From: Oelkers, Eric <EOelkers@scsengineers.com>
Sent: Thursday, May 30, 2024 1:50 PM
To: Koepke, Cynthia L - DNR
Cc: tyler krupp; Tyler Weavers; Radunzel, Ashley
Subject: RE: Vapor Sampling Update for former Classic Cleaners BRRTS #02-13-368525
Attachments: 0213368525: Status Update Report; 240529_Koepke_Vapor Sampling Update.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Cindy,
An update letter documenting the results of the second round of sub-floor soil sampling at the former Classic Cleaners site in Monona is attached and has been uploaded to the DNR portal (confirmation attached).
The second set of results are consistent with the first round and show that PERC concentrations below the floor do not exceed screening levels.

Please call or email if you have any questions.

Regards,

Eric Oelkers, PG*
Senior Project Manager / Hydrogeologist
SCS Engineers
2830 Dairy Drive
Madison, WI 53718-6751 USA
608-216-7341 (W)
608-444-3934 (C)
eoelkers@scsengineers.com
*Licensed in WI

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From: Oelkers, Eric
Sent: Friday, March 15, 2024 5:17 PM
To: Koepke, Cynthia L - DNR <Cynthia.Koepke@wisconsin.gov>
Cc: tyler krupp <tyler@thresholddevelopmentgroup.com>; Tyler Weavers

<tweavers@kruppconstruction.com>
Subject: Vapor Sampling Update for former Classic Cleaners BRRTS #02-13-368525

Hi Cindy,
A letter summarizing the recent slug-slab vapor testing at the former Classic Cleaners/ Threshold Development site in Madison is attached for your review.
Please let me know if you would like us to upload a copy to the DNR submittal portal.
Regards,

Eric Oelkers, PG*
Senior Project Manager / Hydrogeologist
SCS Engineers
2830 Dairy Drive
Madison, WI 53718-6751 USA
608-216-7341 (W)
608-444-3934 (C)
eoelkers@scsengineers.com
*Licensed in WI

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May 29, 2024
File No. 25221209.00

Ms. Cindy Koepke
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Sub Slab Vapor Sampling Update #2
Former Classic Cleaners, 3918 Monona Drive, Madison
BRRTS #02-13-368525

Dear Ms. Koepke:

SCS Engineers (SCS) prepared this letter to document the results of a second round of sub-slab vapor samples collected below the parking level of the new mixed use residential/commercial building ("The Fitzgerald") under construction at the site of the former Classic Cleaners in Monona. Laboratory analysis of the samples indicated that concentrations of tetrachloroethylene (PCE) detected in the soil vapor below the floor slab are less than the corresponding vapor risk screening level (VRSL). The sampling methods and results are described in more detail below.

Background

The dry cleaner contamination case file associated with the former Classic Cleaners site at 3918 Monona Drive in Madison, Wisconsin, (Bureau of Remediation and Redevelopment Tracking System [BRRTS] #03-13-000414) was closed in May 2021 with continuing obligations. SCS submitted a Material Management Plan and Post-Closure Modification Request to the Wisconsin Department of Natural Resources (WDNR) on November 17, 2021. WDNR issued an initial approval of the post-closure modification and soil management approach on December 20, 2021.

Redevelopment of the site commenced with demolition of the existing structures in February 2023. Excavation of 9,381.95 tons of PCE contaminated soil for the portion of lower level of the new building located within the footprint of the former Classic Cleaners site started on March 22, 2023, and was substantially complete by May 15, 2023. None of the 20 post-excavation samples SCS collected at the limits of the excavation showed detectable concentrations of volatile organic compounds (VOCs).

A network of sub slab venting pipes and a Stego vapor barrier were installed below the entire floor of the lower (parking) level. SCS installed "Vapor Pin Inserts" through the vapor barrier at 10 locations (see **Figure 1**) on October 5, 2023, before the concrete floor was placed. The vapor pin inserts consist of a 1-foot long, 1.5-inch outside diameter PVC tube with a 5/8-inch-diameter bore through the middle and a larger bore at the top to accommodate a recessed "Vapor Pin" sampling fitting (see drawing in **Attachment A**). The vapor pin insert is installed so that the top of the tube will be flush with the finished concrete surface and is held in place with a ½-inch-diameter threaded rod driven through the tube into the underlying gravel base and soil. Photos of the vapor pin insert installation are included in **Attachment B**.

Sample Collection

SCS placed Waterloo Membrane Sampler (WMS) passive vapor sample collection vials at six of the previously installed (and sampled) vapor pin inserts in the afternoon of April 19, 2024. As previously discussed with WDNR, SCS sampled the same six locations as the initial round in February 2024. The procedure for placing the WMS vials is described in the standard operating procedure included in **Attachment A**. In general, the vials were suspended in the open bore of the vapor pin insert in a capsule attached to the bottom of a standard vapor pin, which is in turn sealed into the neck of the vapor pin insert. SCS retrieved the samplers in the morning of May 1, 2024, to allow a passive sampling interval of at least 10 full days. SCS sealed the sample vials in the same glass jars used to ship the samples and returned the samplers to the Eurofins Air Toxics laboratory in Folsom, California with a chain of custody (COC).

Two of the glass sample media vials were found to be damaged at the time of sample recovery. The vial at sample location VP-1 was shattered and insufficient sample media was recovered for analysis. The neck of the vial at location VP-4 was broken but the sample media remained in the container and was analyzed by the lab.

Analytical Results

The Eurofins lab analyzed the samples for PCE, trichloroethylene (TCE), cis- and trans-1,2-dichloroethylene, and vinyl chloride. Of these compounds, only PCE was detected in four of the samples. A copy of the lab report and COC are included as **Attachment C**. The lab results and corresponding vapor risk screening levels are summarized in **Table 1**. The detected PCE concentrations in the second round of samples were each at least 60 times less than the most conservative (residential) VRSL.

The results of the second round of samples, especially VP-2 and VP-6, were similar to those of the first round. PCE was detected at VP-3 in the second round at a concentration slightly higher than the detection limit reported for this location in the first round. The PCE concentration detected at VP-4 was about seven times lower in the second round compared to the initial sample. The distribution and detected concentrations of PCE at VP-2, VP-4, and VP-6 are consistent with the location and flow direction of the PCE plume in groundwater at the site.

Conclusions

- The detected PCE concentrations in the soil below the parking level floor are at least 50 to 60 times less than the most conservative vapor screening level.

- The distribution of PCE concentrations in the sub-slab vapor at the site is consistent with the residual contamination shown in the case closure documents for the Classic Cleaners site.

- The sampling results indicate that detectable PCE vapor impacts do not extend north of the identified areas of residual soil and groundwater contamination.

- Given the consistency of the results between the two rounds of sampling and absence of detectable VOCs in post-excavation soil samples, SCS does not recommend additional sub-slab sampling to address the potential for vapor migration.

- Based on these results, and the fact that the lower level of the building will be vented to manage exhaust gasses from motor vehicles, SCS believes that active depressurization of the sub-slab venting pipes is not necessary.

Please contact Eric Oelkers at 608-216-7341 or eoelkers@scsengineers.com if you have any questions regarding this letter.

Sincerely,

Eric Oelkers, PG
Senior Project Manager
SCS Engineers

Ray Tierney, PG
Vice Pesident
SCS Engineers

EO/AJR/REL

cc: Tyler Krupp, Threshold Development
Tyler Weavers, Krupp Construction

Encl. Table 1 – Sub-Slab Soil Vapor Analytical Results Summary
Figure 1 – Site Plan with Vapor Sample Locations
Attachment A – Vapor Sampling Procedures
Attachment B – Photos
Attachment C – Lab Report

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Table 1

Sub-Slab Soil Vapor Analytical Results Summary

Table 1. Sub-Slab Soil Vapor Analytical Results Summary
Former Classic Cleaners, Monona, Wisconsin / SCS Engineers Project #25221209.00
(Results are in µg/m^3)

Sample	Sample Start Date	Sample End Date	cis-1,2-Dichloroethylene	trans-1,2-Dichloroethylene	Tetrachloroethene (PCE)	Trichloroethene (TCE)	Vinyl Chloride
CAS #	--	--	156-59-2	156-60-5	127-18-4	79-01-6	75-01-4
VP-1	2/2/2024	2/13/2024	<7.2	<23	<2.5	<3.8	<130
VP-2	2/2/2024	2/13/2024	<7.2	<23	21	<3.8	<130
	4/19/2024	5/1/2024	<6.6	<21	22	<3.5	<120
VP-3	2/2/2024	2/13/2024	<7.2	<23	<2.5	<3.8	<130
	4/19/2024	5/1/2024	<6.6	<21	2.6 CN	<3.5	<120
VP-4	2/2/2024	2/13/2024	<7.2	<23	28	<3.9	<130
	4/19/2024	5/1/2024	<6.6	<21	4.2	<3.5	<120
VP-5	2/2/2024	2/13/2024	<7.2	<23	<2.5	<3.8	<130
	4/19/2024	5/1/2024	<6.6	<21	<2.2	<3.5	<120
VP-6	2/2/2024	2/13/2024	<7.2	<23	8.6	<3.8	<130
	4/19/2024	5/1/2024	<6.6	<21	6.2	<3.5	<120
Sub Slab Soil Vapor Risk Screening Level (Residential)			1,400	1,400	1,400	70	56
Sub Slab Soil Vapor Risk Screening Level (Small Commercial)			5,800	5,800	5,800	290	930
Sub Slab Vapor Risk Screening Level (Large Commercial & Industrial)			18,000	18,000	18,000	880	2,800

Abbreviations:
µg/m^3 = micrograms per cubic meter of air
NA = Not Analyzed
-- = Not Applicable
CAS # = Chemical Abstracts Service Number
NE = No Established Vapor Risk Screening Level

Notes:
1. Samples were collected using passive sorbent samplers analyzed using EPA Method TO-17.
2. Sub-Slab Soil Vapor Risk Screening Levels (VRSLs) from Wisconsin Vapor Quick Look Up Table Indoor Air VALs and VRSLs (RR0136) - updated August 2023

Laboratory Notes/Qualifiers:
CN = The glass vial for sample VP-3 was received broken with the sample sorbent stuck to the adhesive residue on the outside of the vial where the label had been removed. The amount of sorbent in the outer glass vial was less than the typical amount expected.The sample preparation and analysis proceeded. Results for this sample were qualified with a CN flag to indicate estimated values with a potential low bias due to the apparent loss of sorbent.

Created by:	EO	Date:	3/12/2024
Last Rev by:	EO	Date:	5/20/2024
Checked by:	JSN	Date:	5/23/2024
Proj Mgr QA/QC:	EO	Date:	5/28/2024

I:\25221209.00\Deliverables\2405_Vapor Update\[Table 1_Soil Vapor Analytical Results Summary.xlsx]Vapor Intrusion

Figure 1

Site Plan with Vapor Sample Locations

Cottage Grove Road

COMMERCIAL TENANT
(103 COTTAGE GROVE ROAD)

APARTMENT
69 RESIDENTIAL UNITS
(3914 MONONA DRIVE)

Former Bar Building

Former Muffler Shop

Former Classic Cleaners Building

Former Commercial Building

COMMERCIAL TENANT
(3926 MONONA DRIVE)

OUTDOOR SEATING

DRIVE THRU

RAMP TO UNDERGROUND PARKING

BUILDING ABOVE, TYP.

COLUMN, TYP.

x VP-1
x VP-2
x VP-3
x VP-4
x VP-5
x VP-6
x VP-7
x VP-9
x VP-10

Footprint of New Building - Lower Level/Parking

Monona Drive

Davidson Street

north

SCALE IN FEET
20' 0 20'

Note: Site Plan from JSD Site Plan Sheet 3.0, dated 12/15/2022

x VP = Vapor Pin

= Former Building

Figure 1 - Site Plan with Vapor Sample Locations
Former Classic Cleaners
3918 Monona Drive, Madison
SCS Project 25221209.00

Attachment A

Vapor Sampling Procedures

Standard Operating Procedure

Installation of the
Vapor Pin® Insert

Scope & Purpose

Scope

This standard operating procedure describes the installation of the Vapor Pin® Insert (Figure 1).

Purpose

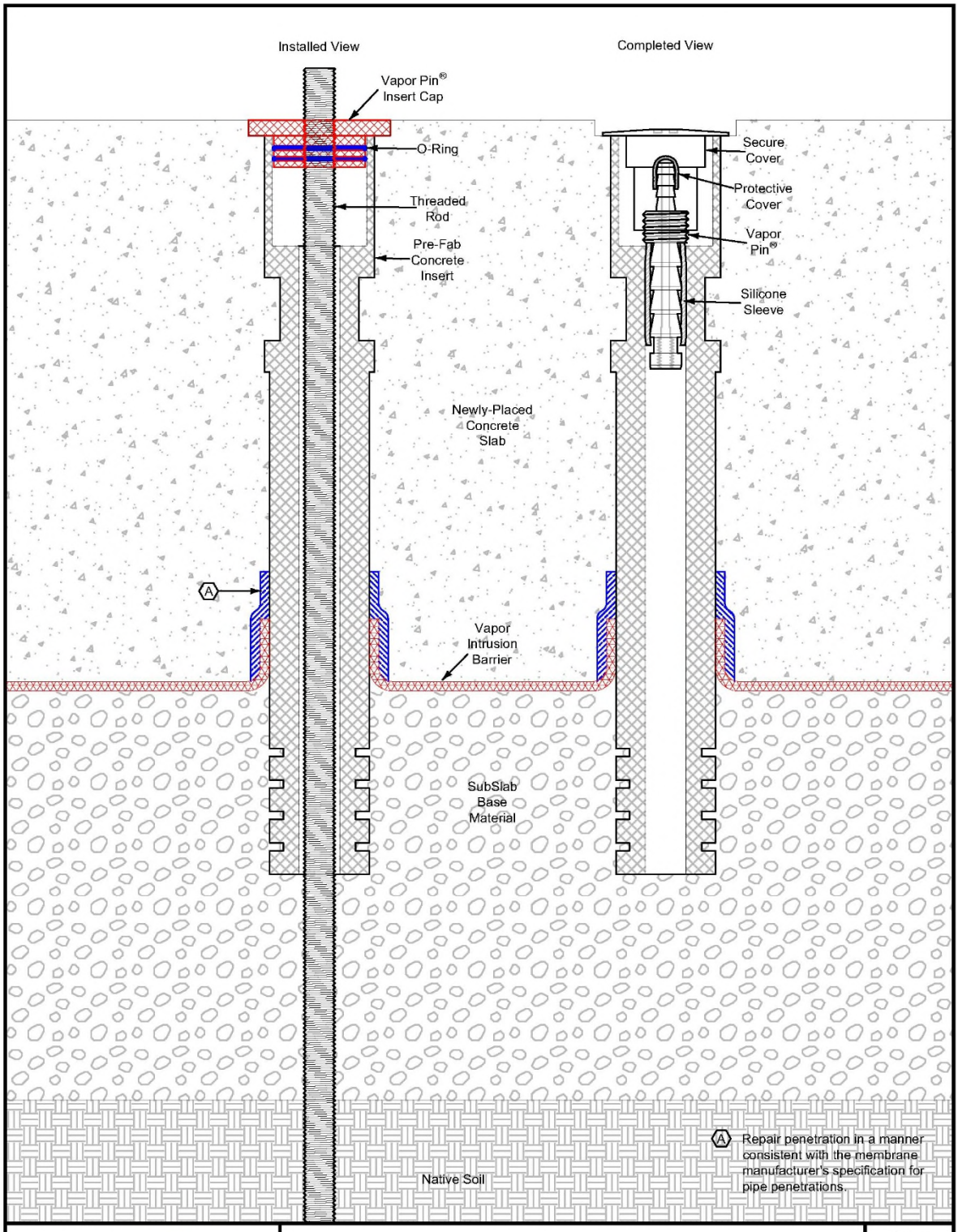
The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin® Insert. The Vapor Pin® Insert is used to facilitate the collection of soil gas samples and pressure measurements beneath engineered vapor intrusion barriers (e.g., Geo-Seal®), or vapor mitigation coatings (e.g., Retro-Coat™).

Equipment Needed

- Vapor Pin® Insert
- Vapor Pin® Insert Cap
- Hacksaw (option)
- Power drill and small diameter bits (optional)
- Threaded rod (½" x 13")
- Dead blow hammer

Installation Procedure

1. Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
2. Prior to installation in an existing slab, a large diameter hole must be cored through the slab to either expose the barrier. Contact the vendor of the barrier or coating about the desired diameter of the hole, the procedures used to expose the seal, and the methods and materials used to marry the seal or coating to the Vapor Pin® Insert prior to proceeding.
3. Locate the desired position (horizontally and vertically) of the top of the Vapor Pin® Insert
4. Pierce the barrier with a threaded rod of sufficient length to extend slightly above the elevation of the finished floor and into the subgrade a sufficient depth to provide support for the Vapor Pin® Insert. Make sure the rod is perpendicular to the proposed floor surface. Avoid bending the rod, as it may inhibit its removal after the concrete has cured. Also avoid damaging the threads on the threaded rod.
5. Dry fit the Vapor Pin® Insert and trim or extend the length. Extend the length by sliding the Insert into a length of 1½ inch diameter schedule 40 PVC pipe. If a longer length is needed, make sure to be below the liner. The Vapor Pin® Insert and pipe can be joined using PVC cement or similar material. Allow sufficient time for the adhesive to cure prior to sampling. Vent holes may be added at the bottom of the extension, beneath the liner, to promote air flow.
6. Assemble the Vapor Pin® Insert and Cap by pressing the Vapor Pin® Insert Cap into the top of the Vapor Pin® Insert. Position the assembly on the threaded rod so that the top of the Vapor Pin® Insert Cap lies flush with the elevation of the finished floor. It is important that the position of the Vapor Pin® Insert be perpendicular to the slab so that the Vapor Pin® Sampling Device Secure Cover meets uniformly with the floor.
7. Marry the barrier to the Insert per the barrier manufacture's specification prior to pouring the concrete slab.
8. After the concrete has set, remove the threaded rod and the Vapor Pin® Insert Cap and install any of your preferred Vapor Pin® Sampling Devices in the Vapor Pin® Insert.



VaporPin®

Vapor Pin® Insert with Cap,
Vapor Pin Enterprises, Inc.

Figure
1

Standard Operating Procedure

Installation of the
Vapor Pin® Capsule

Scope & Purpose

Scope

This standard operating procedure describes how to use the Vapor Pin® Capsule.

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® Capsule. The Vapor Pin® Capsule is used to house the Waterloo Membrane Sampler (WMS™-VP) to passively collect sub-slab soil-gas.

Equipment Needed

- Vapor Pin® Sampling Device
- Vapor Pin® Sleeve
- Vapor Pin® Cap
- Vapor Pin® Capsule
- Waterloo Membrane Sampler (WMS-VP) Kit
- Installation/Extraction Tool
- Rotary Hammer Drill
  - ⅝ - Inch (16mm) diameter hammer bit
  1½ - Inch (38mm) diameter hammer bit for flush mount applications
- ¾- Inch (19mm) diameter bottle brush
- Wet/Dry Vacuum with HEPA filter (optional)
- Dead Blow Hammer
- ¾" diameter closed cell foam rod to seal the hole prior to applying patching material
- VOC-free hole patching material (hydraulic cement) and a putty knife or trowel
  - This is for repairing the hole following the extraction of the Vapor Pin® Sampling Device

How to House your Waterloo Membrane Sampler (WMS™-VP)

1. Assemble your Vapor Pin® Sampling Device as seen in (Figure 1).

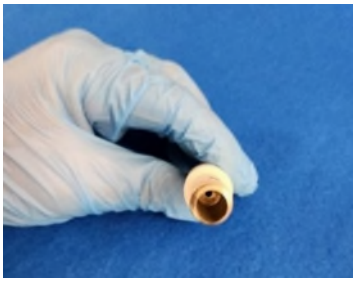
Figure 1

2. Screw the Vapor Pin® Capsule into the base of the Vapor Pin® Sampling Device as seen in (Figure 2).

Figure 2

3. Your Vapor Pin® Capsule (VPC) cap will be shipped already unthreaded. Once you have the VPC screwed into your Vapor Pin® Sampling Device, inspect the interior of the Capsule for potential blockages (Figure 3).

Figure 3



4. For the following instructions please handle the Waterloo Membrane Sampler (WMS™- VP) per manufactures specifications.
5. Remove your WMS™-VP from the packaging. Place the WMS™-VP vial into the Vapor Pin® Capsule. Make sure that the membrane end is facing the open end of the Vapor Pin® Capsule. Re-thread the Vapor Pin® Capsule cap to finger level tightness (Figures 4, 5 & 6).

Figure 4

Figure 5

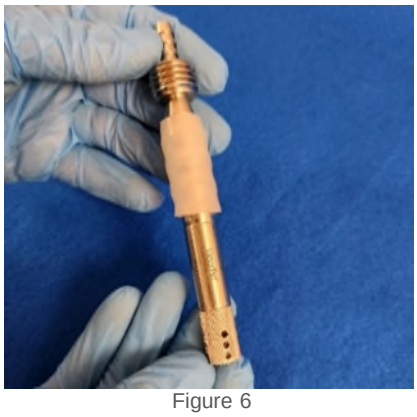


Figure 6

6. Install your Vapor Pin® Sampling Device, with Vapor Pin® Capsule, into your Stick-Up/Flush-Mounted drilled hole (Figures 7 & 8). If Stick-Up Configuration use a cone to cover your pin and if Flush-Mounted Cover be sure to use either the Plastic Flush Mount Cover or Stainless Steel Secure Cover!
NOTE: Prior to leaving site, be sure your Vapor Pin® has a Vapor Pin® Plastic Cap on. If extensions are required per sampling plan/slab thickness/state or local guidance, thread extensions onto the Vapor Pin® Sampling Device prior to threading on the Vapor Pin® Capsule.

Figure 7

Figure 8

Figure 9

7. Post passive sampling of two to three weeks, use the Installation/Extraction Tool to remove the Vapor Pin® Sampling Device (Figure 9). Use the Spanner tool first if you are using a Flush-Mounted configuration With the Stainless Steel Secure Cover. and retrieve your WMS™-VP to send it back off to the lab. Please follow all handing instructions, per manufactures specifications, when retrieving and packaging up the WMS™-VP.

Attachment B

Photos

Former Classic Cleaners
3918 Monona Drive, Madison, WI
SCS Engineers Project #25221209.00

Photo 1: Lower level floor with drainage/vapor piping (black), electrical conduit (gray), and rough plumbing (white) (9/18/2023; 14:15).

Photo 2: Sump at the northeast corner of the lower level with drain/vent pipes connected and opening for ventilation fan visible to the right of the sump (9/18/2023; 14:16).

Former Classic Cleaners
3918 Monona Drive, Madison, WI
SCS Engineers Project #25221209.00

Photo 3: Lower level floor/parking area with a partially completed drain/vent piping looking southeast toward parking ramp entrance (9/18/2023; 14:19).

Photo 4: Gravel drainage layer prior to placement of vapor barrier, looking toward the southwest corner of the building (9/29/2023; 12:25).

Former Classic Cleaners
3918 Monona Drive, Madison, WI
SCS Engineers Project #25221209.00

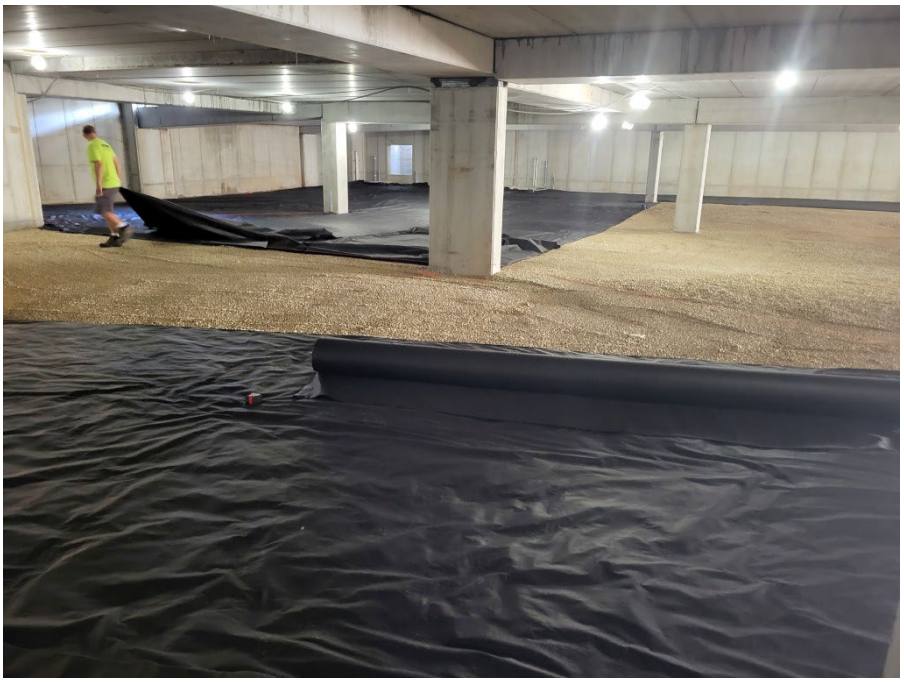


Photo 5: Installation of fabric cushion prior to placement of vapor barrier (10/3/2023; 13:36).

Former Classic Cleaners
3918 Monona Drive, Madison, WI
SCS Engineers Project #25221209.00

Photo 6: VP-3 installed and sealed into vapor barrier (10/5/2023; 15:36).

Former Classic Cleaners
3918 Monona Drive, Madison, WI
SCS Engineers Project #25221209.00

Photo 7: VP-1 installed in electrical room (to the left of the floor drain) prior to completion of the vapor barrier (10/5/2023; 17:49).

Attachment C

Lab Report

eurofins | Air Toxics

Analysis Request / Passive Sorbent Chain of Custody

eurofinsus.com

Eurofins Environment Testing Northern California, LLC
180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Workorder #: 2405150

Client: SCS Engineers
Site Name: Threshold Monona
Project Manager: Eric Oelkers
Sampler: Eric Oelkers

Project Name: Threshold Monona
Project #: 25221209
PO#:

Turnaround Time (Specify Below)
Standard X Rush _____ (Surcharges will apply, per availability)
Samples received after 3PM PST are considered to be received on the following workday.
Requested Date (mm/dd/yy):
OR Number of Days:

Sample Matrix (Check One): Indoor/Outdoor Air | Soil Gas | Workplace Monitoring | (Other) _____

Reporting Units (Circle One): ppbv | µg/m³ | µg | ppmv | ng | mg/m³

Times are military unless am/pm is indicated

Lab ID	Field Sample Identification (Location)	Tube # / Sampler ID	Deployment Information Date	Deployment Information Time	Retrieval Information Date	Retrieval Information Time	Soil Gas	Temperature	Analysis Requested	Sample Comments:
01A	VP-1	AN-VP-24-044	4/19/24	16:05	5/1/24	10:26	✓	60°F	PCE, TCE 1,2-DCE	vial broken
02A	VP-2	AN-VP-24-045	4/19/24	16:13	5/1/24	10:41	✓	↓	Cis, trans Vinyl chloride	
03A	VP-3	AN-VP-24-046	4/19/24	16:20	5/1/24	10:51	✓	↓	↓	
04A	VP-4	AN-VP-24-047	4/19/24	16:27	5/1/24	10:56	✓	↓	↓	vial broken
05A	VP-5	AN-VP-24-048	4/19/24	16:33	5/1/24	11:05	✓	↓	↓	
06A	VP-6	AN-VP-24-049	4/19/24	16:38	5/1/24	11:14	✓	↓	↓	

Special Instructions/Notes:
Analyze all samples for PCE, TCE cis/trans 1,2-DCE, vinyl chloride (VP-1 and VP-4 vials were found to be broken upon opening the vapor pin caps/ales for their samples)

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Eric Oelkers SCS Engineers	5/3/24	14:00	Amrin D. SATL	5/7/24	1003
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name:	Custody Seals Intact?	Yes	No	None	Temperature:	Condition:
Fedex				(None)		

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

eurofins | Air Toxics

5/20/2024
Mr. Eric Oelkers
SCS Engineers
2830 Dairy Drive

Madison WI 53718

Project Name: Threshold Monona
Project #: 25221209
Workorder #: 2405150

Dear Mr. Eric Oelkers

The following report includes the data for the above referenced project for sample(s) received on 5/7/2024 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. WMS 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: Jade White at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Jade White

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2405150

Work Order Summary

CLIENT:	Mr. Eric Oelkers SCS Engineers 2830 Dairy Drive Madison, WI 53718	**BILL TO:**	Mr. Eric Oelkers SCS Engineers 2830 Dairy Drive Madison, WI 53718
PHONE:	608-224-2830	**P.O. #**	
FAX:	608-224-2839	**PROJECT #**	25221209 Threshold Monona
DATE RECEIVED:	05/07/2024	**CONTACT:**	Jade White
DATE COMPLETED:	05/20/2024		

FRACTION #	NAME	TEST
01A(cancelled)	VP-1	Passive S.E. WMS
02A	VP-2	Passive S.E. WMS
03A	VP-3	Passive S.E. WMS
04A	VP-4	Passive S.E. WMS
05A	VP-5	Passive S.E. WMS
06A	VP-6	Passive S.E. WMS
07A	Lab Blank	Passive S.E. WMS
08A	CCV	Passive S.E. WMS
09A	LCS	Passive S.E. WMS
09AA	LCSD	Passive S.E. WMS

CERTIFIED BY: Heidi Hayes DATE: 05/20/24

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 ELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) CA300005-017
Eurofins Environment Testing Northern California, LLC certifies that the test results contained in this report meet all requirements of the 2016 TNI Standard.

LABORATORY NARRATIVE
WMS Passive SE by Mod EPA TO-17
SCS Engineers
Workorder# 2405150

Six WMS-VP samples were received on May 07, 2024. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

Please note that 1,1,2,2-Tetrachloroethane (1,1,2,2-PCA) can degrade into Trichloroethene (TCE) during storage on the charcoal-based sorbent used in the WMS device. Samples containing 1,1,2,2-PCA may yield reduced concentrations of 1,1,2,2-PCA and elevated concentrations of TCE.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

Requirement	***TO-17***	***ATL Modifications***
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

The glass vial for sample VP-1 was received broken with the sample sorbent stuck to the adhesive residue on the outside of the vial where the label had been removed. Sample will need to be cancelled.

The glass vial for sample VP-3 was received broken with the sample sorbent stuck to the adhesive residue on the outside of the vial where the label had been removed. The amount of sorbent in the outer glass vial was less than the typical amount expected.The sample preparation and analysis proceeded. Results for this sample were qualified with a CN flag to indicate estimated values with a potential low bias due to the apparent loss of sorbent.

To calculate ug/m3 concentrations in the Lab Blank, a sampling duration of 16956 minutes was applied.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate 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.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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

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Summary of Detected Compounds
VOC BY PASSIVE SAMPLER - GC/MS

Client Sample ID: VP-2

Lab ID#: 2405150-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Tetrachloroethene	0.050	2.2	0.50	22

Client Sample ID: VP-3

Lab ID#: 2405150-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Tetrachloroethene	0.050	2.2	0.057 CN	2.6 CN

Client Sample ID: VP-4

Lab ID#: 2405150-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Tetrachloroethene	0.050	2.2	0.093	4.2

Client Sample ID: VP-5

Lab ID#: 2405150-05A

No Detections Were Found.

Client Sample ID: VP-6

Lab ID#: 2405150-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Tetrachloroethene	0.050	2.2	0.14	6.2

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Client Sample ID: VP-2

Lab ID#: 2405150-02A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051308sim**	**Date of Collection: 5/1/24 10:41:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 12:29 PM**
		Date of Extraction: 5/13/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	0.50	22

Temperature = 60.0F , duration time = 16948 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

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Client Sample ID: VP-3

Lab ID#: 2405150-03A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051309sim**	**Date of Collection: 5/1/24 10:51:00 AM**
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 12:56 PM**
		Date of Extraction: 5/13/24

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	0.057 CN	2.6 CN

CN =See Case Narrative explanation

Temperature = 60.0F , duration time = 16951 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: VP-4

Lab ID#: 2405150-04A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051310sim**	**Date of Collection: 5/1/24 10:56:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 01:23 PM**	
		Date of Extraction: 5/13/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	0.093	4.2

Temperature = 60.0F , duration time = 16949 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

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Client Sample ID: VP-5

Lab ID#: 2405150-05A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051311sim**	**Date of Collection: 5/1/24 11:05:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 01:50 PM**	
		Date of Extraction: 5/13/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	Not Detected	Not Detected

Temperature = 60.0F , duration time = 16952 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

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Client Sample ID: VP-6

Lab ID#: 2405150-06A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051312sim**	**Date of Collection: 5/1/24 11:14:00 AM**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 02:20 PM**	
		Date of Extraction: 5/13/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	0.14	6.2

Temperature = 60.0F , duration time = 16956 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2405150-07A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051307sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 12:02 PM**	
		Date of Extraction: 5/13/24	

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Vinyl Chloride	0.20	120	Not Detected	Not Detected
trans-1,2-Dichloroethene	0.10	21	Not Detected	Not Detected
cis-1,2-Dichloroethene	0.050	6.6	Not Detected	Not Detected
Trichloroethene	0.050	3.5	Not Detected	Not Detected
Tetrachloroethene	0.050	2.2	Not Detected	Not Detected

Temperature = 60.0F , duration time = 16956 minutes.

Container Type: WMS-VP

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

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Client Sample ID: CCV

Lab ID#: 2405150-08A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051303sim**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 09:55 AM**
		Date of Extraction: NA

Compound	%Recovery
Vinyl Chloride	66
trans-1,2-Dichloroethene	102
cis-1,2-Dichloroethene	90
Trichloroethene	97
Tetrachloroethene	106

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130

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Client Sample ID: LCS

Lab ID#: 2405150-09A

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051304sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 10:27 AM**	
		Date of Extraction: 5/13/24	

Compound	%Recovery	Method Limits
Vinyl Chloride	85	50-140
trans-1,2-Dichloroethene	128	70-130
cis-1,2-Dichloroethene	111	70-130
Trichloroethene	116	70-130
Tetrachloroethene	121	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

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Client Sample ID: LCSD

Lab ID#: 2405150-09AA

VOC BY PASSIVE SAMPLER - GC/MS

File Name:	**18051305sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/13/24 10:54 AM**	
		Date of Extraction: 5/13/24	

Compound	%Recovery	Method Limits
Vinyl Chloride	81	50-140
trans-1,2-Dichloroethene	123	70-130
cis-1,2-Dichloroethene	108	70-130
Trichloroethene	114	70-130
Tetrachloroethene	120	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130