GeoEngineers
333 High Street NE, Suite 102
Salem, Oregon 97301
971.304.3078

March 24, 2021

Khoury Development, LLC
3400 Portland Road NE
Salem, Oregon 97301

Attention: Michael Elias

Subject: Letter Report
Sub-slab Soil Vapor Evaluation
Former Mall 99 Cleaners
972 North Pacific Highway
Woodburn, Oregon
File No. 24986-001-00

INTRODUCTION AND PURPOSE

This report presents the results of the March 5, 2021, Phase II - Sub-slab Soil Vapor Evaluation for 972 North Pacific Highway in Woodburn, Oregon (herein referred to as 'Site'). GeoEngineers reviewed a Phase I Environmental Site Assessment (ESA) prepared by AEI Consultants (AEI) for the property at 954-1032 North Pacific Highway in Woodburn Oregon. The Phase I ESA identified one recognized environmental condition (REC) indicating that a former tenant (Mall 99 Dry Cleaner) occupied unit 976 North Pacific Highway. However, addresses have changed over the years and the current unit identified as 972 is the historical location of the Mall 99 Dry Cleaner. Previous records indicated the tenant was limited to a coin operated laundry; however, the California HAZNET database reported one record during the timeframe of operation related to the transport of solvents, including tetrachloroethylene (PCE), which is a common dry-cleaning solvent. The Phase I ESA recommended a Phase II ESA subsurface investigation to evaluate the potential presence of dry-cleaning solvents in the subsurface.

SOIL VAPOR EVALUATION

Overview and Scope

Based on discussions with client representatives on February 11, 2021, GeoEngineers modified the following scope of services to focus the Phase II ESA on sub-slab soil vapor sampling in the location of the former Mall 99 Dry Cleaner tenant space.

- Prepared a Health and Safety Plan for use by GeoEngineers' personnel during the field activities.

- Coordinated the location of three soil vapor samples within the unit identified as 972 (Figure 1, attached). Sample locations were adjusted in the field based on obstructions, utilities, and to minimize disruption to the facility. Applied Professional Services (APS) performed a private utility locate to clear the sub-slab soil vapor sample locations.
- Installed three temporary sample points for collecting sub-slab soil vapor samples. Pre-sampling quality control procedures (shut-in test, leak testing, and purging) and soil vapor sampling did not take place for at least 30 minutes following installation of the sample location. Sample train leak testing was performed using helium in a shroud. Helium concentrations in the sample trains were not greater than or equal to 5 percent of the helium concentration in the shroud, and therefore, the samples were collected after the helium leak test was performed.
- Sub-slab soil vapor samples were collected using evacuated 1-liter Summa® canisters and a regulator set to less than or equal to approximately 200 milliliters per minute.
- Submitted three vapor samples to Pace Analytical National Laboratory for chemical analysis of select volatile organic compounds (VOCs) (tetrachloroethene [PCE], trichloroethene [TCE], 1,1-dichloroethene [1,1-DCE], cis 1,2 dichloroethene [cis 1,2 DCE], trans 1,2 dichloroethene [trans-1,2-DCE], chloroform and vinyl chloride) by U.S. Environmental Protection Agency (EPA) Method TO-15 and helium by ASTM International (ASTM) Standard Practices Test Method D 1946. Chemical testing was completed on standard (10 business days) turn-around time at the subcontracted chemical laboratory.
- Prepared this letter report, including sample results tables, laboratory data and site figures documenting results of the work performed at the site. The data was tabulated and compared against the Oregon Department of Environmental Quality (DEQ) Risk-Based Concentrations (RBCs) in Table 1.

Cleanup and Screening Levels

The sub-slab soil vapor sampling results were compared to values published in DEQ's RBCs for Individual Chemicals Table (DEQ 2018) for Occupational Receptor Scenario. The RBCs are included in Table 1.

Field Investigation

Samples

GeoEngineers collected three sub-slab soil-vapor samples (SV-01 through SV-03) on March 5, 2021. The sub-slab sample locations were selected based on the location within the former Mall 99 Cleaners in the 972 North Pacific Highway unit. Sample locations were adjusted where necessary due to physical constraints such as interior walls and partitions and where utility conflicts occurred. Sample SV-01 was collected within the southernmost office, near the entrance on the southern side of the building, SV-02 was collected near the center of the western office cubicles, and SV-03 was collected in the electrical/storage room located near the northeast corner of the unit. Approximate sample locations are shown in Figure 1.

Sampling Procedures

Vapor pins® were installed into the concrete building slab using the procedures outline in Appendix A. The sub-slab samples were collected using 1-liter Summa canisters at least one hour after installation of the Vapor Pins. Samples were tested for leaks using a shut-in test and then shrouded with helium during sample collection as a secondary leak test in the field and laboratory. The flow rates during sampling were laboratory calibrated to less than 200 milliliters per minute. Field procedures and leak testing are further described in Appendix A.

Prior to sample collection, the initial canister pressure and the start date and time were recorded, and the inlet valve on the canister was opened to collect the sample. The canisters were filled until a vacuum equivalent of approximately 5 inches of mercury remained in each canister. Then the inlet valve was closed and the canister pressure and stop date and stop time were recorded.

Sub-slab soil vapor samples SV-01 through SV-03 were submitted to Pace National Analytical in Mt. Juliet, Tennessee for chemical analyses of select VOCs (PCE, TCE, 1,1-DCE, cis 1,2 DCE, trans-1,2-DCE, chloroform and vinyl chloride) by EPA Method TO-15 and helium by ASTM D 1946. The laboratory report is presented in Appendix B.

CHEMICAL ANALYTICAL RESULTS

The sub-slab soil vapor chemical analytical results are summarized below and in Table 1. Laboratory analytical results are included in Appendix B.

- PCE was detected in all three soil vapor samples (SV-01 through SV-03) at concentrations ranging from 48.7 micrograms per cubic meter (µg/m^3) in SV-03 to 7,670 µg/m^3 in SV-01. The detected concentrations were less than the DEQ RBC for the Occupational Exposure Scenario (47,000 µg/m^3).
- TCE was detected in one sample (SV-01) at a concentration of 5.68 µg/m^3. The detected concentration was less than the DEQ RBC for the Occupational Exposure Scenario (2,900 µg/m^3). TCE was not detected in samples SV-02 or SV-03.
- 1,1-DCE, cis-1,2 DCE, trans-1,2 DCE, chloroform and vinyl chloride were not detected in the samples analyzed.
- Helium was detected in samples SV-01 through SV-03 at concentrations ranging from 0.109 to 0.563 percent. Detected helium at concentrations less than 5 percent helium are considered acceptable.

CONCLUSIONS AND RECOMMENDATIONS

GeoEngineers completed the Phase II - Sub-slab Soil Vapor Evaluation for the Former Mall 99 Cleaners site according to the Revised Proposal dated February 12, 2021. Based on the results of the soil vapor sampling, PCE and to a lesser extent TCE, appear to be present beneath the concrete building slab at the location of the former dry cleaner. The highest concentrations were detected near the south side of the building at sample location SV-01. However, all detected PCE and TCE concentrations were less than the DEQ RBCs for the Occupational Exposure Scenario, which is applicable under current and likely future use scenarios.

LIMITATIONS

We have prepared this report for the exclusive use of the Khoury Development, LLC, their authorized agents and regulatory agencies.

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. No warranty or other conditions, express or implied, should be understood.

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

REFERENCES

AEI Consultants. 2020. Phase I Environmental Site Assessment, 954-1032 North Pacific Highway, Woodburn, Marion County, Oregon, dated December 16, 2020.

Oregon Department of Environmental Quality (DEQ). 2010. Environmental Cleanup Program, Guidance for Assessing and Remediating Vapor Intrusion in Buildings, Revised May 29, 2020.

Oregon Department of Environmental Quality (DEQ). 2018. Risk Based Decision Making for the Remediation of Petroleum-Contaminated Sites, revised May.

If you have any questions about this sub-slab soil vapor evaluation, please let us know. Thank you.

Sincerely,
GeoEngineers, Inc.

Cris J. Watkins
Senior Environmental Scientist

Bruce Williams
Senior Environmental Principal

CJW:DC:cje

Attachments:
Table 1. Soil Vapor Chemical Analytical Results
Figure 1. Soil Vapor Sample Locations
Appendix A. Field Procedures and Vapor Pin™ Standard Operating Procedures
Appendix B. Pace Analytical National Lab Report
Appendix C. Report Limitations and Guidelines for Use

Table 1

Soil Vapor Chemical Analytical Results[1]
Volatile Organic Compounds
Former Mall 99 Cleaners
Woodburn, Oregon

Sample Identification	Date	PID Screening Result (ppm)	ASTM 1946 (%)	VOCs[2] (µg/m^3)						
			Helium	Chloroform	1,1-Dichloroethene	cis 1,2 Dichloroethene	trans 1,2 Dichloroethene	Tetrachloroethene	Trichloroethene	Vinyl Chloride
SV-01	3/5/2021	11.3	0.563	< 0.973	< 0.793	< 0.793	< 0.793	**7,670**	**5.68**	< 0.511
SV-02	3/5/2021	4.4	0.109	< 0.973	< 0.793	< 0.793	< 0.793	**3,590**	< 1.07	< 0.511
SV-03	3/5/2021	0.0	0.334	< 0.973	< 0.793	< 0.793	< 0.793	**48.7**	< 1.07	< 0.511
Potentially Applicable DEQ Risk-Based Concentrations[3]										
Vapor Intrusion into Buildings										
Occupational			NE	530	880,000	NE	NE	47,000	2,900	2,800

Notes:

[1] Chemical analyses were performed by Pace National Analytical, Mt. Juliet, Tennessee.

[2] Select Volatile Organic Compounds analyzed by U.S. Environmental Protection Agency (EPA) Method TO-15

[3] Oregon Department of Environmental Quality (DEQ) Risk Based Decision Making for the Remediation of Petroleum-Contaminated Sites, revised May 2018.

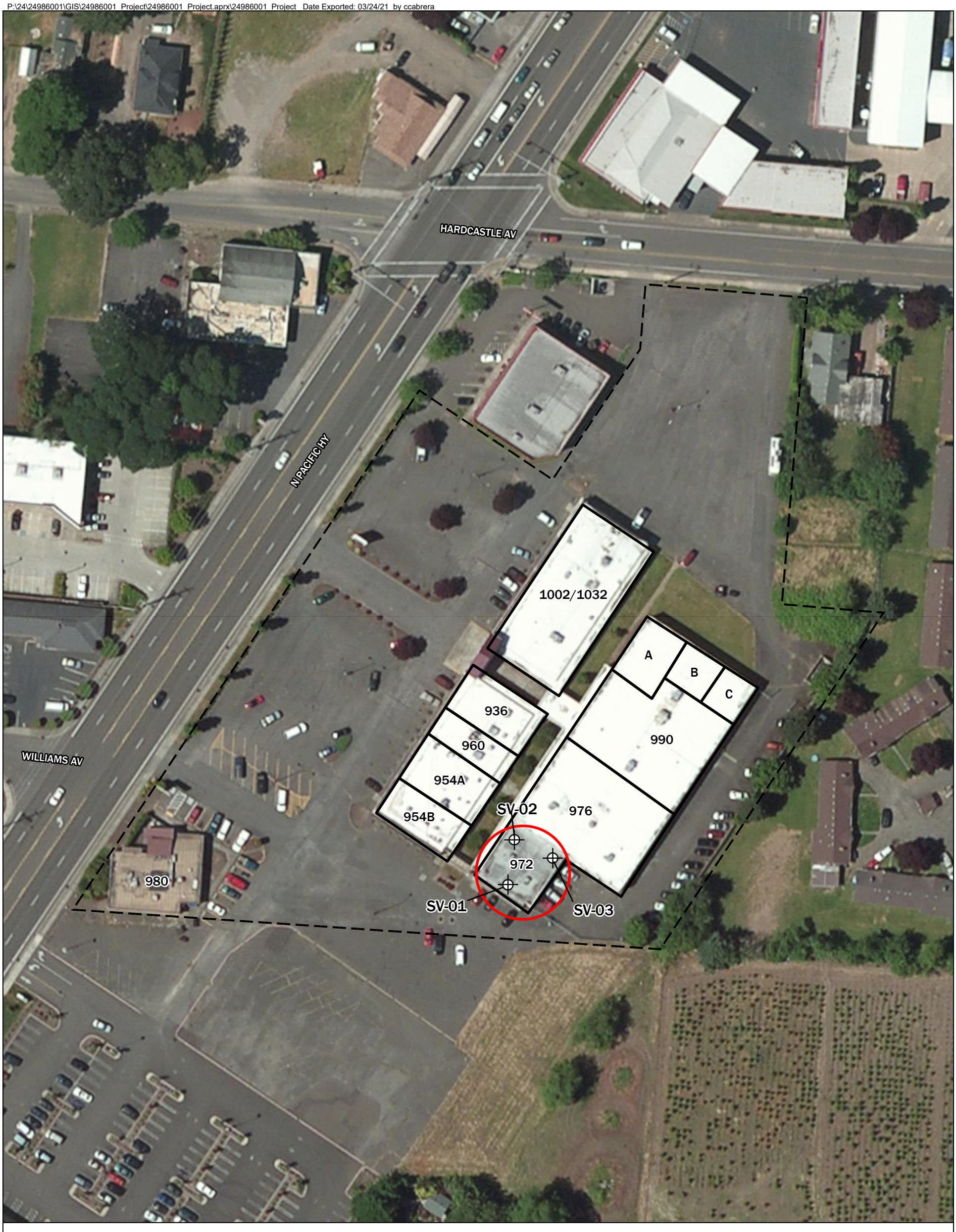
ASTM = ASTM International Standard Practices; µg/m^3 = micrograms per cubic meter; -- = Not Analyzed

VOCs = volatile organic compounds; NE = Not Established; ppm = parts per million; % = percent

<0.200 indicates analyte not detected above the method reporting limit.

Bold indicates the analyte was detected above laboratory Reported Detection Limit (RDL).

P:\24\24986001\GIS\24986001_Project\24986001_Project.aprx\24986001_Project Date Exported: 03/24/21 by ccabrera



Legend

- Soil Vapor Sample Location
- Approximate Project Area
- Approximate Property Boundary

N
W E
S

80 0 80

Feet

Soil Vapor Sample Locations

Former Mall 99 Cleaners
976 North Pacific Highway
Woodburn, Oregon 97301

GeoEngineers

Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI Clarity. Streets from Marion County GIS.

Projection: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl

APPENDIX A
Field Procedures and Vapor Pin™ Standard Operating Procedures

APPENDIX A
FIELD PROCEDURES AND VAPOR PIN™ STANDARD OPERATING PROCEDURES

Sub-Slab Soil Vapor Probe Installation

Sub-slab soil vapor samples will be collected inside the building using Vapor Pin™ sampling devices. The Vapor Pins™ are installed following the manufacturers' standard operating procedures (SOPs) attached to this appendix. The Vapor Pins™ were used as temporary sampling locations and were removed at the completion of sample collection.

General installation procedures for the sub-slab sampling device were as follows:

- Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding. A subcontractor will perform a private utility locate to clear the sub-slab soil vapor sample locations.
- Set up vacuum to collect drill cuttings.
- Drill a 5/8-inch-diameter hole through the slab and approximately 1 inch into the underlying soil to form a void.
- Remove the drill bit, brushed the hole with the bottle brush, and removed the loose cuttings with the vacuum.
- Place the lower end of sampling device assembly into the drilled hole. Place the small hole located in the handle of the extraction/installation tool over the sampling device to protect the barb fitting and cap and tapped the sampling device into place using a dead blow hammer. Make sure the extraction/installation tool is aligned parallel to the sampling device to avoid damaging the barb fitting.
- During installation, the silicone sleeve forms a slight bulge between the slab and the sample device shoulder creating a seal. Place a protective cap on sampling device to prevent vapor loss prior to sampling.
- Allow at least 60 minutes for the sub-slab soil vapor conditions to equilibrate prior to sampling.

Sub-Slab Soil Vapor Sampling Procedure

The following procedure is followed to collect sub-slab soil vapor samples:

- Connect new fluoropolymer (Teflon®) tubing to the sub-slab soil vapor probe, using the barb fitting on the top of the sampling device.
- Connect the tubing (aboveground) to a sampling manifold.
- Vacuum test the sampling manifold (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 are checked and adjusted, then vacuum-tested again. This test is repeated until the sampling train has demonstrated that tightness is achieved.
- A tracer gas shroud (clear plastic bag) is placed around the entire sample train (that is, the sub-slab soil vapor probe where it enters the ground surface, the 1-liter Summa canister and associated tubing and manifold).
    - The shroud is charged (filled) with a tracer gas (spec-grade 99.995 percent helium gas) and the tracer gas concentration within the shroud is measured using a hand-held monitor (Ion

Science – GasCheck G2 Helium Detector) prior to, during and after completion of the sampling event. To charge the shroud a Teflon tube with a ball valve is inserted under the shroud to connect with the compressed helium bottle. This same tube is used to monitor the helium concentration within the shroud periodically throughout the sampling process. The purpose of the periodic monitoring is to make sure helium is in contact with the sample train and the ground surface while the sub-slab vapor sample is collected.

- The sampling train (aboveground and belowground components) is purged using a graduated syringe. Purge volumes are calculated based on the graduations on the syringe and the volume of the soil vapor probe and sample train. After purging three sampling train volumes, the helium concentration within the sampling train is measured and recorded. If the helium concentration in the sample train is greater than or equal to 5 percent of the helium concentration in the shroud, the bentonite seal is re-applied, fittings re-tightened, and the previous purging and measurement tests are repeated (Cal-EPA/DTSC 2015).
- The soil vapor sample is obtained using a 1-liter evacuated Summa canister (with approximately 30 inches of mercury vacuum set by the laboratory) with a regulated flow rate of less than or equal to approximately 200 milliliters per minute (Cal-EPA/DTSC 2015). The canister is filled with soil vapor for approximately 5 minutes or until a vacuum equivalent of approximately 5 inches of mercury remains in the Summa canister, whichever comes first. The initial and final canister vacuums are recorded in the field notebook/report.
- The canisters are provided by the subcontracted analytical laboratory.

Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated March 16, 2018

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.

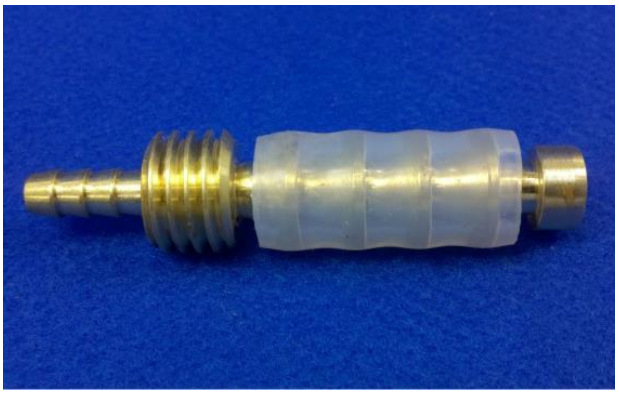


Figure 1. Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

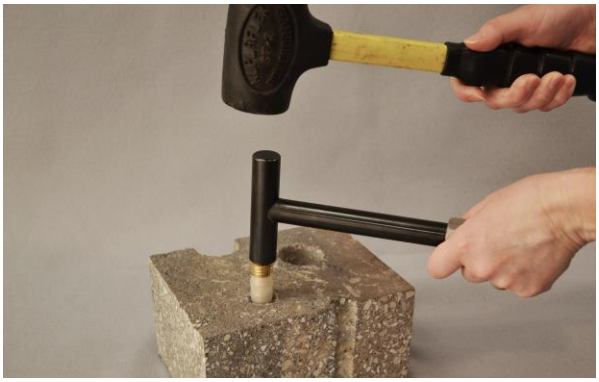


Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).

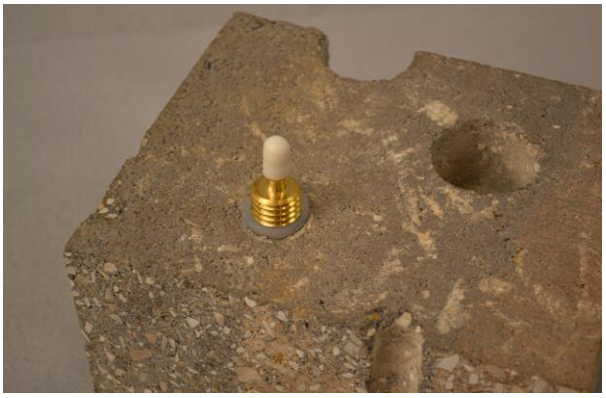


Figure 3. Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

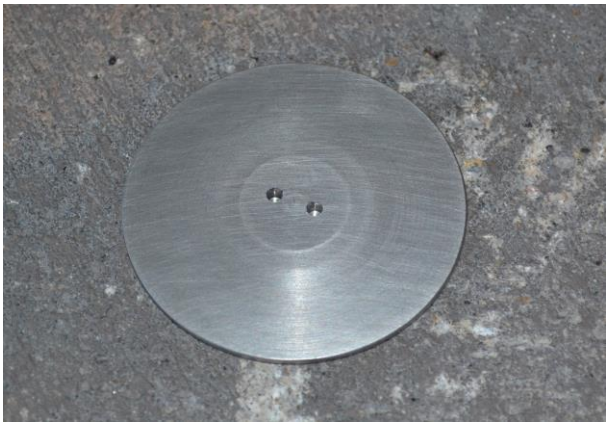


Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the

Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.

Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.

APPENDIX B
Pace Analytical National Lab Report

ANALYTICAL REPORT

March 16, 2021

Revised Report

GeoEngineers- Portland, OR

Sample Delivery Group:	L1323992
Samples Received:	03/06/2021
Project Number:	24986-001-00
Description:	Former Mall 99 Cleaners

Report To:

Cris Watkins
4000 Kruse Way Place
Bldg. 3, Suite 200
Lake Oswego, OR 97035

Entire Report Reviewed By:

Jordan N Zito
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

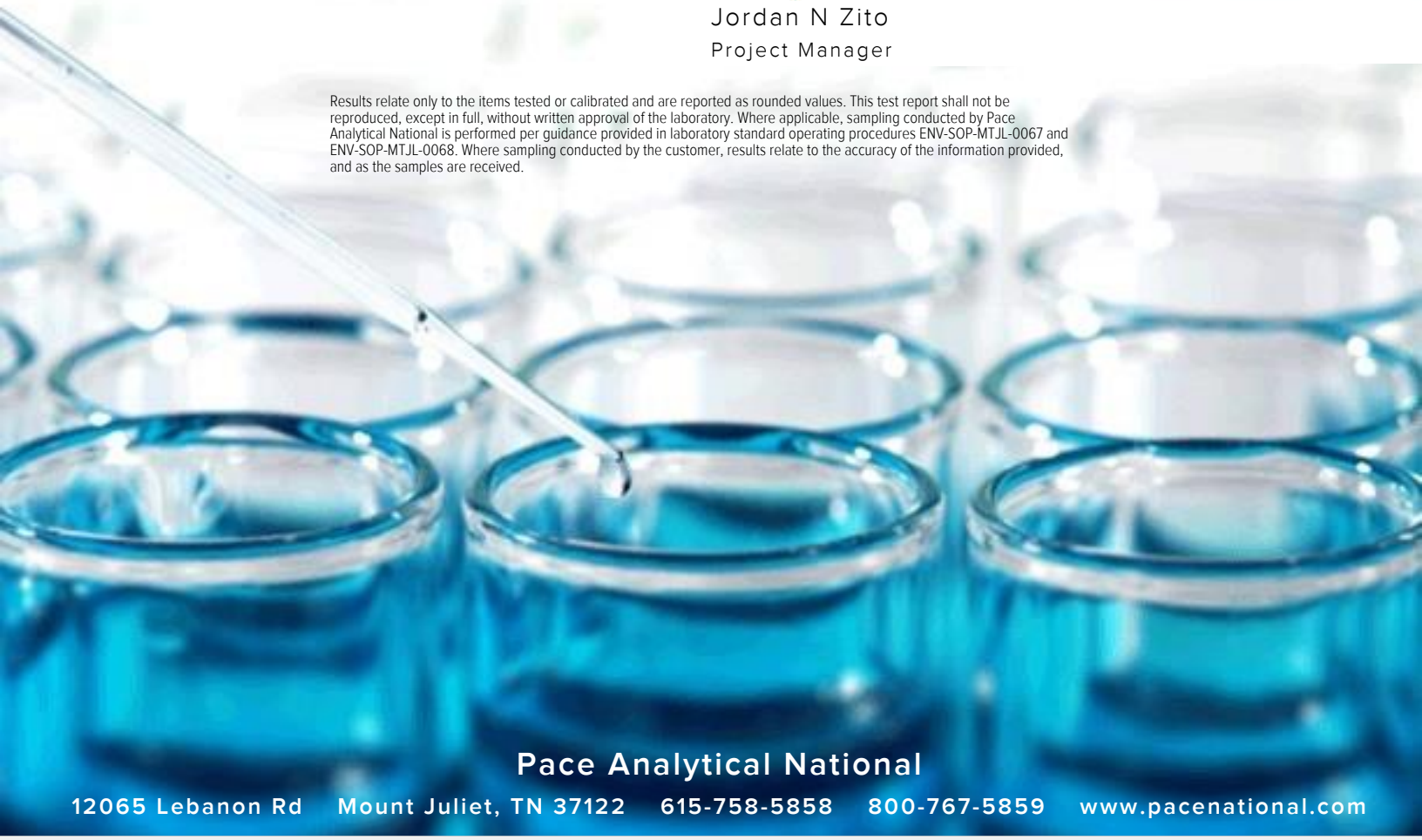


TABLE OF CONTENTS

SV-01 L1323992-01 Air

Collected by: Aaron Fredericy
Collected date/time: 03/05/21 10:42
Received date/time: 03/06/21 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1632278	1	03/10/21 23:30	03/10/21 23:30	GLN	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1632999	20	03/11/21 20:03	03/11/21 20:03	GLN	Mt. Juliet, TN
Organic Compounds (GC) by Method ASTM 1946	WG1631535	1	03/09/21 16:27	03/09/21 16:27	DAH	Mt. Juliet, TN

SV-02 L1323992-02 Air

Collected by: Aaron Fredericy
Collected date/time: 03/05/21 11:18
Received date/time: 03/06/21 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1632278	1	03/11/21 00:11	03/11/21 00:11	GLN	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1632999	10	03/11/21 20:44	03/11/21 20:44	GLN	Mt. Juliet, TN
Organic Compounds (GC) by Method ASTM 1946	WG1631535	1	03/09/21 16:32	03/09/21 16:32	DAH	Mt. Juliet, TN

SV-03 L1323992-03 Air

Collected by: Aaron Fredericy
Collected date/time: 03/05/21 12:13
Received date/time: 03/06/21 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG1632278	1	03/11/21 00:52	03/11/21 00:52	GLN	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG1632999	1	03/11/21 21:32	03/11/21 21:32	GLN	Mt. Juliet, TN
Organic Compounds (GC) by Method ASTM 1946	WG1631535	1	03/09/21 16:35	03/09/21 16:35	DAH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jordan N Zito
Project Manager

Report Revision History

Level II Report - Version 1: 03/13/21 12:01

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1632278
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1632278
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1632278
Tetrachloroethylene	127-18-4	166	4.00	27.2	1130	7670		20	WG1632999
Trichloroethylene	79-01-6	131	0.200	1.07	1.06	5.68		1	WG1632278
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1632278
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*102*				WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*96.4*				WG1632999

Organic Compounds (GC) by Method ASTM 1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Helium	7440-59-7		0.100	0.563		1	WG1631535

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1632278
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1632278
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1632278
Tetrachloroethylene	127-18-4	166	2.00	13.6	529	3590		10	WG1632999
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1632278
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1632278
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*103*				WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.0*				WG1632999

Organic Compounds (GC) by Method ASTM 1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Helium	7440-59-7		0.100	0.109		1	WG1631535

Volatile Organic Compounds (MS) by Method TO-15

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
1,1-Dichloroethene	75-35-4	96.90	0.200	0.793	ND	ND		1	WG1632278
cis-1,2-Dichloroethene	156-59-2	96.90	0.200	0.793	ND	ND		1	WG1632278
trans-1,2-Dichloroethene	156-60-5	96.90	0.200	0.793	ND	ND		1	WG1632278
Tetrachloroethylene	127-18-4	166	0.200	1.36	7.17	48.7		1	WG1632999
Trichloroethylene	79-01-6	131	0.200	1.07	ND	ND		1	WG1632278
Vinyl chloride	75-01-4	62.50	0.200	0.511	ND	ND		1	WG1632278
Chloroform	67-66-3	119	0.200	0.973	ND	ND		1	WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*102*				WG1632278
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*95.3*				WG1632999

Organic Compounds (GC) by Method ASTM 1946

Analyte	CAS #	Mol. Wt.	RDL %	Result %	Qualifier	Dilution	Batch
Helium	7440-59-7		0.100	0.334		1	WG1631535

Method Blank (MB)

(MB) R3629601-3 03/10/21 09:46

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Chloroform	U		0.0717	0.200
1,1-Dichloroethene	U		0.0762	0.200
cis-1,2-Dichloroethene	U		0.0784	0.200
trans-1,2-Dichloroethene	U		0.0673	0.200
Trichloroethylene	U		0.0680	0.200
Vinyl chloride	U		0.0949	0.200
(S) 1,4-Bromofluorobenzene	*99.1*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3629601-1 03/10/21 08:27 • (LCSD) R3629601-2 03/10/21 09:07

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Vinyl chloride	3.75	4.10	4.07	109	109	70.0-130			0.734	25
1,1-Dichloroethene	3.75	3.62	3.59	96.5	95.7	70.0-130			0.832	25
trans-1,2-Dichloroethene	3.75	4.02	3.93	107	105	70.0-130			2.26	25
cis-1,2-Dichloroethene	3.75	4.06	4.01	108	107	70.0-130			1.24	25
Chloroform	3.75	3.98	3.93	106	105	70.0-130			1.26	25
Trichloroethylene	3.75	3.84	3.80	102	101	70.0-130			1.05	25
(S) 1,4-Bromofluorobenzene				*101*	*102*	*60.0-140*				

Method Blank (MB)

(MB) R3629753-3 03/11/21 10:19

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Tetrachloroethylene	U		0.0814	0.200
(S) 1,4-Bromofluorobenzene	*94.6*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3629753-1 03/11/21 08:53 • (LCSD) R3629753-2 03/11/21 09:36

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Tetrachloroethylene	3.75	4.07	4.01	109	107	70.0-130			1.49	25
(S) 1,4-Bromofluorobenzene				*95.2*	*95.3*	*60.0-140*				

Method Blank (MB)

(MB) R3628931-3 03/09/21 15:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Helium	U		0.0259	0.100

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3628931-1 03/09/21 15:34 • (LCSD) R3628931-2 03/09/21 15:37

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	%	%	%	%	%	%			%	%
Helium	2.50	2.41	2.40	96.4	96.0	70.0-130			0.416	25

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
GeoEngineers- Portland, OR

4000 Kruse Way Place
Bldg. 3, Suite 200
Lake Oswego. OR 97035

Billing Information:
Accounts Payable (Marlee Johnston)
17425 NE Union Hill Rd, Suite 250
Redmond, WA 98052

Report to:
Cris Watkins

Email To:
cwatkins@geoengineers.com;afredericy@geoen

Project Description:
Former Mall 99 Cleaners

City/State Collected: Woodburn, OR

Please Circle: (PT) MT CT ET

Phone: **503-603-6661**

Client Project #
24986-001-00

Lab Project #
GEOENGPOR-249860010

Collected by (print):
AARON FREDERICY

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N X Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Analysis / Container / Preservative: TO-15* Summa	Pres Chk	Remarks	Sample # (lab only)
SV-01	GRAB	Air	—	3/5/21	10:42	1	X		012464	-01
SV-02	GRAB	Air	—	3/5/21	11:18	1	X		006319	-02
SV-03	GRAB	Air	—	3/5/21	12:13	1	X		012033	-03
		~~Air~~								

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Road Mt Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1323592

M093

Acctnum: GEOENGPOR

Template: T182319

Prelogin: P828631

PM: 110 - Brian Ford

PB: CSG 02/26/21

Shipped Via: FedEX Ground

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: *11-DCE,cis-12-DCE,trans-12-DCE,PCE,TCE,VC only.

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 9362 6945 1015

Sample Receipt Checklist

COC Seal Present/Intact:	~~NP~~ Y N
COC Signed/Accurate:	Y N
Bottles arrive intact:	Y N
Correct bottles used:	~~Y~~ N
Sufficient volume sent:	~~Y~~ N
If Applicable	
VOA Zero Headspace:	Y N
Preservation Correct/Checked:	Y N
RAD Screen <0.5 mR/hr:	~~Y~~ N

Relinquished by : (Signature)	Date: 3/5/2021	Time: 13:00	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: AW °C	Bottles Received: 3
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 3/6/21	Time: 1010

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Brian Ford

From: Aaron J. Fredericy <afredericy@geoengineers.com>
Sent: Saturday, March 6, 2021 11:19 AM
To: Brian Ford; Cris J. Watkins
Subject: RE: Lab Order and Work Order - Former Mall 99 Cleaners - T182319

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Brian,
I shipped these back to you guys yesterday but I didn't add helium analysis to the CoC. Could you please add this analysis for the three samples (SV-01, SV-02 and SV-03).

Thanks and have a good weekend,
Aaron

From: Brian Ford <Brian.Ford@pacelabs.com>
Sent: Monday, March 1, 2021 1:00 PM
To: Cris J. Watkins <cwatkins@geoengineers.com>
Cc: Aaron J. Fredericy <afredericy@geoengineers.com>
Subject: RE: Lab Order and Work Order - Former Mall 99 Cleaners - T182319

[EXTERNAL]

Cris,

Shipped out on Fri, should arrive today or tomorrow. Here is the tracking information.

Fedex # 936249450990
https://www.fedex.com/fedextrack/?trknbr=936249450990&trkqual=2459272000~936249450990~FX

Thanks,

Brian Ford
Project Manager 2 / Pace National
12065 Lebanon Road | Mt. Juliet, TN 37122
Office: 615.773.9772
brian.ford@pacelabs.com

From: Cris J. Watkins <cwatkins@geoengineers.com>
Sent: Monday, March 1, 2021 2:52 PM
To: Brian Ford <Brian.Ford@pacelabs.com>
Cc: Aaron J. Fredericy <afredericy@geoengineers.com>
Subject: RE: Lab Order and Work Order - Former Mall 99 Cleaners - T182319

APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This attachment provides information to help you manage your risks with respect to the use of this report. Please confer with GeoEngineers if you need to know more about how these "Report Limitations and Guidelines for Use" apply to your project or property.

Read These Provisions Closely

It is important to recognize that environmental engineering and geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce the risk of misunderstandings or unrealistic expectations that lead to disappointments, claims and disputes.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

GeoEngineers has performed this Phase II - Sub-slab Soil Vapor Evaluation for the Khoury Development property located at 972 North Pacifica Highway in Woodburn, Oregon in general accordance with the revised proposal dated February 12, 2021. This report has been prepared for the exclusive use of the Khoury Development. This report may be provided to regulatory agencies for review. This report is not intended for use by others and the information contained herein is not applicable to other properties.

GeoEngineers structures its services to meet the specific needs of its clients. For example, an environmental 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 property. Use of this report is not recommended for any purpose or project other than as expressly stated in this report.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the Khoury Development property located at 972 North Pacifica Highway in Woodburn, Oregon. 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, it is important not to 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 to the project or property after the date of this report, we recommend that GeoEngineers be given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the party(ies) to whom this report is addressed. No other party may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed Project scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

Understand That Geotechnical Issues Have Not Been Addressed

Unless geotechnical engineering was specifically included in our scope of service, this report does not provide any geotechnical findings, conclusions, or recommendations, including but not limited to, the suitability of subsurface materials for construction purposes.

Do Not Separate Documentation from the Report

Environmental reports often include supplemental documentation, such as maps, figures and table. Do not separate such documentation from the report. Further, do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.

Environmental Regulations Change and Evolve

Some substances may be present in the vicinity of the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, 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 substances, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain Even After This Study is Completed

Performance of an environmental study is intended to reduce uncertainty regarding the potential for contamination in connection with a property, but no environmental study can wholly eliminate that uncertainty. 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 man-made events such as construction on or adjacent to the subject property, by new releases of hazardous substances, new information or technology that become available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Please contact GeoEngineers before applying this report for its intended purpose so that GeoEngineers may evaluate whether changed conditions affect the continued applicability of the report.

Soil and Groundwater End Use

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other properties or for other on-site uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior

to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. GeoEngineers will not assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location, or the reuse of such soil and/or groundwater on-site in any instances that we did not recommend, know of, or control.

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 subject property. 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 its professional judgment to render an informed opinion about subsurface conditions throughout the property. Actual subsurface conditions may differ significantly from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

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.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

Information Provided by Others

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.