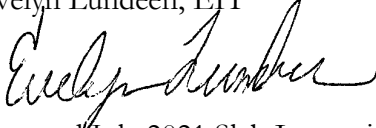




MEMORANDUM

To: Priscilla Tomlinson
Washington State Department of Ecology

Date: September 22, 2021

From: Evelyn Lundeen, EIT


Project No.: 1803.01.05

RE: June and July 2021 Slab Inspection and Vapor Intrusion Priority Monitoring
Precision Engineering, Inc., Seattle, Washington
Agreed Order No. DE 18079; Facility Site ID 2056; Cleanup Site ID 4532

Maul Foster & Alongi, Inc. (MFA) prepared this memorandum to describe results from the third quarterly slab inspection and vapor intrusion priority (VIP) air monitoring event conducted at the Precision Engineering, Inc., site. Activities were conducted in accordance with the Washington State Department of Ecology (Ecology)-approved VIP work plan, included as Section 7 of MFA's draft vapor report (MFA, 2020a).

SLAB INSPECTION

A site visit was conducted on June 21, 2021, to inspect slab conditions. Slab inspection documentation includes an inspection form summarizing observed slab conditions, a figure showing locations of slab conditions noted in the inspection form, and photographs taken during the site reconnaissance (see Attachment A).

MFA observed localized areas of sealant wear, but overall, the slab appeared to be in good condition (see Attachment A). Since the last slab inspection on March 22, 2021, one additional area of minor sealant peeling was identified in Warehouse 3. Cracks without sealant do not appear to extend through the slab and do not pose a concern at this time.

AIR MONITORING

Radiello 130 passive vapor samplers were deployed over a three-week period from June 21, 2021, to July 12, 2021, in three locations: the office (RAD1), the sewing room (RAD4), and Warehouse 1 (RAD5) (see the attached figure).

The samples and a trip blank were analyzed for trichloroethene (TCE) by U.S. Environmental Protection Agency Method TO-17. The laboratory analytical report is provided as Attachment B.

Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met project-specific data quality objectives. A data validation memorandum summarizing data evaluation procedures, data usability, and deviations from specific field and/or laboratory methods is included as Attachment C. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

TCE was detected in all three samples at concentrations ranging from 0.38 to 0.76 micrograms per cubic meter (ug/m^3), below Ecology's workplace scenario short-term action limit of $7.5 \text{ ug}/\text{m}^3$ provided in Implementation Memorandum No. 22 (Ecology, 2019), but above the Model Toxics Control Act Method B indoor air cleanup level of $0.33 \text{ ug}/\text{m}^3$ (see the attached table). TCE detections at all sampling locations were below the March/April 2021 vapor monitoring results, which ranged from 0.44 to $0.95 \text{ ug}/\text{m}^3$.

DISCUSSION AND RECOMMENDATIONS

The slab was observed to be in generally good condition, aside from the minor issues noted in Attachment A. The most significant sealant wear was observed in seams (i.e., expansion joints) that extend only a few centimeters into the concrete slab. Seams do not extend through the entire slab thickness and as such, are not considered to be a vapor intrusion concern. Cracks may extend deeper into the slab. During the interim action, several rounds of concrete mix and sealant were applied to cracks to ensure a complete seal (MFA, 2020a). Sealant wear observed in cracks appears to be surficial and does not appear to penetrate the entire sealed thickness, except for in areas with observed groundwater seepage, as identified in Warehouse 3. Warehouse 3 receives the heaviest forklift traffic, which has contributed to significant sealant wear in those areas. Historical groundwater data from borings in the area suggests that the groundwater seepage does not present an immediate health concern or a vapor intrusion concern (MFA, 2020b). Unsealed cracks were observed in areas previously covered by inventory, but they do not appear to extend through the slab. Based on these observations, the slab issues do not appear to present a significant vapor intrusion concern.

The minor slab issues do not appear to be impacting indoor air quality. TCE in indoor air from confirmation vapor sampling conducted immediately after implementation of the interim remedial actions ranged in concentration from 1.4 to $2.6 \text{ ug}/\text{m}^3$ (MFA, 2020a). Results of samples collected during this monitoring event were lower than results from that initial confirmation vapor sampling and below the short-term action limit; therefore, the minor slab issues do not appear to be contributing to worsening conditions. Based on these findings, MFA does not recommend resuming air purification.

MFA will continue to visually monitor the slab conditions and conduct air monitoring, as described in the VIP work plan. The next quarterly event is scheduled for September 2021.

ATTACHMENTS

Limitations

References

Table

Figure

Attachment A—Slab Inspection Documentation

Attachment B—Analytical Lab Report

Attachment C—Data Validation Memorandum

LIMITATIONS

The services undertaken in completing this memorandum were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This memorandum is solely for the use and information of our client unless otherwise noted. Any reliance on this memorandum by a third party is at such party's sole risk.

Opinions and recommendations contained in this memorandum apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this memorandum.

REFERENCES

Ecology. 2019. Implementation memorandum no. 22: vapor intrusion investigations and short-term trichloroethene toxicity. Washington State Department of Ecology, Lacey, Washington. October 1.

MFA. 2020a. Vapor report: vapor intrusion assessment, interim remedial actions, vapor intrusion priority work plan, Precision Engineering, Inc., site. Prepared for Dick Morgan. Maul Foster & Alongi, Inc., Bellingham, Washington. November 6.

MFA. 2020b. Email (re: Precision Engineering—vapor report and VIP work plan) to M. Adams, Washington State Department of Ecology, from H. Good, Maul Foster & Alongi, Inc., Bellingham, Washington. December 9.

TABLE



Table
Vapor Intrusion Priority Monitoring
Analytical Results
Precision Engineering, Inc.
Dick Morgan
Seattle, Washington



Location	Sample Name	Collection Start Date	Collection End Date	Trichloroethene
				ug/m ³
MTCA Method B VI CUL ^(a)				0.33
Indoor Air Action Level, Workplace Scenario ⁽¹⁾				7.5
RAD1	RAD1-121720	12/17/2020	01/07/2021	0.54
	RAD1-032221	03/22/2021	04/12/2021	0.44
	RAD1-062121	06/21/2021	07/12/2021	0.42
RAD4	RAD4-121720	12/17/2020	01/07/2021	0.87
	RAD4-032221	03/22/2021	04/12/2021	0.95
	RAD4-062121	06/21/2021	07/12/2021	0.76
RAD5	RAD5-121720	12/17/2020	01/07/2021	0.77
	RAD5-032221	03/22/2021	04/12/2021	0.71
	RAD5-062121	06/21/2021	07/12/2021	0.38

NOTES:
Each sample was collected over a three-week period, using Radiello® R130 passive indoor air samplers.
Shading indicates an exceedance of MTCA Method B VI CUL.
CUL = cleanup level.
MTCA = Model Toxics Control Act.
ug/m³ = micrograms per cubic meter.
VI = vapor intrusion.
^(a)The MTCA Method B VI CUL is the basis for the Lower Duwamish Waterway preliminary CUL for trichloroethene in indoor air at the site.
REFERENCE:
⁽¹⁾Ecology. Implementation memorandum no. 22: vapor intrusion investigations and short-term trichloroethene toxicity. Washington State Department of Ecology, Lacey, Washington. October 1, 2019.

FIGURE



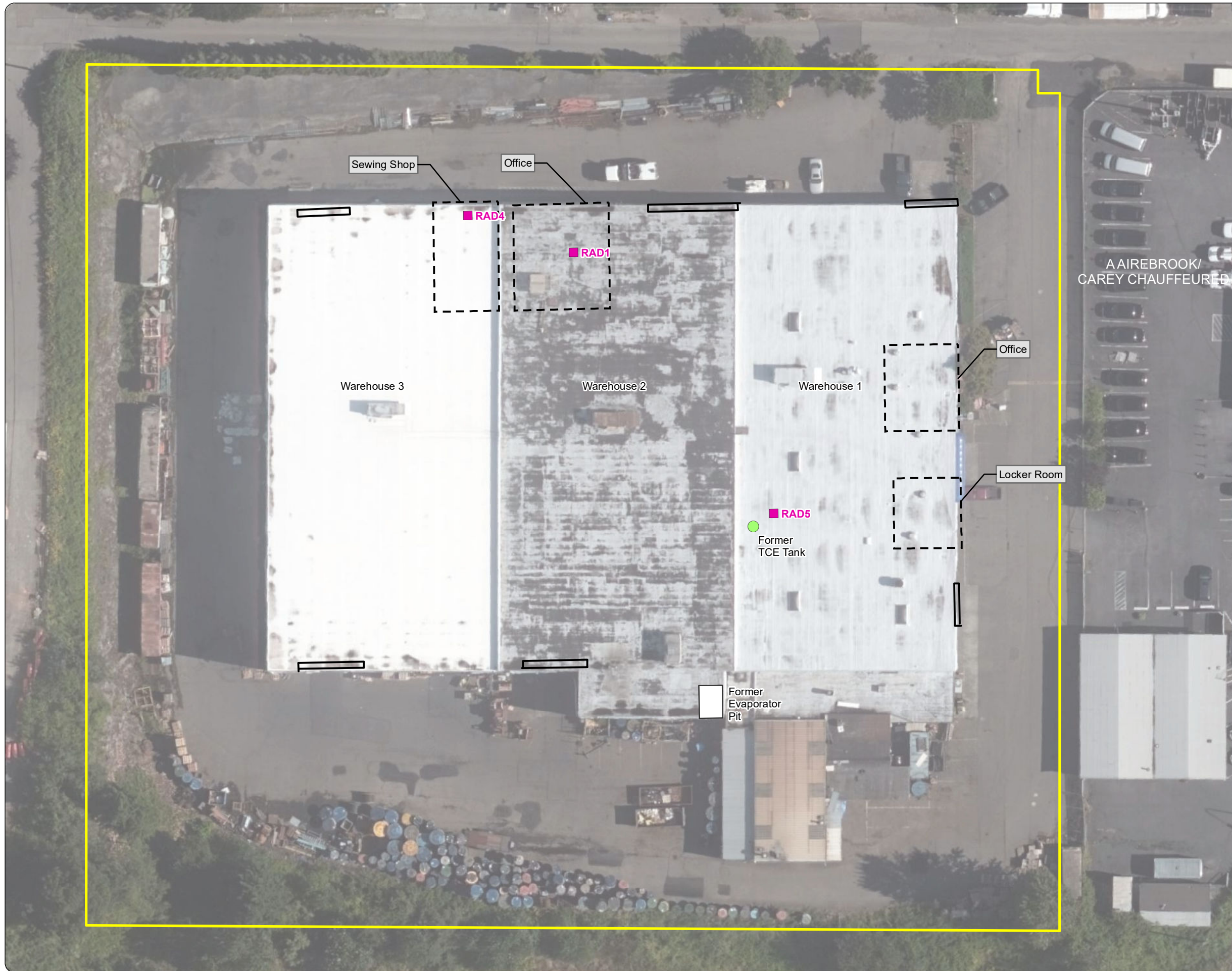


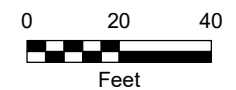
Figure
Vapor Intrusion Priority
Monitoring Locations
 Precision Engineering, Inc.
 Seattle, Washington

Legend

- Passive Sampler
- Property Features**
- Second Story Areas (approximate)
- Overhead Door (approximate)
- Property Parcel

A AIREBROOK/
CAREY CHAUFFEURS

NOTES:
 All sample locations are approximate.
 TCE = trichloroethene.



Source:
 Aerial photograph obtained from Mapbox.
 Parcel data obtained from King County GIS.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

ATTACHMENT A

SLAB INSPECTION DOCUMENTATION



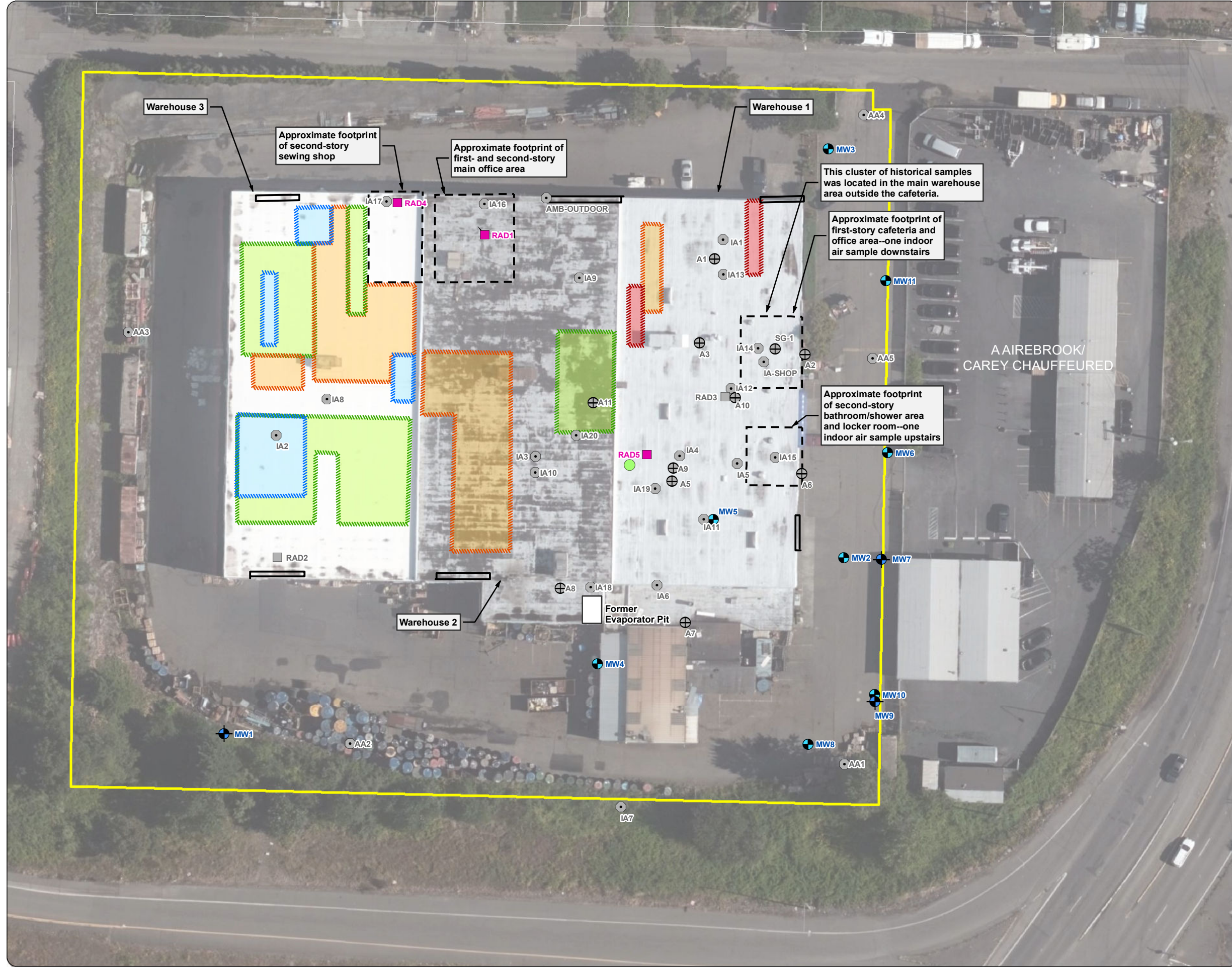
Slab Inspection Form
Precision Engineering, Inc.
Dick Morgan
Seattle, Washington



Date:	6/21/2021
Weather:	Partly cloudy, 48° Fahrenheit
Precipitation (prior 24 hours.):	0 inches on 6/20/2021
Completed By:	E. Lundeen, EIT, Maul Foster & Alongi, Inc.
General Observations:	
<p>Most cracks did not have a noticeable change in condition from the March 22, 2021 inspection. One additional area with minor sealant wear was identified in Warehouse 3.</p> <p>The evaporator pit cap appears to be in good condition.</p>	
Specific Observations:	
Slab Sealing:	
<p>In Warehouse 1, the sealed cracks are generally in good condition. There is minimal cracking or flaking of sealant. A few unsealed areas were identified that had been covered with inventory during the slab sealing work (see the attached figure).</p> <p>In Warehouse 2, no changes from the previous inspection were observed. A few areas continue to show minor sealant wear, but these appear to be surficial. Areas with the heaviest vehicle traffic have the most obvious sealant wear, and in some cases sealant is no longer present(see the attached figure).</p> <p>In Warehouse 3, MFA observed an additional area where sealant is no longer present. This area should be monitored (see the attached figure).</p>	
Evaporator Pit Cap:	
<p>The former evaporator pit was backfilled with compacted gravel and capped with concrete on April 13, 2020. The cap is currently in good condition.</p> <p>The former evaporator pit is currently covered with heavy equipment, but the exposed areas appear to be intact, with no visible damage to the concrete.</p> <p>No settling or bulging was observed.</p>	

Project: 1803.01.05 Produced By: abtkby Approved By: hgood Print Date: 7/26/2021 Path: X:\1803.01\04\Projects\Slab_Inspections\Fig_June2021_SlabInspectionLocations.mxd

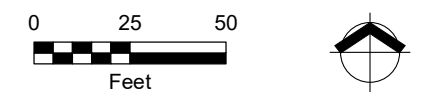
Figure
June 2021
Slab Inspection
 Precision Engineering, Inc.
 Seattle, Washington



Legend

- Slab Inspection Areas**
- ▬ Unsealed Cracks and Seams ^(a)
 - ▬ Groundwater Seepage
 - ▬ Minor Sealant Wear
 - ▬ Sealant Peeling from Seams ^(a)
- Vapor Sample Locations**
- Passive Sampler
- Previous Vapor Sample Locations**
- Indoor/Ambient Air
 - ⊕ Sub-slab Soil Gas
 - Passive Sampler
- Property Features**
- Former Trichloroethene Tank
 - Shallow Monitoring Well
 - ⊕ Deep Monitoring Well
 - ▬ Overhead Door (Approximate)
 - Property Parcel
 - King County Parcel

NOTES:
 The slab inspection was conducted by Evelyn Lundeen on June 21, 2021.
 Well locations for MW1 to MW8 were surveyed by Duncanson, Inc. All other feature locations are approximate.
 (a) Seams are approximately 1-centimeter-deep, linear depressions in the concrete slab with a visible bottom. Seams are not anticipated to contribute to vapor intrusion.



Source:
 Aerial photograph obtained from Mapbox.
 Parcel data obtained from King County GIS.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



MAUL
FOSTER
ALONGI

PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 1.

Description

Typical sealed crack in Warehouse 1. No wear of the sealant was observed.



Photo No. 2.

Description

Typical sealed crack in Warehouse 1. No wear of the sealant was observed.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 3.

Description

Crack without sealant in the north portion of Warehouse 1.



Photo No. 4.

Description

Minor wear of sealant in Warehouse 1. The crack does not appear to extend through the slab.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 5.

Description

Typical wear of sealant in Warehouse 2.



Photo No. 6.

Description

Example of sealant wear in a crack in an area of Warehouse 2 with high amounts of vehicle activity. The crack does not appear to extend into the slab.





PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 7.

Description

Former evaporator pit, covered by heavy equipment and inventory.



Photo No. 8.

Description

Area of groundwater seepage observed in Warehouse 3.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 9.

Description

New area of sealant wear in Warehouse 3. Seams are approximately 1 centimeter deep and do not appear to extend through the slab.



Photo No. 10.

Description

New area of sealant wear in Warehouse 3. Seams are approximately 1 centimeter deep and do not appear to extend through the slab.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
June 2021 Slab Inspection
Project Number: 1803.01.05
Location: 1231 S Director Street, Seattle, Washington

Photo No. 11.

Description

Minor cracks in sealant
in Warehouse 3.



Photo No. 12.

Description

Minor cracks in sealant
in Warehouse 3.



ATTACHMENT B

ANALYTICAL LAB REPORT



7/15/2021

Ms. Heather Good
Maul Foster and Alongi Inc.
1329 North State Street
Suite 301
Bellingham WA 98225

Project Name: Precision Engineering

Project #: 1803.01.05

Workorder #: 2107237

Dear Ms. Heather Good

The following report includes the data for the above referenced project for sample(s) received on 7/13/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. RAD130/SKC 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

WORK ORDER #: 2107237

Work Order Summary

CLIENT: Ms. Heather Good
Maul Foster and Alongi Inc.
1329 North State Street
Suite 301
Bellingham, WA 98225

BILL TO: Accounts Payable
Maul Foster and Alongi Inc.
400 E. Mill Plain Blvd
Suite 400
Vancouver, WA 98660

PHONE: 360-594-6262
P.O. #

FAX: 360-594-6270
PROJECT # 1803.01.05 Precision Engineering

DATE RECEIVED: 07/13/2021
CONTACT: Monica Tran

DATE COMPLETED: 07/15/2021

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	RAD1-062121	Passive S.E. RAD130/SKC
02A	RAD4-062121	Passive S.E. RAD130/SKC
03A	RAD5-062121	Passive S.E. RAD130/SKC
04A	TRIP BLANK	Passive S.E. RAD130/SKC
05A	Lab Blank	Passive S.E. RAD130/SKC
06A	CCV	Passive S.E. RAD130/SKC
07A	LCS	Passive S.E. RAD130/SKC
07AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:



Technical Director

DATE: 07/15/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Maul Foster and Alongi Inc.
Workorder# 2107237**

Four Radiello 130 (Solvent) samples were received on July 13, 2021. 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.

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:

<i>Requirement</i>	<i>TO-17</i>	<i>ATL Modifications</i>
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 uptake rates were corrected based on average field temperatures if provided. In the absence of field temperatures, the uptake rates determined at 25 deg C were used.

To calculate ug/m³ concentrations in the Lab Blank and Trip Blank, a sampling duration of 30240 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

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

**Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS**

Client Sample ID: RAD1-062121

Lab ID#: 2107237-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	0.88	0.42

Client Sample ID: RAD4-062121

Lab ID#: 2107237-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.6	0.76

Client Sample ID: RAD5-062121

Lab ID#: 2107237-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	0.80	0.38

Client Sample ID: TRIP BLANK

Lab ID#: 2107237-04A

No Detections Were Found.



Air Toxics

Client Sample ID: RAD1-062121

Lab ID#: 2107237-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071311sim	Date of Collection:	7/12/21 12:25:00 PM
Dil. Factor:	1.00	Date of Analysis:	7/13/21 12:18 PM
		Date of Extraction:	7/13/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	0.88	0.42

Temperature = 77.0F , duration time = 30240 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	76	70-130



Air Toxics

Client Sample ID: RAD4-062121

Lab ID#: 2107237-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071312sim	Date of Collection:	7/12/21 12:32:00 PM
Dil. Factor:	1.00	Date of Analysis:	7/13/21 12:45 PM
		Date of Extraction:	7/13/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.6	0.76

Temperature = 77.0F , duration time = 30240 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	77	70-130



Air Toxics

Client Sample ID: RAD5-062121

Lab ID#: 2107237-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071313sim	Date of Collection:	7/12/21 12:40:00 PM
Dil. Factor:	1.00	Date of Analysis:	7/13/21 01:12 PM
		Date of Extraction:	7/13/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	0.80	0.38

Temperature = 77.0F , duration time = 30240 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	75	70-130



Air Toxics

Client Sample ID: TRIP BLANK

Lab ID#: 2107237-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071314sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/13/21 01:38 PM
		Date of Extraction:	7/13/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	Not Detected	Not Detected

Temperature = 77.0F , duration time = 30240 minutes.
Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	79	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 2107237-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071305sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/13/21 09:11 AM
		Date of Extraction:	7/13/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	Not Detected	Not Detected

Temperature = 77.0F , duration time = 30240 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	78	70-130

Client Sample ID: CCV

Lab ID#: 2107237-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071302sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 7/13/21 07:34 AM
		Date of Extraction: NA

Compound	%Recovery
Trichloroethene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

Client Sample ID: LCS

Lab ID#: 2107237-07A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071303sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/13/21 08:03 AM
		Date of Extraction:	7/13/21

Compound	%Recovery	Method Limits
Trichloroethene	90	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	76	70-130

Client Sample ID: LCSD

Lab ID#: 2107237-07AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18071304sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/13/21 08:29 AM
		Date of Extraction:	7/13/21

Compound	%Recovery	Method Limits
Trichloroethene	90	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	76	70-130



Air Toxics

Passive Sorbent Chain of Custody

WO#

2107237

Case Seal #: _____

Company: Maul Foster + Alonzi Project #: 1803-01-05 P.O. #: _____
 Project Manager: Heather Goon Project Name: Precision Engineering
 Contact phone/email: 260-594-6268 Collected by: Evelyn Lundeen

Lab I.D.	Sample Identification	Sampler ID	Date of Deployment (mm/dd/yy)	Time of Deployment (hr:min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr:min)	Sample Matrix (check one)				Reporting Units (circle)		Turn Around Time:
							Indoor/Outdoor Air	Soil Gas	Workplace Monitoring	Other	ppbv (<u>µg/m3</u>)	ppmv (mg/m3)	µg (ng)
01A	RAD1-002121	DB445	06/21/21 07/12/21	1225	07/12/21	1225	X				T0-17	} ONLY TCE	
02A	RAD4-002121	DB446	06/21/21 07/12/21	1232	07/12/21	1232	X				T0-17		
03A	RAD5-002121	DB447	06/21/21 07/12/21	1240	07/12/21	1240	X				T0-17		
04A	TRIP BLANK	DB448	NA	NA	07/12/21	NA					T0-17		

Relinquished by: (signature) [Signature] Date 7/12/21 Time 15:30 Received by: (signature) [Signature] Date 7-13-21 Time 09:52
 Notes to Lab: MRL needed 4 = 0.37 µg/m3

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.

Lab Use Only

Shipper Name: FedEx Custody Seals Intact? **Yes** **No** **None** Sample Condition Upon Receipt: (circle) Good SDR
 Air Bill #: _____ Temperature (°C) NA

ATTACHMENT C

DATA VALIDATION MEMORANDUM



DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 1803.01.05 | JULY 15, 2021 | PRECISION ENGINEERING, INC.

Maul Foster & Alongi, Inc., conducted an independent review of the quality of analytical results for indoor air samples collected at the Precision Engineering, Inc., site located at 1231 S Director Street in Seattle, Washington. The samples were collected from June 21 to July 12, 2021.

Eurofins Air Toxics (Eurofins) performed the analyses. Eurofins report number 2107237 was reviewed. The analyses performed and samples analyzed are listed in the tables below.

Analysis	Reference
TCE—Radiello 130	EPA TO-17 Modified
NOTES: EPA = U.S. Environmental Protection Agency. TCE = trichloroethene.	

Report 2107237
Samples Analyzed
RAD1-062121
RAD4-062121
RAD5-062121
TRIP BLANK

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) procedures (EPA, 2017) and appropriate laboratory and method-specific guidelines (EPA, 1986; Eurofins, 2021).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch.

The laboratory method blank was non-detect to the laboratory reporting limit for trichloroethene.

Trip Blanks

According to report 2107237, a trip blank sample was submitted to Eurofins for EPA Method TO-17 modified analysis. Eurofins noted that the trip blank sample volume was calculated based on a sampling duration of 30,240 minutes (three weeks).

The trip blank was non-detect to the method reporting limit.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate recoveries were within acceptance limits.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. Laboratory duplicate results were not reported.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency.

All LCS and LCSD results were within acceptance limits for percent recovery and relative percent difference.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. No field duplicates were submitted for analysis.

CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch.

The CCV result was within percent recovery acceptance limits.

REPORTING LIMITS

Eurofins used routine reporting limits for non-detect results.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. No issues were found.

REFERENCES

EPA. 1986. Test methods for evaluating solid waste, physical/chemical methods. EPA publication SW-846. 3d ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), and VI phase III (2019).

EPA. 2017. EPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

Eurofins. 2021. Laboratory quality assurance manual. Rev. 32. Eurofins Air Toxics, Folsom, California. January 4.