachloride	ND		0.21	0.024	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1-Dichloropropene	ND		0.21	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Benzene	ND		0.043	0.021	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2-Dichloroethane	ND		0.21	0.015	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Trichloroethene	ND		0.054	0.016	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2-Dichloropropane	ND		0.26	0.065	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Dibromomethane	ND		0.21	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Bromodichloromethane	ND		0.21	0.13	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
cis-1,3-Dichloropropene	ND		0.21	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Toluene	ND		0.21	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
trans-1,3-Dichloropropene	ND		0.21	0.056	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1,2-Trichloroethane	ND		0.21	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Tetrachloroethene	**5.1**		0.086	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,3-Dichloropropane	ND		0.21	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Dibromochloromethane	ND		0.43	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2-Dibromoethane (EDB)	ND		0.21	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Chlorobenzene	ND		0.21	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Ethylbenzene	ND		0.21	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1,1,2-Tetrachloroethane	ND		0.21	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,1,2,2-Tetrachloroethane	ND		0.21	0.062	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
m,p-Xylene	ND		0.86	0.062	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
o-Xylene	ND		0.43	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Styrene	ND		0.21	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Bromoform	ND		0.43	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Isopropylbenzene	ND		0.21	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Bromobenzene	ND		0.21	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
N-Propylbenzene	ND		0.21	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2,3-Trichloropropane	ND		0.43	0.079	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
2-Chlorotoluene	ND		0.21	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,3,5-Trimethylbenzene	ND		0.21	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
4-Chlorotoluene	ND		0.21	0.019	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
tert-Butylbenzene	ND		0.21	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2,4-Trimethylbenzene	ND		0.21	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
sec-Butylbenzene	ND		0.21	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,3-Dichlorobenzene	ND		0.21	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
p-Isopropyltoluene	ND		0.21	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,4-Dichlorobenzene	ND		0.21	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
n-Butylbenzene	ND		0.21	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1

Client Sample ID: GEI040-B6 (10-11)

Lab Sample ID: 590-19376-6

Date Collected: 11/30/22 09:40
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 79.2

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	ND		0.21	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2-Dibromo-3-Chloropropane	ND		1.1	0.13	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2,4-Trichlorobenzene	ND		0.21	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
1,2,3-Trichlorobenzene	ND		0.21	0.072	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Hexachlorobutadiene	ND		0.21	0.035	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Naphthalene	ND		0.43	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1
Methyl tert-butyl ether	ND		0.11	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:14*	*1*
4-Bromofluorobenzene (Surr)	*85*		*76 - 122*	*12/09/22 10:44*	*12/09/22 18:14*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*75 - 129*	*12/09/22 10:44*	*12/09/22 18:14*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**8.0**	**J**	11	3.9	mg/Kg	☼	12/09/22 10:44	12/09/22 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 18:14*	*1*

Client Sample ID: GEI040-B7 (10-11)

Lab Sample ID: 590-19376-7

Date Collected: 11/30/22 10:25
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 79.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.33	0.092	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Chloromethane	ND		1.6	0.14	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Vinyl chloride	ND		0.20	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Bromomethane	ND		1.6	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Chloroethane	ND		0.66	0.18	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Trichlorofluoromethane	ND		0.66	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1-Dichloroethene	ND		0.33	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Methylene Chloride	ND		1.1	0.66	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
trans-1,2-Dichloroethene	ND		0.33	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1-Dichloroethane	ND		0.33	0.087	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
2,2-Dichloropropane	ND		0.33	0.080	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
cis-1,2-Dichloroethene	ND		0.33	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Bromochloromethane	ND		0.33	0.13	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Chloroform	ND		0.33	0.077	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1,1-Trichloroethane	ND		0.33	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Carbon tetrachloride	ND		0.33	0.036	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1-Dichloropropene	ND		0.33	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Benzene	ND		0.066	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2-Dichloroethane	ND		0.33	0.023	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Trichloroethene	ND		0.082	0.025	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2-Dichloropropane	ND		0.39	0.099	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Dibromomethane	ND		0.33	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Bromodichloromethane	ND		0.33	0.20	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
cis-1,3-Dichloropropene	ND		0.33	0.067	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1

Client Sample ID: GEI040-B7 (10-11)
Date Collected: 11/30/22 10:25
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-7
Matrix: Solid
Percent Solids: 79.1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.33	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
trans-1,3-Dichloropropene	ND		0.33	0.086	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1,2-Trichloroethane	ND		0.33	0.12	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Tetrachloroethene	ND		0.13	0.058	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,3-Dichloropropane	ND		0.33	0.097	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Dibromochloromethane	ND		0.66	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2-Dibromoethane (EDB)	ND		0.33	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Chlorobenzene	ND		0.33	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Ethylbenzene	ND		0.33	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1,1,2-Tetrachloroethane	ND		0.33	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,1,2,2-Tetrachloroethane	ND		0.33	0.095	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
m,p-Xylene	ND		1.3	0.094	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
o-Xylene	ND		0.66	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Styrene	ND		0.33	0.077	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Bromoform	ND		0.66	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Isopropylbenzene	ND		0.33	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Bromobenzene	ND		0.33	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
N-Propylbenzene	ND		0.33	0.087	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2,3-Trichloropropane	ND		0.66	0.12	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
2-Chlorotoluene	ND		0.33	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,3,5-Trimethylbenzene	ND		0.33	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
4-Chlorotoluene	ND		0.33	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
tert-Butylbenzene	ND		0.33	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2,4-Trimethylbenzene	ND		0.33	0.077	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
sec-Butylbenzene	ND		0.33	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,3-Dichlorobenzene	ND		0.33	0.041	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
p-Isopropyltoluene	ND		0.33	0.067	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,4-Dichlorobenzene	ND		0.33	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
n-Butylbenzene	ND		0.33	0.090	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2-Dichlorobenzene	ND		0.33	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2-Dibromo-3-Chloropropane	ND		1.6	0.20	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2,4-Trichlorobenzene	ND		0.33	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
1,2,3-Trichlorobenzene	ND		0.33	0.11	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Hexachlorobutadiene	ND		0.33	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Naphthalene	ND		0.66	0.092	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1
Methyl tert-butyl ether	ND		0.16	0.098	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:36*	*1*
4-Bromofluorobenzene (Surr)	*86*		*76 - 122*	*12/09/22 10:44*	*12/09/22 18:36*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 129*	*12/09/22 10:44*	*12/09/22 18:36*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		16	5.9	mg/Kg	☼	12/09/22 10:44	12/09/22 18:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 18:36*	*1*

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B8 (10-11)
Date Collected: 11/30/22 10:55
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-8
Matrix: Solid
Percent Solids: 81.0

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.17	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Chloromethane	ND		0.83	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Vinyl chloride	ND		0.10	0.033	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Bromomethane	ND		0.83	0.055	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Chloroethane	ND		0.33	0.094	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Trichlorofluoromethane	ND		0.33	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1-Dichloroethene	ND		0.17	0.057	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Methylene Chloride	ND		0.58	0.33	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
trans-1,2-Dichloroethene	ND		0.17	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1-Dichloroethane	ND		0.17	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
2,2-Dichloropropane	ND		0.17	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
cis-1,2-Dichloroethene	ND		0.17	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Bromochloromethane	ND		0.17	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Chloroform	ND		0.17	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1,1-Trichloroethane	ND		0.17	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Carbon tetrachloride	ND		0.17	0.018	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1-Dichloropropene	ND		0.17	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Benzene	ND		0.033	0.017	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2-Dichloroethane	ND		0.17	0.012	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Trichloroethene	ND		0.041	0.013	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2-Dichloropropane	ND		0.20	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Dibromomethane	ND		0.17	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Bromodichloromethane	ND		0.17	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
cis-1,3-Dichloropropene	ND		0.17	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Toluene	ND		0.17	0.022	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
trans-1,3-Dichloropropene	ND		0.17	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1,2-Trichloroethane	ND		0.17	0.059	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Tetrachloroethene	**0.23**		0.066	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,3-Dichloropropane	ND		0.17	0.049	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Dibromochloromethane	ND		0.33	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2-Dibromoethane (EDB)	ND		0.17	0.056	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Chlorobenzene	ND		0.17	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Ethylbenzene	ND		0.17	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1,1,2-Tetrachloroethane	ND		0.17	0.032	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,1,2,2-Tetrachloroethane	ND		0.17	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
m,p-Xylene	ND		0.66	0.048	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
o-Xylene	ND		0.33	0.038	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Styrene	ND		0.17	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Bromoform	ND		0.33	0.032	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Isopropylbenzene	ND		0.17	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Bromobenzene	ND		0.17	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
N-Propylbenzene	ND		0.17	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2,3-Trichloropropane	ND		0.33	0.061	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
2-Chlorotoluene	ND		0.17	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,3,5-Trimethylbenzene	ND		0.17	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
4-Chlorotoluene	ND		0.17	0.014	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
tert-Butylbenzene	ND		0.17	0.032	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2,4-Trimethylbenzene	ND		0.17	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
sec-Butylbenzene	ND		0.17	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1

Client Sample ID: GEI040-B8 (10-11)

Lab Sample ID: 590-19376-8
Date Collected: 11/30/22 10:55
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 81.0

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		0.17	0.021	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
p-Isopropyltoluene	ND		0.17	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,4-Dichlorobenzene	ND		0.17	0.034	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
n-Butylbenzene	ND		0.17	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2-Dichlorobenzene	ND		0.17	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2-Dibromo-3-Chloropropane	ND		0.83	0.10	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2,4-Trichlorobenzene	ND		0.17	0.031	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
1,2,3-Trichlorobenzene	ND		0.17	0.055	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Hexachlorobutadiene	ND		0.17	0.027	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Naphthalene	ND		0.33	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1
Methyl tert-butyl ether	ND		0.083	0.050	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:57*	*1*
4-Bromofluorobenzene (Surr)	*94*		*76 - 122*	*12/09/22 10:44*	*12/09/22 18:57*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*	*12/09/22 10:44*	*12/09/22 18:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 129*	*12/09/22 10:44*	*12/09/22 18:57*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		8.3	3.0	mg/Kg	☼	12/09/22 10:44	12/09/22 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 18:57*	*1*

Client Sample ID: GEI040-B-DUP

Lab Sample ID: 590-19376-9
Date Collected: 11/30/22 08:00
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 81.0

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.23	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Chloromethane	ND		1.1	0.095	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Vinyl chloride	ND		0.14	0.046	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Bromomethane	ND		1.1	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Chloroethane	ND		0.46	0.13	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Trichlorofluoromethane	ND		0.46	0.075	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1-Dichloroethene	ND		0.23	0.078	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Methylene Chloride	ND		0.80	0.46	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
trans-1,2-Dichloroethene	ND		0.23	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1-Dichloroethane	ND		0.23	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
2,2-Dichloropropane	ND		0.23	0.055	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
cis-1,2-Dichloroethene	ND		0.23	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Bromochloromethane	ND		0.23	0.091	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Chloroform	ND		0.23	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1,1-Trichloroethane	ND		0.23	0.039	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Carbon tetrachloride	ND		0.23	0.025	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1-Dichloropropene	ND		0.23	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Benzene	ND		0.046	0.023	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2-Dichloroethane	ND		0.23	0.016	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Trichloroethene	ND		0.057	0.017	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1

Client Sample ID: GEI040-B-DUP
Date Collected: 11/30/22 08:00
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-9
Matrix: Solid
Percent Solids: 81.0

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloropropane	ND		0.27	0.069	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Dibromomethane	ND		0.23	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Bromodichloromethane	ND		0.23	0.14	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
cis-1,3-Dichloropropene	ND		0.23	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Toluene	ND		0.23	0.030	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
trans-1,3-Dichloropropene	ND		0.23	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1,2-Trichloroethane	ND		0.23	0.081	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Tetrachloroethene	**0.32**		0.091	0.040	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,3-Dichloropropane	ND		0.23	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Dibromochloromethane	ND		0.46	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2-Dibromoethane (EDB)	ND		0.23	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Chlorobenzene	ND		0.23	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Ethylbenzene	ND		0.23	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1,1,2-Tetrachloroethane	ND		0.23	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,1,2,2-Tetrachloroethane	ND		0.23	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
m,p-Xylene	ND		0.91	0.066	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
o-Xylene	ND		0.46	0.052	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Styrene	ND		0.23	0.054	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Bromoform	ND		0.46	0.044	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Isopropylbenzene	ND		0.23	0.071	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Bromobenzene	ND		0.23	0.051	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
N-Propylbenzene	ND		0.23	0.060	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2,3-Trichloropropane	ND		0.46	0.084	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
2-Chlorotoluene	ND		0.23	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,3,5-Trimethylbenzene	ND		0.23	0.073	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
4-Chlorotoluene	ND		0.23	0.020	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
tert-Butylbenzene	ND		0.23	0.045	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2,4-Trimethylbenzene	ND		0.23	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
sec-Butylbenzene	ND		0.23	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,3-Dichlorobenzene	ND		0.23	0.029	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
p-Isopropyltoluene	ND		0.23	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,4-Dichlorobenzene	ND		0.23	0.047	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
n-Butylbenzene	ND		0.23	0.063	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2-Dichlorobenzene	ND		0.23	0.053	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2-Dibromo-3-Chloropropane	ND		1.1	0.14	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2,4-Trichlorobenzene	ND		0.23	0.042	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
1,2,3-Trichlorobenzene	ND		0.23	0.076	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Hexachlorobutadiene	ND		0.23	0.037	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Naphthalene	ND		0.46	0.064	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1
Methyl tert-butyl ether	ND		0.11	0.068	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*	*12/09/22 10:44*	*12/09/22 19:40*	*1*
4-Bromofluorobenzene (Surr)	*91*		*76 - 122*	*12/09/22 10:44*	*12/09/22 19:40*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*	*12/09/22 10:44*	*12/09/22 19:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*75 - 129*	*12/09/22 10:44*	*12/09/22 19:40*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	**4.2**	**J**	11	4.1	mg/Kg	☼	12/09/22 10:44	12/09/22 19:40	1

Client Sample ID: GEI040-B-DUP

Lab Sample ID: 590-19376-9

Date Collected: 11/30/22 08:00
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 81.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*91*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 19:40*	*1*

Client Sample ID: Trip Blank

Lab Sample ID: 590-19376-10

Date Collected: 11/29/22 10:00
Matrix: Solid
Date Received: 12/02/22 13:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.10	0.028	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Chloromethane	ND		0.50	0.042	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Vinyl chloride	ND		0.060	0.020	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Bromomethane	ND		0.50	0.033	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Chloroethane	ND		0.20	0.056	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Trichlorofluoromethane	ND		0.20	0.033	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1-Dichloroethene	ND		0.10	0.034	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Methylene Chloride	ND		0.35	0.20	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
trans-1,2-Dichloroethene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1-Dichloroethane	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
2,2-Dichloropropane	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
cis-1,2-Dichloroethene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Bromochloromethane	ND		0.10	0.040	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Chloroform	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1,1-Trichloroethane	ND		0.10	0.017	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Carbon tetrachloride	ND		0.10	0.011	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1-Dichloropropene	ND		0.10	0.017	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Benzene	ND		0.020	0.010	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2-Dichloroethane	ND		0.10	0.0070	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Trichloroethene	ND		0.025	0.0076	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2-Dichloropropane	ND		0.12	0.030	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Dibromomethane	ND		0.10	0.022	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Bromodichloromethane	ND		0.10	0.062	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
cis-1,3-Dichloropropene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Toluene	ND		0.10	0.013	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
trans-1,3-Dichloropropene	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1,2-Trichloroethane	ND		0.10	0.035	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Tetrachloroethene	ND		0.040	0.018	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,3-Dichloropropane	ND		0.10	0.030	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Dibromochloromethane	ND		0.20	0.016	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2-Dibromoethane (EDB)	ND		0.10	0.034	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Chlorobenzene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Ethylbenzene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1,1,2-Tetrachloroethane	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,1,2,2-Tetrachloroethane	ND		0.10	0.029	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
m,p-Xylene	ND		0.40	0.029	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
o-Xylene	ND		0.20	0.023	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Styrene	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Bromoform	ND		0.20	0.019	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Isopropylbenzene	ND		0.10	0.031	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Bromobenzene	ND		0.10	0.022	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
N-Propylbenzene	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 20:02	1

Client Sample ID: Trip Blank

Lab Sample ID: 590-19376-10
Matrix: Solid
Date Collected: 11/29/22 10:00
Date Received: 12/02/22 13:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.20	0.037	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
2-Chlorotoluene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,3,5-Trimethylbenzene	ND		0.10	0.032	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
4-Chlorotoluene	ND		0.10	0.0087	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
tert-Butylbenzene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2,4-Trimethylbenzene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
sec-Butylbenzene	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,3-Dichlorobenzene	ND		0.10	0.013	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
p-Isopropyltoluene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,4-Dichlorobenzene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
n-Butylbenzene	ND		0.10	0.028	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2-Dichlorobenzene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2-Dibromo-3-Chloropropane	ND		0.50	0.060	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2,4-Trichlorobenzene	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
1,2,3-Trichlorobenzene	ND		0.10	0.033	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Hexachlorobutadiene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Naphthalene	ND		0.20	0.028	mg/Kg		12/09/22 10:44	12/09/22 20:02	1
Methyl tert-butyl ether	ND		0.050	0.030	mg/Kg		12/09/22 10:44	12/09/22 20:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*	*12/09/22 10:44*	*12/09/22 20:02*	*1*
4-Bromofluorobenzene (Surr)	*93*		*76 - 122*	*12/09/22 10:44*	*12/09/22 20:02*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*	*12/09/22 10:44*	*12/09/22 20:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*75 - 129*	*12/09/22 10:44*	*12/09/22 20:02*	*1*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	1.8	mg/Kg		12/09/22 10:44	12/09/22 20:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 20:02*	*1*

Client Sample ID: GEI040-WC

Lab Sample ID: 590-19376-11
Matrix: Solid
Date Collected: 11/30/22 12:00
Date Received: 12/02/22 13:30
Percent Solids: 84.5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**40**		12	4.6	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Barium	**160**		12	3.1	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Cadmium	ND		9.3	0.55	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Chromium	**14**		12	1.6	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Lead	**150**		28	14	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Selenium	ND		47	28	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10
Silver	ND		12	2.7	mg/Kg	☼	12/15/22 09:49	12/15/22 17:10	10

Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**97**	**B**	47	3.4	ug/Kg	☼	12/15/22 09:56	12/15/22 18:11	1

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 590-39423/1-A
Matrix: Solid
Analysis Batch: 39420

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39423

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		0.10	0.028	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Chloromethane	ND		0.50	0.042	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Vinyl chloride	ND		0.060	0.020	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Bromomethane	ND		0.50	0.033	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Chloroethane	ND		0.20	0.056	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Trichlorofluoromethane	ND		0.20	0.033	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1-Dichloroethene	ND		0.10	0.034	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Methylene Chloride	ND		0.35	0.20	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
trans-1,2-Dichloroethene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1-Dichloroethane	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
2,2-Dichloropropane	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
cis-1,2-Dichloroethene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Bromochloromethane	ND		0.10	0.040	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Chloroform	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1,1-Trichloroethane	ND		0.10	0.017	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Carbon tetrachloride	ND		0.10	0.011	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1-Dichloropropene	ND		0.10	0.017	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Benzene	ND		0.020	0.010	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2-Dichloroethane	ND		0.10	0.0070	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Trichloroethene	ND		0.025	0.0076	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2-Dichloropropane	ND		0.12	0.030	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Dibromomethane	ND		0.10	0.022	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Bromodichloromethane	ND		0.10	0.062	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
cis-1,3-Dichloropropene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Toluene	ND		0.10	0.013	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
trans-1,3-Dichloropropene	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1,2-Trichloroethane	ND		0.10	0.035	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Tetrachloroethene	ND		0.040	0.018	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,3-Dichloropropane	ND		0.10	0.030	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Dibromochloromethane	ND		0.20	0.016	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2-Dibromoethane (EDB)	ND		0.10	0.034	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Chlorobenzene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Ethylbenzene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1,1,2-Tetrachloroethane	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,1,2,2-Tetrachloroethane	ND		0.10	0.029	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
m,p-Xylene	ND		0.40	0.029	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
o-Xylene	ND		0.20	0.023	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Styrene	ND		0.10	0.024	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Bromoform	ND		0.20	0.019	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Isopropylbenzene	ND		0.10	0.031	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Bromobenzene	ND		0.10	0.022	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
N-Propylbenzene	ND		0.10	0.026	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2,3-Trichloropropane	ND		0.20	0.037	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
2-Chlorotoluene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,3,5-Trimethylbenzene	ND		0.10	0.032	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
4-Chlorotoluene	ND		0.10	0.0087	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
tert-Butylbenzene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2,4-Trimethylbenzene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 13:33	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 590-39423/1-A
Matrix: Solid
Analysis Batch: 39420

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39423

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,3-Dichlorobenzene	ND		0.10	0.013	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
p-Isopropyltoluene	ND		0.10	0.020	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,4-Dichlorobenzene	ND		0.10	0.021	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
n-Butylbenzene	ND		0.10	0.028	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2-Dichlorobenzene	ND		0.10	0.023	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2-Dibromo-3-Chloropropane	ND		0.50	0.060	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2,4-Trichlorobenzene	ND		0.10	0.019	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
1,2,3-Trichlorobenzene	ND		0.10	0.033	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Hexachlorobutadiene	ND		0.10	0.016	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Naphthalene	ND		0.20	0.028	mg/Kg		12/09/22 10:44	12/09/22 13:33	1
Methyl tert-butyl ether	ND		0.050	0.030	mg/Kg		12/09/22 10:44	12/09/22 13:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*	*12/09/22 10:44*	*12/09/22 13:33*	*1*
4-Bromofluorobenzene (Surr)	*95*		*76 - 122*	*12/09/22 10:44*	*12/09/22 13:33*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*	*12/09/22 10:44*	*12/09/22 13:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 129*	*12/09/22 10:44*	*12/09/22 13:33*	*1*

Lab Sample ID: LCS 590-39423/2-A
Matrix: Solid
Analysis Batch: 39420

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39423

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Dichlorodifluoromethane	0.500	0.341		mg/Kg		68	34 - 120
Chloromethane	0.500	0.467	J	mg/Kg		93	42 - 120
Vinyl chloride	0.500	0.492		mg/Kg		98	66 - 129
Bromomethane	0.500	0.550		mg/Kg		110	56 - 138
Chloroethane	0.500	0.508		mg/Kg		102	50 - 150
Trichlorofluoromethane	0.500	0.516		mg/Kg		103	64 - 143
1,1-Dichloroethene	0.500	0.568		mg/Kg		114	63 - 150
Methylene Chloride	0.500	0.609		mg/Kg		122	47 - 150
trans-1,2-Dichloroethene	0.500	0.578		mg/Kg		116	80 - 138
1,1-Dichloroethane	0.500	0.552		mg/Kg		110	80 - 136
2,2-Dichloropropane	0.500	0.535		mg/Kg		107	73 - 150
cis-1,2-Dichloroethene	0.500	0.537		mg/Kg		107	80 - 144
Bromochloromethane	0.500	0.519		mg/Kg		104	75 - 148
Chloroform	0.500	0.550		mg/Kg		110	80 - 150
1,1,1-Trichloroethane	0.500	0.550		mg/Kg		110	80 - 150
Carbon tetrachloride	0.500	0.549		mg/Kg		110	72 - 150
1,1-Dichloropropene	0.500	0.552		mg/Kg		110	78 - 145
Benzene	0.500	0.563		mg/Kg		113	76 - 139
1,2-Dichloroethane	0.500	0.504		mg/Kg		101	73 - 150
Trichloroethene	0.500	0.566		mg/Kg		113	79 - 144
1,2-Dichloropropane	0.500	0.539		mg/Kg		108	75 - 135
Dibromomethane	0.500	0.469		mg/Kg		94	80 - 140
Bromodichloromethane	0.500	0.500		mg/Kg		100	80 - 146
cis-1,3-Dichloropropene	0.500	0.488		mg/Kg		98	80 - 136

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 590-39423/2-A
Matrix: Solid
Analysis Batch: 39420

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39423

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Toluene	0.500	0.533		mg/Kg		107	77 - 131
trans-1,3-Dichloropropene	0.500	0.526		mg/Kg		105	80 - 124
1,1,2-Trichloroethane	0.500	0.537		mg/Kg		107	80 - 132
Tetrachloroethene	0.500	0.536		mg/Kg		107	77 - 149
1,3-Dichloropropane	0.500	0.525		mg/Kg		105	76 - 125
Dibromochloromethane	0.500	0.494		mg/Kg		99	78 - 136
1,2-Dibromoethane (EDB)	0.500	0.500		mg/Kg		100	75 - 129
Chlorobenzene	0.500	0.528		mg/Kg		106	80 - 136
Ethylbenzene	0.500	0.556		mg/Kg		111	77 - 135
1,1,1,2-Tetrachloroethane	0.500	0.531		mg/Kg		106	80 - 128
1,1,2,2-Tetrachloroethane	0.500	0.512		mg/Kg		102	75 - 137
m,p-Xylene	0.500	0.549		mg/Kg		110	78 - 130
o-Xylene	0.500	0.523		mg/Kg		105	77 - 129
Styrene	0.500	0.522		mg/Kg		104	80 - 128
Bromoform	0.500	0.502		mg/Kg		100	72 - 133
Isopropylbenzene	0.500	0.528		mg/Kg		106	78 - 139
Bromobenzene	0.500	0.520		mg/Kg		104	75 - 142
N-Propylbenzene	0.500	0.553		mg/Kg		111	77 - 140
1,2,3-Trichloropropane	0.500	0.509		mg/Kg		102	67 - 144
2-Chlorotoluene	0.500	0.546		mg/Kg		109	77 - 135
1,3,5-Trimethylbenzene	0.500	0.545		mg/Kg		109	76 - 133
4-Chlorotoluene	0.500	0.554		mg/Kg		111	77 - 133
tert-Butylbenzene	0.500	0.522		mg/Kg		104	76 - 130
1,2,4-Trimethylbenzene	0.500	0.541		mg/Kg		108	76 - 139
sec-Butylbenzene	0.500	0.538		mg/Kg		108	76 - 139
1,3-Dichlorobenzene	0.500	0.534		mg/Kg		107	80 - 133
p-Isopropyltoluene	0.500	0.527		mg/Kg		105	80 - 140
1,4-Dichlorobenzene	0.500	0.523		mg/Kg		105	80 - 133
n-Butylbenzene	0.500	0.536		mg/Kg		107	80 - 131
1,2-Dichlorobenzene	0.500	0.515		mg/Kg		103	80 - 135
1,2-Dibromo-3-Chloropropane	0.500	0.443	J	mg/Kg		89	65 - 139
1,2,4-Trichlorobenzene	0.500	0.512		mg/Kg		102	67 - 140
1,2,3-Trichlorobenzene	0.500	0.498		mg/Kg		100	66 - 143
Hexachlorobutadiene	0.500	0.517		mg/Kg		103	59 - 150
Naphthalene	0.500	0.537		mg/Kg		107	67 - 129
Methyl tert-butyl ether	0.500	0.513		mg/Kg		103	80 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*80 - 120*
4-Bromofluorobenzene (Surr)	*101*		*76 - 122*
Dibromofluoromethane (Surr)	*96*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 129*

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC/MS)

Lab Sample ID: MB 590-39423/1-A
Matrix: Solid
Analysis Batch: 39421

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39423

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.0	1.8	mg/Kg		12/09/22 10:44	12/09/22 13:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*41.5 - 162*	*12/09/22 10:44*	*12/09/22 13:33*	*1*

Lab Sample ID: LCS 590-39423/3-A
Matrix: Solid
Analysis Batch: 39421

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39423

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline			50.0	50.9		mg/Kg		102	74.4 - 124		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*41.5 - 162*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-39479/2-A
Matrix: Solid
Analysis Batch: 39492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39479

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.3	0.50	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Barium	ND		1.3	0.34	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Cadmium	ND		1.0	0.059	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Chromium	ND		1.3	0.18	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Lead	ND		3.0	1.5	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Selenium	ND		5.0	3.0	mg/Kg		12/15/22 09:49	12/15/22 16:43	1
Silver	ND		1.3	0.29	mg/Kg		12/15/22 09:49	12/15/22 16:43	1

Lab Sample ID: LCS 590-39479/1-A
Matrix: Solid
Analysis Batch: 39492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39479

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			100	97.1		mg/Kg		97	80 - 120		
Barium			100	97.1		mg/Kg		97	80 - 120		
Cadmium			50.0	49.8		mg/Kg		100	80 - 120		
Chromium			50.0	48.2		mg/Kg		96	80 - 120		
Lead			50.0	51.5		mg/Kg		103	80 - 120		
Selenium			100	99.7		mg/Kg		100	80 - 120		
Silver			5.00	4.89		mg/Kg		98	80 - 120		

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 590-39480/9-A
Matrix: Solid
Analysis Batch: 39493

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39480

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	4.00	J	50	3.6	ug/Kg		12/15/22 09:55	12/15/22 17:25	1

Lab Sample ID: LCS 590-39480/8-A
Matrix: Solid
Analysis Batch: 39493

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39480

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	200	176		ug/Kg		88	80 - 120

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B1 (10-11)
Date Collected: 11/29/22 11:30
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B1 (10-11)
Date Collected: 11/29/22 11:30
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-1
Matrix: Solid
Percent Solids: 68.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.779 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 16:27	JSP	EET SPK
Total/NA	Prep	5035			6.779 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 16:27	JSP	EET SPK

Client Sample ID: GEI040-B2 (5-6)
Date Collected: 11/29/22 14:10
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B2 (5-6)
Date Collected: 11/29/22 14:10
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-2
Matrix: Solid
Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.572 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 16:48	JSP	EET SPK
Total/NA	Prep	5035			6.572 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 16:48	JSP	EET SPK

Client Sample ID: GEI040-B3 (14-15)
Date Collected: 11/29/22 15:10
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B3 (14-15)
Date Collected: 11/29/22 15:10
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-3
Matrix: Solid
Percent Solids: 71.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.68 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 17:10	JSP	EET SPK
Total/NA	Prep	5035			6.68 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 17:10	JSP	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B4 (14-15)
Date Collected: 11/29/22 15:50
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B4 (14-15)
Date Collected: 11/29/22 15:50
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-4
Matrix: Solid
Percent Solids: 88.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.829 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 17:31	JSP	EET SPK
Total/NA	Prep	5035			6.829 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 17:31	JSP	EET SPK

Client Sample ID: GEI040-B5 (10-11)
Date Collected: 11/30/22 08:55
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B5 (10-11)
Date Collected: 11/30/22 08:55
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-5
Matrix: Solid
Percent Solids: 81.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			7.389 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 17:53	JSP	EET SPK
Total/NA	Prep	5035			7.389 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 17:53	JSP	EET SPK

Client Sample ID: GEI040-B6 (10-11)
Date Collected: 11/30/22 09:40
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B6 (10-11)
Date Collected: 11/30/22 09:40
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-6
Matrix: Solid
Percent Solids: 79.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.707 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 18:14	JSP	EET SPK
Total/NA	Prep	5035			6.707 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 18:14	JSP	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: GEI040-B7 (10-11)
Date Collected: 11/30/22 10:25
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B7 (10-11)
Date Collected: 11/30/22 10:25
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-7
Matrix: Solid
Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			4.195 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 18:36	JSP	EET SPK
Total/NA	Prep	5035			4.195 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 18:36	JSP	EET SPK

Client Sample ID: GEI040-B8 (10-11)
Date Collected: 11/30/22 10:55
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B8 (10-11)
Date Collected: 11/30/22 10:55
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-8
Matrix: Solid
Percent Solids: 81.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			8.674 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 18:57	JSP	EET SPK
Total/NA	Prep	5035			8.674 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 18:57	JSP	EET SPK

Client Sample ID: GEI040-B-DUP
Date Collected: 11/30/22 08:00
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-B-DUP
Date Collected: 11/30/22 08:00
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-9
Matrix: Solid
Percent Solids: 81.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			6.028 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 19:40	JSP	EET SPK
Total/NA	Prep	5035			6.028 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 19:40	JSP	EET SPK

Lab Chronicle

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Client Sample ID: Trip Blank
Lab Sample ID: 590-19376-10
Date Collected: 11/29/22 10:00
Matrix: Solid
Date Received: 12/02/22 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			10 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	8260D		1	0.86 mL	43 mL	39420	12/09/22 20:02	JSP	EET SPK
Total/NA	Prep	5035			10 g	10 mL	39423	12/09/22 10:44	JSP	EET SPK
Total/NA	Analysis	NWTPH-Gx		1	0.86 mL	43 mL	39421	12/09/22 20:02	JSP	EET SPK

Client Sample ID: GEI040-WC
Lab Sample ID: 590-19376-11
Date Collected: 11/30/22 12:00
Matrix: Solid
Date Received: 12/02/22 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			39342	12/06/22 09:00	M1V	EET SPK

Client Sample ID: GEI040-WC
Lab Sample ID: 590-19376-11
Date Collected: 11/30/22 12:00
Matrix: Solid
Date Received: 12/02/22 13:30
Percent Solids: 84.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.27 g	50 mL	39479	12/15/22 09:49	AMB	EET SPK
Total/NA	Analysis	6010D		10			39492	12/15/22 17:10	AMB	EET SPK
Total/NA	Prep	7471B			0.63 g	50 mL	39480	12/15/22 09:56	AMB	EET SPK
Total/NA	Analysis	7471B		1			39493	12/15/22 18:11	AMB	EET SPK

Laboratory References:

EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Job ID: 590-19376-1
Project/Site: Yakima Dry Cleaner

Laboratory: Eurofins Spokane

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-06-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET SPK
NWTPH-Gx	Northwest - Volatile Petroleum Products (GC/MS)	NWTPH	EET SPK
6010D	Metals (ICP)	SW846	EET SPK
7471B	Mercury (CVAA)	SW846	EET SPK
Moisture	Percent Moisture	EPA	EET SPK
3050B	Preparation, Metals	SW846	EET SPK
5035	Closed System Purge and Trap	SW846	EET SPK
7471B	Preparation, Mercury	SW846	EET SPK

Protocol References:

EPA = US Environmental Protection Agency

NWTPH = Northwest Total Petroleum Hydrocarbon

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Justin Orr	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8041-2345.1
Client Contact: ~~Scott Lathen~~ Justin Orr	Phone: (406) 890-1310	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin:	Page: Page 1 of ~~5~~ 1
Company: GeoEngineers Inc	PWSID:	Analysis Requested		Job #:
Address: 523 East Second Ave	Due Date Requested: STD			Preservation Codes: A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify); Other:
City: Spokane	TAT Requested (days): STD			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone: ~~509-251-5239(Tel)~~ 509 870 0779	PO #: Purchase Order not required			
Email: jorr@geoengineers.com ~~slathen@geoengineers.com~~	WO #:			
Project Name: Yakima Dry Cleaner	Project #: 59002489			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260D, NWTPH_Gx_MS *	8260D, NWTPH_Gx_MS	8260D Standard Analyte List	8260D Standard Analyte List	RCRA 8 metals	Total Number of containers	Special Instructions/Note:
Preservation Code:							F	A	F	A			
GE1040-B1 (10-11)	11/29/22	1130	G	Solid			X		X			3	* 1AL Stoddard Solvent
GE1040-B2 (5-6)	11/29/22	1410		Solid									
GE1040-B3 (14-15)	11/29/22	1510		Solid									
GE1040-B4 (11-12)	11/29/22	1550		Solid									
GE1040-B5 (10-11)	11/30/22	0855		Solid									
GE1040-B6 (10-11)	11/30/22	0940		Solid									
GE1040-B7 (10-11)	11/30/22	1025		Solid									
GE1040-B8 (10-11)	11/30/22	1055		Solid									
GE1040-B-DUP	11/30/22	0800		Solid									
Trip Blank	11/29/22	1000		Solid									
GE1040_WC	11/30/22	1200		Solid							X		

590-19376 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II III IV Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		12/2/22 1145	GE		12/2/22 1145	GET
2		12/2/22 1330	GET		12/2/22 1330	ECONO
3						

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.

Cooler Temperature(s) °C and Other Remarks: 2.8 2.9 IR005

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-19376-1

Login Number: 19376
List Number: 1
Creator: Fettig, Riley

List Source: Eurofins Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Justin Orr
GeoEngineers Inc
523 East Second Ave
Spokane, Washington 99202

Generated 2/20/2023 3:05:39 PM

JOB DESCRIPTION

Yakima Dry Cleaner

JOB NUMBER

590-19376-2

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

See page two for job notes and contact information.

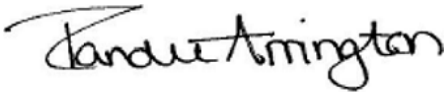
Job Notes

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender and destroy this report immediately. This report shall not be reproduced except in full, without prior express written approval by the laboratory.

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



Generated
2/20/2023 3:05:39 PM

Authorized for release by
Randee Arrington, Business Unit Manager
Randee.Arrington@et.eurofinsus.com
(509)924-9200

Table of Contents

Case Narrative

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Job ID: 590-19376-2

Laboratory: Eurofins Spokane

Narrative

Receipt
The samples were received on 12/2/2022 1:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9º C.

Receipt Exceptions
The following sample was activated for TCLP Lead analysis by the client on 02/03/23: GEI040-WC (590-19376-11). This analysis was not originally requested on the chain-of-custody (COC).

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-19376-11	GEI040-WC	Solid	11/30/22 12:00	12/02/22 13:30

Definitions/Glossary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Client Sample ID: GEI040-WC
Date Collected: 11/30/22 12:00
Date Received: 12/02/22 13:30

Lab Sample ID: 590-19376-11
Matrix: Solid

Method: SW846 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.060	0.0051	mg/L		02/17/23 13:10	02/20/23 08:43	1

Method: 6010D - Metals (ICP)

Lab Sample ID: LCS 590-40310/1-A
Matrix: Solid
Analysis Batch: 40323

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 40310

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			1.00	0.924		mg/L		92	80 - 120		

Lab Sample ID: LB 590-40296/1-B
Matrix: Solid
Analysis Batch: 40323

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 40310

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.060	0.0051	mg/L		02/17/23 13:10	02/20/23 08:39	1

Lab Chronicle

Client: GeoEngineers Inc
Job ID: 590-19376-2
Project/Site: Yakima Dry Cleaner

Client Sample ID: GEI040-WC
Lab Sample ID: 590-19376-11
Date Collected: 11/30/22 12:00
Matrix: Solid
Date Received: 12/02/22 13:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			100.14 g	2000.22 mL	40296	02/16/23 19:21	AMB	EET SPK
TCLP	Prep	3010A			50 mL	50 mL	40310	02/17/23 13:10	AMB	EET SPK
TCLP	Analysis	6010D		1			40323	02/20/23 08:43	AMB	EET SPK

Laboratory References:

EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Laboratory: Eurofins Spokane

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-07-24

Method Summary

Client: GeoEngineers Inc
Project/Site: Yakima Dry Cleaner

Job ID: 590-19376-2

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	EET SPK
1311	TCLP Extraction	SW846	EET SPK
3010A	Preparation, Total Metals	SW846	EET SPK

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Justin Orr	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-8041-2345.1
Client Contact: ~~Scott Lathen~~ Justin Orr	Phone: (406) 890-1310	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin:	Page: Page 1 of ~~5~~ 1
Company: GeoEngineers Inc	PWSID:			Job #:
Address: 523 East Second Ave	Due Date Requested: STD			
City: Spokane	TAT Requested (days): STD			
State, Zip: WA, 99202	Compliance Project: Δ Yes Δ No			
Phone: ~~509-251-5239(Tel)~~ 509 870 0779	PO #: Purchase Order not required			
Email: jorr@geoengineers.com ~~slathen@geoengineers.com~~	WO #:			
Project Name: Yakima Dry Cleaner	Project #: 59002489			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A HCL, B NaOH, C Zn Acetate, D Nitric Acid, E NaHSO4, F MeOH, G Amchlor, H Ascorbic Acid, I Ice, J DI Water, K EDTA, L EDA, M Hexane, N None, O AsNaO2, P Na2O4S, Q Na2SO3, R Na2S2O3, S H2SO4, T TSP Dodecahydrate, U Acetone, V MCAA, W pH 4-5, Y Trizma, Z other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260D, NWTPH_Gx_MS *	8260D, NWTPH_Gx_MS	8260D Standard Analyte List	8260D Standard Analyte List	RCRA 8 metals	Total Number of containers	Special Instructions/Note:
			Preservation Code:				F	A	F	A			
GE1040-B1 (10-11)	11/29/22	1130	G	Solid			X		X			3	* 1AC Stoddard Solvent
GE1040-B2 (5-6)	11/29/22	1410		Solid									
GE1040-B3 (14-15)	11/29/22	1510		Solid									
GE1040-B4 (11-12)	11/29/22	1550		Solid									
GE1040-B5 (10-11)	11/30/22	0855		Solid									
GE1040-B6 (10-11)	11/30/22	0940		Solid									
GE1040-B7 (10-11)	11/30/22	1025		Solid									
GE1040-B8 (10-11)	11/30/22	1055		Solid									
GE1040-B-DUP	11/30/22	0800		Solid									
Trip Blank	11/29/22	1000		Solid									
GE1040_WC	11/30/22	1200		Solid							X		

590-19376 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II III IV Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		12/2/22 1145	GE		12/2/22 1145	GET
2		12/2/22 1330	GET		12/2/22 1330	EUROFINS
3						

Custody Seals Intact. Δ Yes Δ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks: 2.8 2.9 IR005

Login Sample Receipt Checklist

Client: GeoEngineers Inc

Job Number: 590-19376-2

Login Number: 19376
List Number: 1
Creator: Fettig, Riley

List Source: Eurofins Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

GeoEngineers

523 East Second Avenue, Spokane, Washington 99202, Telephone: 509.363.3125, Fax: 509.363.3126 www.geoengineers.com

Data Validation Report

Project: Yakima Dry Cleaner – Environmental Services
November 2022 Soil and December 2022 Soil Vapor Samples

GEI File No: 00504-183-00

Date: March 7, 2023

This report documents the results of a United States Environmental Protection Agency (USEPA)-defined Stage 2A data validation (USEPA Document 540-R-08-005; USEPA, 2009) of analytical data from the analyses of soil and soil vapor samples collected as part of the November and December 2022 sampling events, and the associated laboratory and field quality control (QC) samples. The samples were obtained from the Yakima Dry Cleaner site located at 2904 West Nob Hill Boulevard in Yakima, Washington.

Objective and Quality Control Elements

GeoEngineers, Inc. (GeoEngineers) completed the data validation consistent with the USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review (USEPA, 2020a) and Inorganic Superfund Methods Data Review (USEPA, 2020b) (National Functional Guidelines) to determine if the laboratory analytical results meet the project objectives and are usable for their intended purpose. Data usability was assessed by determining if:

- The samples were analyzed using well-defined and acceptable methods that provide reporting limits below applicable regulatory criteria;
- The precision and accuracy of the data are well-defined and sufficient to provide defensible data; and
- The quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards.

In accordance with the Quality Assurance Project Plan (QAPP), Appendix B of the Work Plan (GeoEngineers, 2022), the data validation included review of the following QC elements:

- Data Package Completeness
- Chain-of-Custody Documentation
- Holding Times and Sample Preservation
- Surrogate Recoveries
- Method and Trip Blanks
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory Control Samples/Laboratory Control Sample Duplicates
- Field Duplicates

Validated Sample Delivery Groups

This data validation included review of the sample delivery groups (SDGs) listed below in Table 1.

TABLE 1: SUMMARY OF VALIDATED SAMPLE DELIVERY GROUPS

Laboratory SDG	Samples Validated
590-19376-1	GEI040-B1 (10-11), GEI040-B2 (5-6), GEI040-B3 (14-15), GEI040-B4 (14-15), GEI040-B5 (10-11), GEI040-B-DUP, GEI040-B6 (10-11), GEI040-B7 (10-11), GEI040-B8 (10-11), GEI040-WC, Trip Blank
590-19376-2	GEI040-WC
2212705	GEI040-SSV1-122822, GEI040-SSV2-122822, GEI040-SVP1-122822

Chemical Analysis Performed

Eurofins Spokane, Environment Testing Northwest, LLC (Eurofins), located in Spokane, Washington, performed laboratory analyses on the samples using one or more of the following methods:

- Gasoline-Range Hydrocarbons (NWTPH-Gx) by Method NWTPH-Gx;
- Volatile Organic Compounds (VOCs) by Method EPA8260D;
- Total Metals by Methods EPA6010D and EPA7471B: and
- Toxicity Characteristic Leaching Procedure (TCLP) for Lead by Method SW6010D

Eurofins Air Toxics, Inc. (Air Toxics), located in Folsom, California, performed laboratory analyses on the samples using the following method:

- Volatile Organic Compounds in Soil Vapor (VOCs) by Method TO-15

Data Validation Summary

The results for each of the QC elements are summarized below.

Data Package Completeness

Eurofins and Air Toxics provided the required deliverables for the data validation according to the National Functional Guidelines. The laboratories followed adequate corrective action processes and the identified anomalies were discussed in the relevant laboratory case narrative.

Chain-of-Custody Documentation

Chain-of-custody (COC) forms were provided with the laboratory analytical reports. The COCs were accurate and complete when submitted to the laboratory.

Holding Times and Sample Preservation

The sample holding time is defined as the time that elapses between sample collection and sample analysis. Maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentration present at the time of sample collection. Established holding times were met for each analysis. The sample cooler arrived at the laboratory within the appropriate temperatures of between two and six degrees Celsius.

Surrogate Recoveries

A surrogate compound is a compound that is chemically similar to the organic analytes of interest, but unlikely to be found in an environmental sample. Surrogates are used for organic analyses and are added to the samples, standards, and blanks to serve as an accuracy and specificity check of each analysis. The surrogates are added to the samples at a known concentration and percent recoveries are calculated following analysis. The surrogate percent recoveries for field samples were within the laboratory control limits.

Method and Trip Blanks

Method Blanks

Method blanks are analyzed to ensure that laboratory procedures and reagents do not introduce measurable concentrations of the analytes of interest. A method blank was analyzed with each batch of samples, at a frequency of 1 per 20 samples. For each sample batch, method blanks for the applicable methods were analyzed at the required frequency. None of the analytes of interest were detected in the method blanks, with the following exceptions:

SDG 590-19376-1: (Total Metals) There was a positive result for total mercury detected above the method detection limit, but below the reporting limit in the method blank digested on 12/15/2022. The positive result for this target analyte was greater than 10X the concentration in the method blank in the associated field sample; therefore, no qualification was required.

SDG 2212705: (VOCs) There was a positive result for 1,2-Dichlorobenzene, 4-Methyl-2-pentanone, and carbon disulfide detected above the method detection limit, but below the reporting limit in the method blank extracted on 1/9/2023. There were no positive results or the positive results for these target analytes were greater than 2X the concentration in the method blank in the associated field samples; therefore, no qualifications were required.

There was a positive result for 2,2,4-Trimethylpentane detected above the method detection limit, but below the reporting limit in the method blank extracted on 1/10/2023. There were no positive results for this target analyte in the associated field sample; therefore, no qualification was required.

Trip Blanks

Trip blanks are analyzed to provide an indication as to whether volatile compounds have cross-contaminated other like samples within the transportation process to the laboratory. None of the analytes of interest were detected in the trip blank.

Matrix Spikes/Matrix Spike Duplicates

Since the actual analyte concentration in an environmental sample is not known, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis on one sample from the associated batch, known as the parent sample. One aliquot of the sample is analyzed in the normal manner and then a second aliquot of the sample is spiked with a known amount of analyte concentration and analyzed. From these analyses, a percent recovery is calculated. Matrix spike duplicate (MSD) analyses are generally performed for organic analyses as a precision check and analyzed in the same sequence as a matrix spike. Using the result values from the MS and MSD, the relative percent difference (RPD) is calculated.

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) sample set was performed in lieu of a MS/MSD analysis.

Laboratory Control Samples/Laboratory Control Sample Duplicates

A laboratory control sample (LCS) is a blank sample that is spiked with a known amount of analyte and then analyzed. An LCS is similar to an MS, but without the possibility of matrix interference. Given that matrix interference is not an issue, the LCS/LCSD control limits for accuracy and precision are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS/LCSD analyses would apply to each sample in the associated batch, instead of just the parent sample. The percent recovery control limits for LCS and LCSD analyses are specified in the laboratory documents, as are the RPD control limits for LCS/LCSD sample sets.

One LCS/LCSD analysis should be performed for every analytical batch or every 20 field samples, whichever is more frequent. The frequency requirements were met for each analysis and the percent recovery and RPD values were within the proper control limits, with the following exceptions:

SDG 2212705: (VOCs) The percent recovery for 1,2,4-Trimethylbenzene was greater than the control limits in the LCS extracted on 1/9/2023; however, the percent recovery for this target analyte was within the control limits in the corresponding LCSD. No action was required for this outlier.

The percent recovery for bromomethane was greater than the control limits in the LCS/LCSD extracted on 1/10/2023. There were no positive results for this target analyte in the associated field sample; therefore, no qualification was required.

Field Duplicates

In order to assess precision, field duplicate samples are collected and analyzed along with the reviewed sample batches. The duplicate samples are analyzed for the same parameters as the associated parent samples. Precision is determined by calculating the RPD between each pair of samples. If one or more of the sample analytes has a concentration less than five times the reporting limit for that sample, then the absolute difference is used instead of the RPD. The RPD control limit for soil and soil vapor is 35 percent.

SDG 590-19376-1: One field duplicate sample pair, GEI040-B5 (10-11) and GEI040-B-DUP, was submitted with this SDG. The precision criteria for the target analytes were met for this sample pair.

Overall Assessment

As was determined by this data validation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the surrogate and LCS/LCSD percent recovery values, with the exceptions noted above. Precision was acceptable, as demonstrated by the LCS/LCSD and field duplicate RPD values.

No analytical results were qualified. The data are acceptable for the intended use.

References

U.S. Environmental Protection Agency (USEPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA-540-R-08-005. January 2009.

U.S. Environmental Protection Agency (USEPA) 2020a. Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005. November 2020.

U.S. Environmental Protection Agency (USEPA) 2020b. Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA-542-R-20-006. November 2020.

GeoEngineers, Inc. (GeoEngineers). “Work Plan, Yakima Dry Cleaner Site Assessment,” prepared for Washington State Department of Ecology. October 26, 2022.

APPENDIX D
Report Limitations and Guidelines for Use

APPENDIX D
REPORT LIMITATIONS AND GUIDELINES FOR USE[2]

This Appendix provides information to help you manage your risks with respect to the use of this report.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of the Washington State Department of Ecology (Ecology). This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Ecology should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the Yakima Dry Cleaner site located at 2904 West Nob Hill Boulevard in Yakima, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

Our report was prepared for the exclusive use of Ecology. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm and Ecology with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with Ecology and generally accepted environmental practices in this area at the time this report was prepared.

[2] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Environmental Regulations are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain Even After This Phase II ESA is Completed

No Environmental Site Assessment (ESA) can wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

Subsurface Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

Most Environmental Findings are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted, or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Do Not Redraw the Exploration Logs

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproductions are acceptable but recognize that separating logs from the report can elevate risk.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Geotechnical, Geologic and Geoenvironmental Reports Should Not be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Ecology desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

GeoEngineers