

From: Langdon, Robert <RLangdon@scsengineers.com>
Sent: Friday, June 23, 2023 1:54 PM
To: Ackerman, Jeffrey A - DNR
Cc: Jeff A. Miesen; Gilkey, Keith
Subject: Request to shutdown SVE System and submit for closure , Former Highway Cleaners, Boscobel BRRTS #02-22-543001
Attachments: Table 1 - SVE System Operation Summary and Air Emissions.pdf; Figures.pdf; SVE System Exhaust Laboratory Reports.pdf

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

Hi Jeff, I've attached updated SVE system documentation for the Former Highway Cleaners site. The system was re-started on April 6th, and we've completed three rounds of exhaust sampling since then. Like the prior period of operation there has been relatively little mass removed. For this period exhaust concentrations have fallen, and mass removal rates are stabilizing. Based on these findings we're requesting permission to shut the system off and submit for case closure.

Thank you,
Rob

Robert Langdon
Senior Project Manager
SCS Engineers
2830 Dairy Drive
Madison, WI 53718-6751 USA
608-216-7329 (W)
608-212-3995 (C)
rlangdon@scsengineers.com

Driven by Client Success
www.scsengineers.com



Figure 1
PCE in SVE System Exhaust
Former Highway Cleaners
Boscobel, Wisconsin

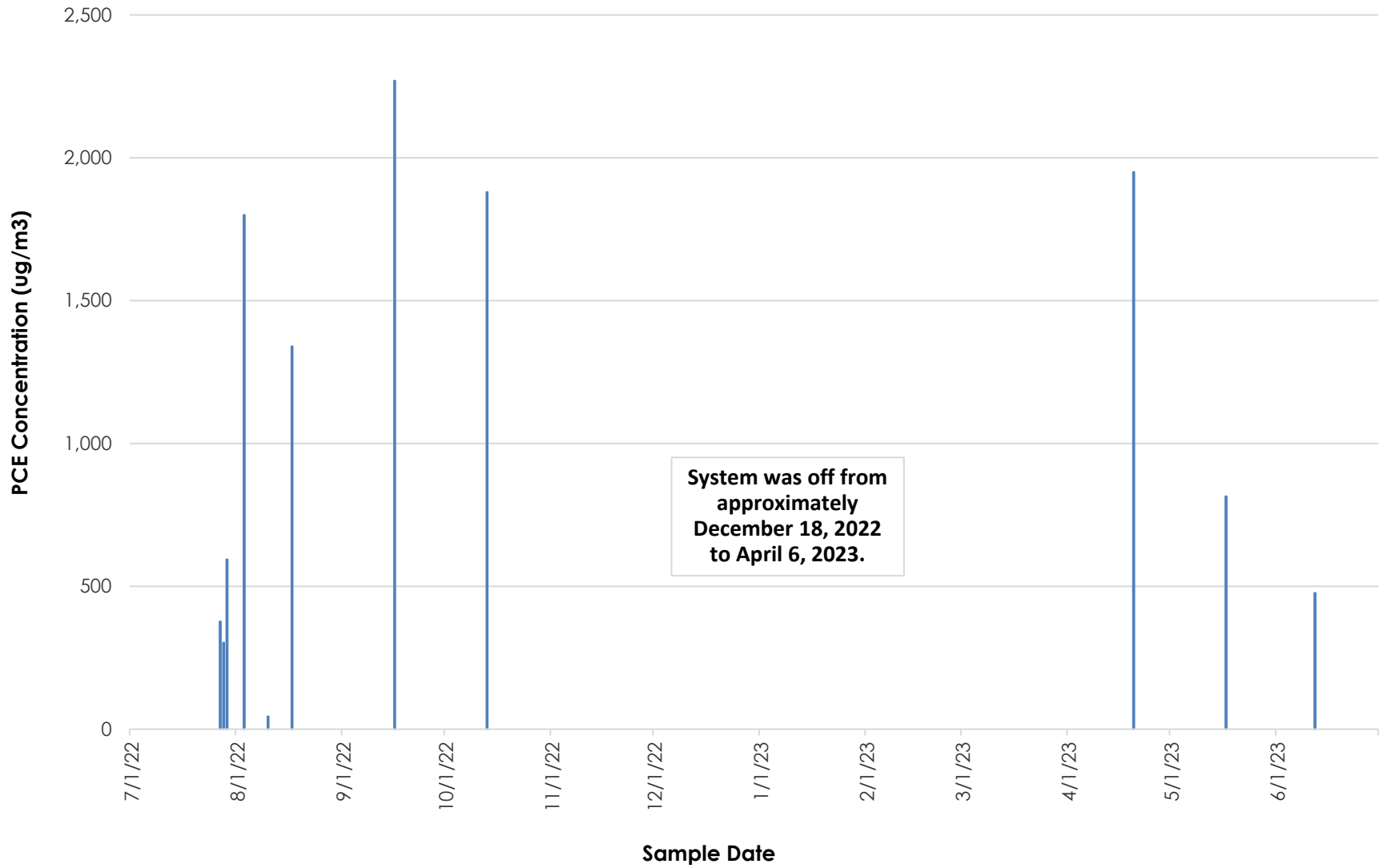


Figure 2
Total PCE Removed
Former Highway Cleaners
Boscobel, Wisconsin

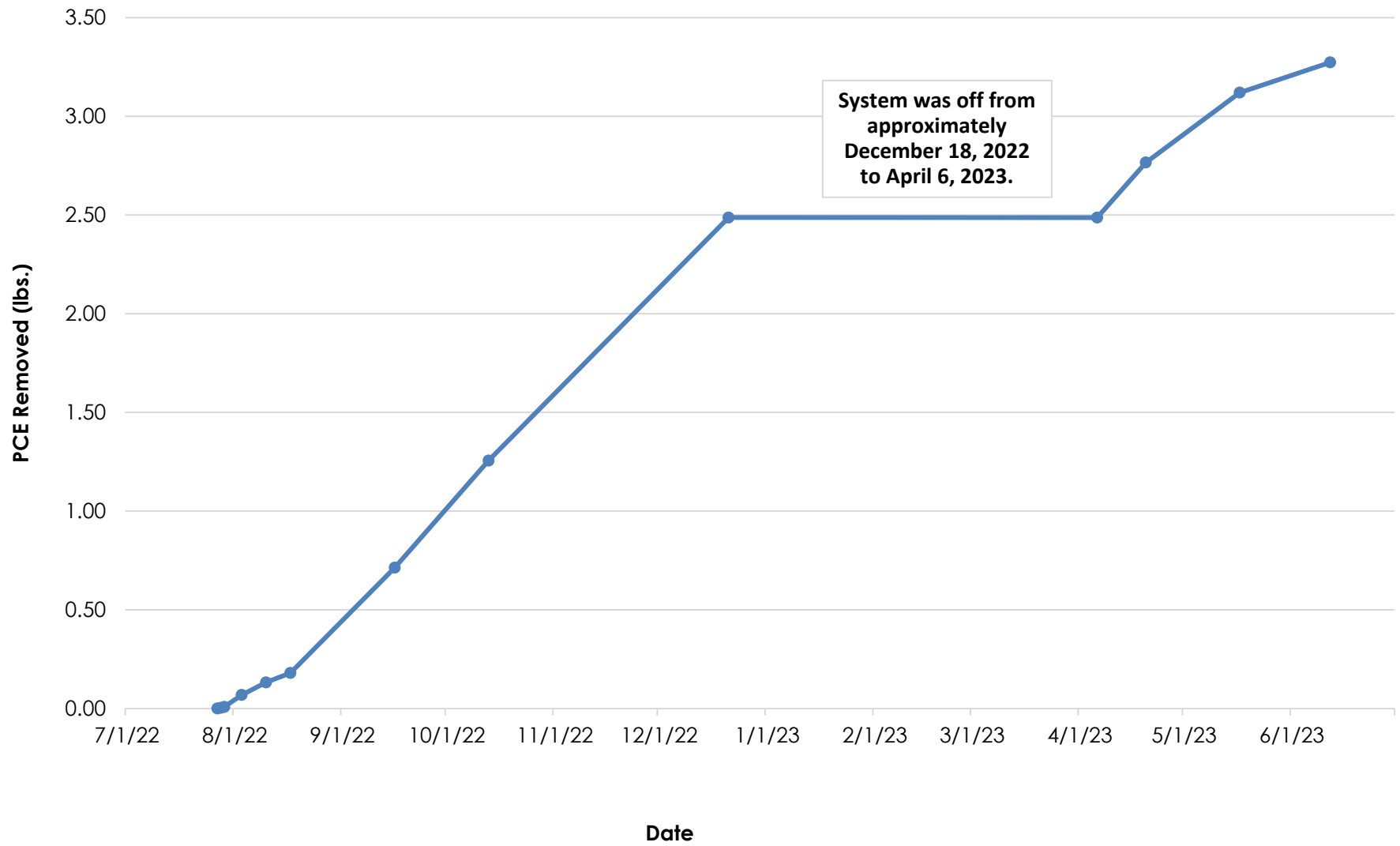
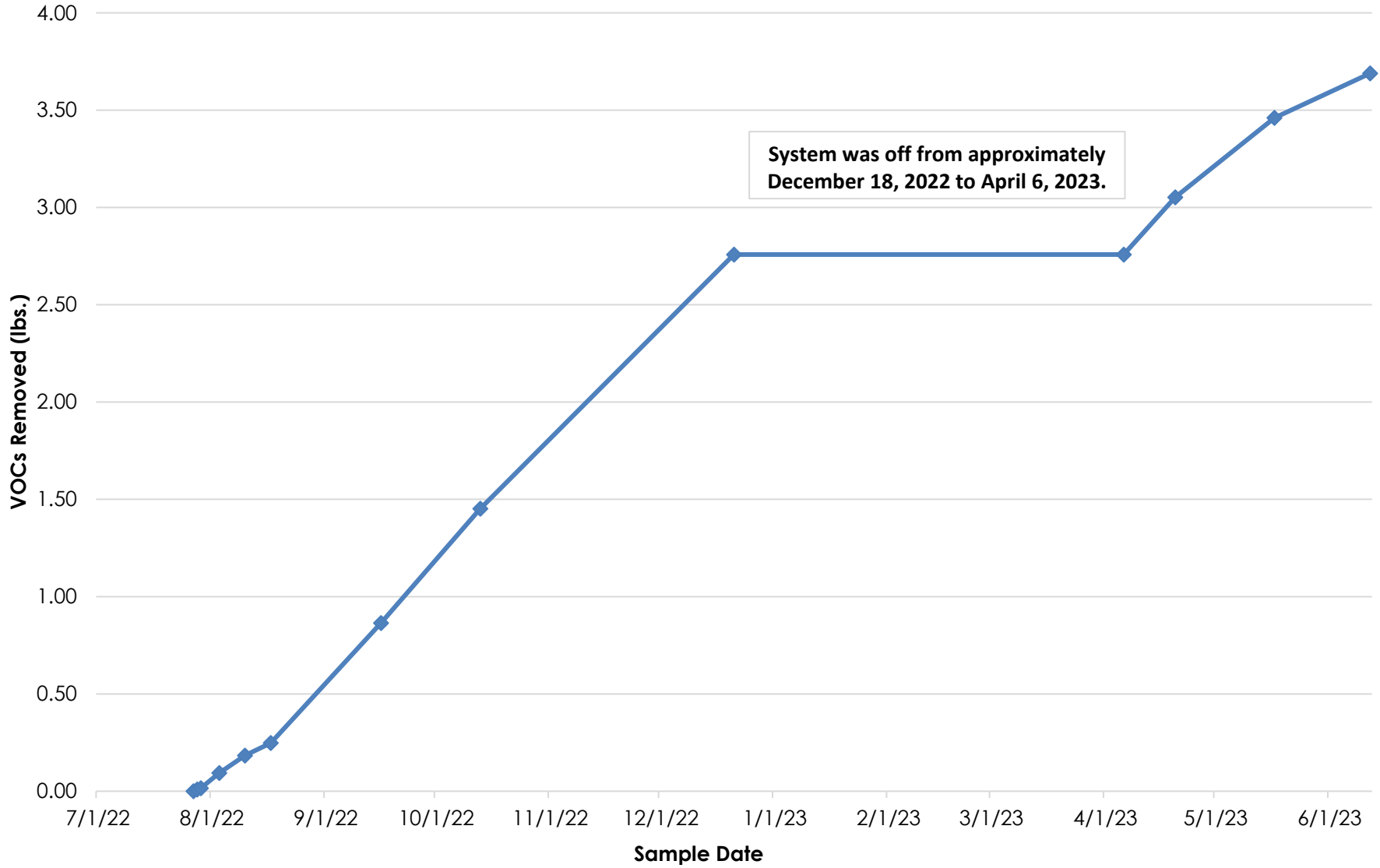


Figure 3
Total VOCs Removed
Former Highway Cleaners
Boscobel, Wisconsin



SCS Engineers - Madison, WI

Sample Delivery Group: L1608286
Samples Received: 04/22/2023
Project Number: 25220211.01
Description: Highway Cleaners

Report To: Robert Langdon
2830 Dairy Drive
Madison, WI 53718-6751

Entire Report Reviewed By:



Jennifer A McCurdy
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.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1	1 Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	2 Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	3 Ss
SVE-9 L1608286-01	5	
Qc: Quality Control Summary	7	4 Cn
Volatile Organic Compounds (MS) by Method TO-15	7	5 Sr
Gl: Glossary of Terms	12	
Al: Accreditations & Locations	13	6 Qc
Sc: Sample Chain of Custody	14	7 Gl
		8 Al
		9 Sc

SAMPLE SUMMARY

SVE-9 L1608286-01 Air

Collected by: Ethan Schafer
 Collected date/time: 04/20/23 10:27
 Received date/time: 04/22/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2050816	1	04/29/23 01:57	04/29/23 01:57	DBB	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG2054324	20	05/04/23 19:48	05/04/23 19:48	SDS	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

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.



Jennifer A McCurdy
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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
Acetone	67-64-1	58.10	1.95	4.63	3.03	7.20		1	WG2050816
Allyl chloride	107-05-1	76.53	0.380	1.19	ND	ND		1	WG2050816
Benzene	71-43-2	78.10	0.238	0.760	ND	ND		1	WG2050816
Benzyl Chloride	100-44-7	127	0.199	1.03	ND	ND		1	WG2050816
Bromodichloromethane	75-27-4	164	0.234	1.57	ND	ND		1	WG2050816
Bromoform	75-25-2	253	0.244	2.52	ND	ND		1	WG2050816
Bromomethane	74-83-9	94.90	0.327	1.27	ND	ND		1	WG2050816
1,3-Butadiene	106-99-0	54.10	0.347	0.768	ND	ND		1	WG2050816
Carbon disulfide	75-15-0	76.10	0.340	1.06	ND	ND		1	WG2050816
Carbon tetrachloride	56-23-5	154	0.244	1.54	ND	ND		1	WG2050816
Chlorobenzene	108-90-7	113	0.277	1.28	ND	ND		1	WG2050816
Chloroethane	75-00-3	64.50	0.332	0.876	ND	ND		1	WG2050816
Chloroform	67-66-3	119	0.239	1.16	ND	ND		1	WG2050816
Chloromethane	74-87-3	50.50	0.343	0.708	ND	ND		1	WG2050816
2-Chlorotoluene	95-49-8	126	0.276	1.42	ND	ND		1	WG2050816
Cyclohexane	110-82-7	84.20	0.251	0.864	ND	ND		1	WG2050816
Dibromochloromethane	124-48-1	208	0.242	2.06	ND	ND		1	WG2050816
1,2-Dibromoethane	106-93-4	188	0.240	1.85	ND	ND		1	WG2050816
1,2-Dichlorobenzene	95-50-1	147	0.427	2.57	ND	ND		1	WG2050816
1,3-Dichlorobenzene	541-73-1	147	0.607	3.65	ND	ND		1	WG2050816
1,4-Dichlorobenzene	106-46-7	147	0.186	1.12	ND	ND		1	WG2050816
1,2-Dichloroethane	107-06-2	99	0.233	0.943	ND	ND		1	WG2050816
1,1-Dichloroethane	75-34-3	98	0.241	0.966	ND	ND		1	WG2050816
1,1-Dichloroethene	75-35-4	96.90	0.254	1.01	ND	ND		1	WG2050816
cis-1,2-Dichloroethene	156-59-2	96.90	0.261	1.03	ND	ND		1	WG2050816
trans-1,2-Dichloroethene	156-60-5	96.90	0.224	0.888	ND	ND		1	WG2050816
1,2-Dichloropropane	78-87-5	113	0.253	1.17	ND	ND		1	WG2050816
cis-1,3-Dichloropropene	10061-01-5	111	0.230	1.04	ND	ND		1	WG2050816
trans-1,3-Dichloropropene	10061-02-6	111	0.243	1.10	ND	ND		1	WG2050816
1,4-Dioxane	123-91-1	88.10	0.278	1.00	ND	ND		1	WG2050816
Ethanol	64-17-5	46.10	0.883	1.66	10.4	19.6		1	WG2050816
Ethylbenzene	100-41-4	106	0.278	1.21	ND	ND		1	WG2050816
4-Ethyltoluene	622-96-8	120	0.261	1.28	ND	ND		1	WG2050816
Trichlorofluoromethane	75-69-4	137.40	0.273	1.53	0.395	2.22		1	WG2050816
Dichlorodifluoromethane	75-71-8	120.92	0.457	2.26	9.60	47.5		1	WG2050816
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.264	2.02	ND	ND		1	WG2050816
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.297	2.08	ND	ND		1	WG2050816
Heptane	142-82-5	100	0.347	1.42	ND	ND		1	WG2050816
Hexachloro-1,3-butadiene	87-68-3	261	0.350	3.74	ND	ND		1	WG2050816
n-Hexane	110-54-3	86.20	0.687	2.42	ND	ND		1	WG2050816
Isopropylbenzene	98-82-8	120.20	0.259	1.27	ND	ND		1	WG2050816
Methylene Chloride	75-09-2	84.90	0.326	1.13	0.453	1.57		1	WG2050816
Methyl Butyl Ketone	591-78-6	100	0.443	1.81	ND	ND		1	WG2050816
2-Butanone (MEK)	78-93-3	72.10	0.271	0.799	0.554	1.63		1	WG2050816
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	0.255	1.04	ND	ND		1	WG2050816
Methyl methacrylate	80-62-6	100.12	0.292	1.20	ND	ND		1	WG2050816
MTBE	1634-04-4	88.10	0.216	0.778	ND	ND		1	WG2050816
Naphthalene	91-20-3	128	1.17	6.13	ND	ND		1	WG2050816
2-Propanol	67-63-0	60.10	0.880	2.16	ND	ND		1	WG2050816
Propene	115-07-1	42.10	0.311	0.536	ND	ND		1	WG2050816
Styrene	100-42-5	104	0.263	1.12	ND	ND		1	WG2050816
1,1,2,2-Tetrachloroethane	79-34-5	168	0.248	1.70	ND	ND		1	WG2050816
Tetrachloroethylene	127-18-4	166	5.43	36.9	287	1950		20	WG2054324
Tetrahydrofuran	109-99-9	72.10	0.245	0.722	ND	ND		1	WG2050816
Toluene	108-88-3	92.10	0.290	1.09	0.715	2.69		1	WG2050816
1,2,4-Trichlorobenzene	120-82-1	181	0.493	3.65	ND	ND		1	WG2050816

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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
1,1,1-Trichloroethane	71-55-6	133	0.245	1.33	0.394	2.14		1	WG2050816
1,1,2-Trichloroethane	79-00-5	133	0.258	1.40	ND	ND		1	WG2050816
Trichloroethylene	79-01-6	131	0.227	1.22	0.989	5.30		1	WG2050816
1,2,4-Trimethylbenzene	95-63-6	120	0.255	1.25	ND	ND		1	WG2050816
1,3,5-Trimethylbenzene	108-67-8	120	0.260	1.28	ND	ND		1	WG2050816
2,2,4-Trimethylpentane	540-84-1	114.22	0.443	2.07	2.95	13.8		1	WG2050816
Vinyl chloride	75-01-4	62.50	0.316	0.808	ND	ND		1	WG2050816
Vinyl Bromide	593-60-2	106.95	0.284	1.24	ND	ND		1	WG2050816
Vinyl acetate	108-05-4	86.10	0.387	1.36	ND	ND		1	WG2050816
Xylenes, Total	1330-20-7	106.16	0.450	1.95	1.17	5.08		1	WG2050816
m&p-Xylene	1330-20-7	106	0.450	1.95	ND	ND		1	WG2050816
o-Xylene	95-47-6	106	0.276	1.20	0.885	3.84		1	WG2050816
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		101				WG2050816
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		86.4				WG2054324

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3920724-2 04/28/23 10:23

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.95
Allyl Chloride	U		0.114	0.380
Benzene	U		0.0715	0.238
Benzyl Chloride	U		0.0598	0.199
Bromodichloromethane	U		0.0702	0.234
Bromoform	U		0.0732	0.244
Bromomethane	U		0.0982	0.327
1,3-Butadiene	U		0.104	0.347
Carbon disulfide	U		0.102	0.340
Carbon tetrachloride	U		0.0732	0.244
Chlorobenzene	U		0.0832	0.277
Chloroethane	U		0.0996	0.332
Chloroform	U		0.0717	0.239
Chloromethane	U		0.103	0.343
2-Chlorotoluene	U		0.0828	0.276
Cyclohexane	U		0.0753	0.251
Dibromochloromethane	U		0.0727	0.242
1,2-Dibromoethane	U		0.0721	0.240
1,2-Dichlorobenzene	U		0.128	0.427
1,3-Dichlorobenzene	U		0.182	0.607
1,4-Dichlorobenzene	U		0.0557	0.186
1,2-Dichloroethane	U		0.0700	0.233
1,1-Dichloroethane	U		0.0723	0.241
1,1-Dichloroethene	U		0.0762	0.254
cis-1,2-Dichloroethene	U		0.0784	0.261
trans-1,2-Dichloroethene	U		0.0673	0.224
1,2-Dichloropropane	U		0.0760	0.253
cis-1,3-Dichloropropene	U		0.0689	0.230
trans-1,3-Dichloropropene	U		0.0728	0.243
1,4-Dioxane	U		0.0833	0.278
Ethanol	U		0.265	0.883
Ethylbenzene	U		0.0835	0.278
4-Ethyltoluene	U		0.0783	0.261
Trichlorofluoromethane	U		0.0819	0.273
Dichlorodifluoromethane	U		0.137	0.457
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.264
1,2-Dichlorotetrafluoroethane	U		0.0890	0.297
Heptane	U		0.104	0.347
Hexachloro-1,3-butadiene	U		0.105	0.350
n-Hexane	U		0.206	0.687

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3920724-2 04/28/23 10:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Isopropylbenzene	U		0.0777	0.259
Methylene Chloride	U		0.0979	0.326
Methyl Butyl Ketone	U		0.133	0.443
2-Butanone (MEK)	U		0.0814	0.271
4-Methyl-2-pentanone (MIBK)	U		0.0765	0.255
Methyl Methacrylate	U		0.0876	0.292
MTBE	U		0.0647	0.216
Naphthalene	U		0.350	1.17
2-Propanol	U		0.264	0.880
Propene	0.138	U	0.0932	0.311
Styrene	U		0.0788	0.263
1,1,2,2-Tetrachloroethane	U		0.0743	0.248
Tetrahydrofuran	U		0.0734	0.245
Toluene	U		0.0870	0.290
1,2,4-Trichlorobenzene	U		0.148	0.493
1,1,1-Trichloroethane	U		0.0736	0.245
1,1,2-Trichloroethane	U		0.0775	0.258
Trichloroethylene	U		0.0680	0.227
1,2,4-Trimethylbenzene	U		0.0764	0.255
1,3,5-Trimethylbenzene	U		0.0779	0.260
2,2,4-Trimethylpentane	U		0.133	0.443
Vinyl chloride	U		0.0949	0.316
Vinyl Bromide	U		0.0852	0.284
Vinyl acetate	U		0.116	0.387
Xylenes, Total	U		0.135	0.450
m&p-Xylene	U		0.135	0.450
o-Xylene	U		0.0828	0.276
(S) 1,4-Bromofluorobenzene	101			60.0-140

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3920724-1 04/28/23 09:42 • (LCSD) R3920724-3 04/28/23 11:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Acetone	3.75	3.45	3.40	92.0	90.7	70.0-130			1.46	25
Allyl Chloride	3.75	3.55	3.63	94.7	96.8	70.0-130			2.23	25
Benzene	3.75	3.58	3.53	95.5	94.1	70.0-130			1.41	25
Benzyl Chloride	3.75	4.00	4.01	107	107	70.0-152			0.250	25
Bromodichloromethane	3.75	3.62	3.64	96.5	97.1	70.0-130			0.551	25

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

(LCS) R3920724-1 04/28/23 09:42 • (LCSD) R3920724-3 04/28/23 11:21

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromoform	3.75	3.72	3.77	99.2	101	70.0-130			1.34	25
Bromomethane	3.75	4.12	4.27	110	114	70.0-130			3.58	25
1,3-Butadiene	3.75	4.04	4.29	108	114	70.0-130			6.00	25
Carbon disulfide	3.75	3.54	3.59	94.4	95.7	70.0-130			1.40	25
Carbon tetrachloride	3.75	3.72	3.79	99.2	101	70.0-130			1.86	25
Chlorobenzene	3.75	3.92	4.00	105	107	70.0-130			2.02	25
Chloroethane	3.75	3.80	3.88	101	103	70.0-130			2.08	25
Chloroform	3.75	3.63	3.64	96.8	97.1	70.0-130			0.275	25
Chloromethane	3.75	3.53	3.52	94.1	93.9	70.0-130			0.284	25
2-Chlorotoluene	3.75	3.78	3.78	101	101	70.0-130			0.000	25
Cyclohexane	3.75	3.51	3.51	93.6	93.6	70.0-130			0.000	25
Dibromochloromethane	3.75	3.83	3.89	102	104	70.0-130			1.55	25
1,2-Dibromoethane	3.75	3.85	3.90	103	104	70.0-130			1.29	25
1,2-Dichlorobenzene	3.75	3.80	3.78	101	101	70.0-130			0.528	25
1,3-Dichlorobenzene	3.75	3.86	3.87	103	103	70.0-130			0.259	25
1,4-Dichlorobenzene	3.75	3.88	3.88	103	103	70.0-130			0.000	25
1,2-Dichloroethane	3.75	3.63	3.62	96.8	96.5	70.0-130			0.276	25
1,1-Dichloroethane	3.75	3.55	3.55	94.7	94.7	70.0-130			0.000	25
1,1-Dichloroethene	3.75	3.57	3.55	95.2	94.7	70.0-130			0.562	25
cis-1,2-Dichloroethene	3.75	3.54	3.56	94.4	94.9	70.0-130			0.563	25
trans-1,2-Dichloroethene	3.75	3.55	3.55	94.7	94.7	70.0-130			0.000	25
1,2-Dichloropropane	3.75	3.51	3.49	93.6	93.1	70.0-130			0.571	25
cis-1,3-Dichloropropene	3.75	3.61	3.60	96.3	96.0	70.0-130			0.277	25
trans-1,3-Dichloropropene	3.75	3.70	3.73	98.7	99.5	70.0-130			0.808	25
1,4-Dioxane	3.75	3.53	3.59	94.1	95.7	70.0-140			1.69	25
Ethanol	3.75	3.31	3.40	88.3	90.7	55.0-148			2.68	25
Ethylbenzene	3.75	3.81	3.84	102	102	70.0-130			0.784	25
4-Ethyltoluene	3.75	3.88	3.81	103	102	70.0-130			1.82	25
Trichlorofluoromethane	3.75	3.72	3.80	99.2	101	70.0-130			2.13	25
Dichlorodifluoromethane	3.75	3.31	2.90	88.3	77.3	64.0-139			13.2	25
1,1,2-Trichlorotrifluoroethane	3.75	3.55	3.68	94.7	98.1	70.0-130			3.60	25
1,2-Dichlorotetrafluoroethane	3.75	3.68	3.71	98.1	98.9	70.0-130			0.812	25
Heptane	3.75	3.30	3.38	88.0	90.1	70.0-130			2.40	25
Hexachloro-1,3-butadiene	3.75	3.55	3.87	94.7	103	70.0-151			8.63	25
n-Hexane	3.75	3.47	3.47	92.5	92.5	70.0-130			0.000	25
Isopropylbenzene	3.75	3.71	3.74	98.9	99.7	70.0-130			0.805	25
Methylene Chloride	3.75	3.42	3.47	91.2	92.5	70.0-130			1.45	25
Methyl Butyl Ketone	3.75	3.36	3.38	89.6	90.1	70.0-149			0.593	25
Methyl Ethyl Ketone	3.75	3.82	3.72	102	99.2	70.0-130			2.65	25
4-Methyl-2-pentanone (MIBK)	3.75	3.63	3.62	96.8	96.5	70.0-139			0.276	25

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3920724-1 04/28/23 09:42 • (LCSD) R3920724-3 04/28/23 11:21

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methyl Methacrylate	3.75	3.75	3.46	100	92.3	70.0-130			8.04	25
MTBE	3.75	3.54	3.58	94.4	95.5	70.0-130			1.12	25
Naphthalene	3.75	3.52	4.04	93.9	108	70.0-159			13.8	25
2-Propanol	3.75	3.39	3.43	90.4	91.5	70.0-139			1.17	25
Propene	3.75	3.40	3.43	90.7	91.5	64.0-144			0.878	25
Styrene	3.75	3.76	3.78	100	101	70.0-130			0.531	25
1,1,2,2-Tetrachloroethane	3.75	3.74	3.76	99.7	100	70.0-130			0.533	25
Tetrahydrofuran	3.75	3.44	3.43	91.7	91.5	70.0-137			0.291	25
Toluene	3.75	3.61	3.64	96.3	97.1	70.0-130			0.828	25
1,2,4-Trichlorobenzene	3.75	3.59	3.93	95.7	105	70.0-160			9.04	25
1,1,1-Trichloroethane	3.75	3.67	3.69	97.9	98.4	70.0-130			0.543	25
1,1,2-Trichloroethane	3.75	3.62	3.66	96.5	97.6	70.0-130			1.10	25
Trichloroethylene	3.75	3.58	3.61	95.5	96.3	70.0-130			0.834	25
1,2,4-Trimethylbenzene	3.75	3.75	3.79	100	101	70.0-130			1.06	25
1,3,5-Trimethylbenzene	3.75	3.62	3.77	96.5	101	70.0-130			4.06	25
2,2,4-Trimethylpentane	3.75	3.54	3.51	94.4	93.6	70.0-130			0.851	25
Vinyl chloride	3.75	4.11	4.26	110	114	70.0-130			3.58	25
Vinyl Bromide	3.75	3.69	3.72	98.4	99.2	70.0-130			0.810	25
Vinyl acetate	3.75	3.40	3.35	90.7	89.3	70.0-130			1.48	25
Xylenes, Total	11.3	11.2	11.3	99.1	100	70.0-130			0.889	25
m&p-Xylene	7.50	7.49	7.58	99.9	101	70.0-130			1.19	25
o-Xylene	3.75	3.67	3.71	97.9	98.9	70.0-130			1.08	25
<i>(S) 1,4-Bromofluorobenzene</i>				101	100	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3921300-3 05/04/23 17:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Tetrachloroethylene	U		0.0814	0.271
<i>(S) 1,4-Bromofluorobenzene</i>	84.9			60.0-140

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

(LCS) R3921300-1 05/04/23 15:51 • (LCSD) R3921300-2 05/04/23 16:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Tetrachloroethylene	3.75	4.29	3.94	114	105	70.0-130			8.51	25
<i>(S) 1,4-Bromofluorobenzene</i>				90.2	90.2	60.0-140				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

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

J	The identification of the analyte is acceptable; the reported value is an estimate.
---	---

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

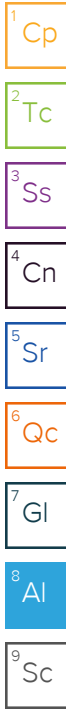
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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	LA000356
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.



SCS Engineers - Madison, WI

Sample Delivery Group: L1617694
Samples Received: 05/18/2023
Project Number: 25220211.01
Description: Highway Cleaners

Report To: Robert Langdon
2830 Dairy Drive
Madison, WI 53718-6751

Entire Report Reviewed By:












Jennifer A McCurdy
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.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1	
Tc: Table of Contents	2	
Ss: Sample Summary	3	
Cn: Case Narrative	4	
Sr: Sample Results	5	
SVE-10 L1617694-01	5	
Qc: Quality Control Summary	7	
Volatile Organic Compounds (MS) by Method TO-15	7	
Gl: Glossary of Terms	12	
Al: Accreditations & Locations	13	
Sc: Sample Chain of Custody	14	

SAMPLE SUMMARY

SVE-10 L1617694-01 Air

Collected by: Ethan Schafer
 Collected date/time: 05/17/23 10:34
 Received date/time: 05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2064996	1	05/23/23 17:42	05/23/23 17:42	GH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method TO-15	WG2069844	10	06/01/23 19:14	06/01/23 19:14	SDS	Mt. Juliet, TN

- ¹Cp
- ²Tc
- ³Ss
- ⁴Cn
- ⁵Sr
- ⁶Qc
- ⁷Gl
- ⁸Al
- ⁹Sc

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.



Jennifer A McCurdy
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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
Acetone	67-64-1	58.10	1.95	4.63	2.81	6.68		1	WG2064996
Allyl chloride	107-05-1	76.53	0.380	1.19	ND	ND		1	WG2064996
Benzene	71-43-2	78.10	0.238	0.760	ND	ND		1	WG2064996
Benzyl Chloride	100-44-7	127	0.199	1.03	ND	ND		1	WG2064996
Bromodichloromethane	75-27-4	164	0.234	1.57	ND	ND		1	WG2064996
Bromoform	75-25-2	253	0.244	2.52	ND	ND		1	WG2064996
Bromomethane	74-83-9	94.90	0.327	1.27	ND	ND		1	WG2064996
1,3-Butadiene	106-99-0	54.10	0.347	0.768	ND	ND		1	WG2064996
Carbon disulfide	75-15-0	76.10	0.340	1.06	ND	ND		1	WG2064996
Carbon tetrachloride	56-23-5	154	0.244	1.54	ND	ND		1	WG2064996
Chlorobenzene	108-90-7	113	0.277	1.28	ND	ND		1	WG2064996
Chloroethane	75-00-3	64.50	0.332	0.876	ND	ND		1	WG2064996
Chloroform	67-66-3	119	0.239	1.16	ND	ND		1	WG2064996
Chloromethane	74-87-3	50.50	0.343	0.708	ND	ND		1	WG2064996
2-Chlorotoluene	95-49-8	126	0.276	1.42	ND	ND		1	WG2064996
Cyclohexane	110-82-7	84.20	0.251	0.864	ND	ND		1	WG2064996
Dibromochloromethane	124-48-1	208	0.242	2.06	ND	ND		1	WG2064996
1,2-Dibromoethane	106-93-4	188	0.240	1.85	ND	ND		1	WG2064996
1,2-Dichlorobenzene	95-50-1	147	0.427	2.57	ND	ND		1	WG2064996
1,3-Dichlorobenzene	541-73-1	147	0.607	3.65	ND	ND		1	WG2064996
1,4-Dichlorobenzene	106-46-7	147	0.186	1.12	ND	ND		1	WG2064996
1,2-Dichloroethane	107-06-2	99	0.233	0.943	ND	ND		1	WG2064996
1,1-Dichloroethane	75-34-3	98	0.241	0.966	ND	ND		1	WG2064996
1,1-Dichloroethene	75-35-4	96.90	0.254	1.01	ND	ND		1	WG2064996
cis-1,2-Dichloroethene	156-59-2	96.90	0.261	1.03	ND	ND		1	WG2064996
trans-1,2-Dichloroethene	156-60-5	96.90	0.224	0.888	ND	ND		1	WG2064996
1,2-Dichloropropane	78-87-5	113	0.253	1.17	ND	ND		1	WG2064996
cis-1,3-Dichloropropene	10061-01-5	111	0.230	1.04	ND	ND		1	WG2064996
trans-1,3-Dichloropropene	10061-02-6	111	0.243	1.10	ND	ND		1	WG2064996
1,4-Dioxane	123-91-1	88.10	0.278	1.00	ND	ND		1	WG2064996
Ethanol	64-17-5	46.10	0.883	1.66	36.1	68.1		1	WG2064996
Ethylbenzene	100-41-4	106	0.278	1.21	0.549	2.38		1	WG2064996
4-Ethyltoluene	622-96-8	120	0.261	1.28	0.320	1.57		1	WG2064996
Trichlorofluoromethane	75-69-4	137.40	0.273	1.53	0.529	2.97		1	WG2064996
Dichlorodifluoromethane	75-71-8	120.92	0.457	2.26	11.8	58.4		1	WG2064996
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.264	2.02	ND	ND		1	WG2064996
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.297	2.08	ND	ND		1	WG2064996
Heptane	142-82-5	100	0.347	1.42	0.941	3.85		1	WG2064996
Hexachloro-1,3-butadiene	87-68-3	261	0.350	3.74	ND	ND		1	WG2064996
n-Hexane	110-54-3	86.20	0.687	2.42	ND	ND		1	WG2064996
Isopropylbenzene	98-82-8	120.20	0.259	1.27	ND	ND		1	WG2064996
Methylene Chloride	75-09-2	84.90	0.326	1.13	ND	ND		1	WG2064996
Methyl Butyl Ketone	591-78-6	100	0.443	1.81	ND	ND		1	WG2064996
2-Butanone (MEK)	78-93-3	72.10	0.271	0.799	1.16	3.42		1	WG2064996
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	0.255	1.04	ND	ND		1	WG2064996
Methyl methacrylate	80-62-6	100.12	0.292	1.20	ND	ND		1	WG2064996
MTBE	1634-04-4	88.10	0.216	0.778	ND	ND		1	WG2064996
Naphthalene	91-20-3	128	1.17	6.13	ND	ND		1	WG2064996
2-Propanol	67-63-0	60.10	0.880	2.16	3.83	9.41		1	WG2064996
Propene	115-07-1	42.10	0.311	0.536	ND	ND		1	WG2064996
Styrene	100-42-5	104	0.263	1.12	ND	ND		1	WG2064996
1,1,2,2-Tetrachloroethane	79-34-5	168	0.248	1.70	ND	ND		1	WG2064996
Tetrachloroethylene	127-18-4	166	2.71	18.4	120	815		10	WG2069844
Tetrahydrofuran	109-99-9	72.10	0.245	0.722	ND	ND		1	WG2064996
Toluene	108-88-3	92.10	0.290	1.09	32.5	122		1	WG2064996
1,2,4-Trichlorobenzene	120-82-1	181	0.493	3.65	ND	ND		1	WG2064996

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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
1,1,1-Trichloroethane	71-55-6	133	0.245	1.33	0.337	1.83		1	WG2064996
1,1,2-Trichloroethane	79-00-5	133	0.258	1.40	ND	ND		1	WG2064996
Trichloroethylene	79-01-6	131	0.227	1.22	0.689	3.69		1	WG2064996
1,2,4-Trimethylbenzene	95-63-6	120	0.255	1.25	ND	ND		1	WG2064996
1,3,5-Trimethylbenzene	108-67-8	120	0.260	1.28	0.279	1.37		1	WG2064996
2,2,4-Trimethylpentane	540-84-1	114.22	0.443	2.07	3.07	14.3		1	WG2064996
Vinyl chloride	75-01-4	62.50	0.316	0.808	ND	ND		1	WG2064996
Vinyl Bromide	593-60-2	106.95	0.284	1.24	ND	ND		1	WG2064996
Vinyl acetate	108-05-4	86.10	0.387	1.36	ND	ND	J4	1	WG2064996
Xylenes, Total	1330-20-7	106.16	0.450	1.95	3.20	13.9		1	WG2064996
m&p-Xylene	1330-20-7	106	0.450	1.95	2.36	10.2		1	WG2064996
o-Xylene	95-47-6	106	0.276	1.20	0.837	3.63		1	WG2064996
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		101				WG2064996
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		93.8				WG2069844

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3928364-2 05/23/23 09:44

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Acetone	U		0.584	1.95
Allyl chloride	U		0.114	0.380
Benzene	U		0.0715	0.238
Benzyl Chloride	U		0.0598	0.199
Bromodichloromethane	U		0.0702	0.234
Bromoform	U		0.0732	0.244
Bromomethane	U		0.0982	0.327
1,3-Butadiene	U		0.104	0.347
Carbon disulfide	U		0.102	0.340
Carbon tetrachloride	U		0.0732	0.244
Chlorobenzene	U		0.0832	0.277
Chloroethane	U		0.0996	0.332
Chloroform	U		0.0717	0.239
Chloromethane	U		0.103	0.343
2-Chlorotoluene	U		0.0828	0.276
Cyclohexane	U		0.0753	0.251
Dibromochloromethane	U		0.0727	0.242
1,2-Dibromoethane	U		0.0721	0.240
1,2-Dichlorobenzene	U		0.128	0.427
1,3-Dichlorobenzene	U		0.182	0.607
1,4-Dichlorobenzene	U		0.0557	0.186
1,2-Dichloroethane	U		0.0700	0.233
1,1-Dichloroethane	U		0.0723	0.241
1,1-Dichloroethene	U		0.0762	0.254
cis-1,2-Dichloroethene	U		0.0784	0.261
trans-1,2-Dichloroethene	U		0.0673	0.224
1,2-Dichloropropane	U		0.0760	0.253
cis-1,3-Dichloropropene	U		0.0689	0.230
trans-1,3-Dichloropropene	U		0.0728	0.243
1,4-Dioxane	U		0.0833	0.278
Ethanol	U		0.265	0.883
Ethylbenzene	U		0.0835	0.278
4-Ethyltoluene	U		0.0783	0.261
Trichlorofluoromethane	U		0.0819	0.273
Dichlorodifluoromethane	U		0.137	0.457
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.264
1,2-Dichlorotetrafluoroethane	U		0.0890	0.297
Heptane	U		0.104	0.347
Hexachloro-1,3-butadiene	U		0.105	0.350
n-Hexane	U		0.206	0.687

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3928364-2 05/23/23 09:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Isopropylbenzene	U		0.0777	0.259
Methylene Chloride	U		0.0979	0.326
Methyl Butyl Ketone	U		0.133	0.443
2-Butanone (MEK)	U		0.0814	0.271
4-Methyl-2-pentanone (MIBK)	U		0.0765	0.255
Methyl methacrylate	U		0.0876	0.292
MTBE	U		0.0647	0.216
Naphthalene	U		0.350	1.17
2-Propanol	U		0.264	0.880
Propene	U		0.0932	0.311
Styrene	U		0.0788	0.263
1,1,2,2-Tetrachloroethane	U		0.0743	0.248
Tetrahydrofuran	U		0.0734	0.245
Toluene	U		0.0870	0.290
1,2,4-Trichlorobenzene	U		0.148	0.493
1,1,1-Trichloroethane	U		0.0736	0.245
1,1,2-Trichloroethane	U		0.0775	0.258
Trichloroethylene	U		0.0680	0.227
1,2,4-Trimethylbenzene	U		0.0764	0.255
1,3,5-Trimethylbenzene	U		0.0779	0.260
2,2,4-Trimethylpentane	U		0.133	0.443
Vinyl chloride	U		0.0949	0.316
Vinyl Bromide	U		0.0852	0.284
Vinyl acetate	U		0.116	0.387
Xylenes, Total	U		0.135	0.450
m&p-Xylene	U		0.135	0.450
o-Xylene	U		0.0828	0.276
(S) 1,4-Bromofluorobenzene	98.5			60.0-140

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

(LCS) R3928364-1 05/23/23 09:15 • (LCSD) R3928364-3 05/23/23 10:56

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Acetone	3.75	3.32	3.39	88.5	90.4	70.0-130			2.09	25
Allyl chloride	3.75	3.60	3.62	96.0	96.5	70.0-130			0.554	25
Benzene	3.75	3.63	3.62	96.8	96.5	70.0-130			0.276	25
Benzyl Chloride	3.75	4.46	4.43	119	118	70.0-152			0.675	25
Bromodichloromethane	3.75	3.96	3.98	106	106	70.0-130			0.504	25

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

(LCS) R3928364-1 05/23/23 09:15 • (LCSD) R3928364-3 05/23/23 10:56

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromoform	3.75	4.07	4.14	109	110	70.0-130			1.71	25
Bromomethane	3.75	3.52	3.54	93.9	94.4	70.0-130			0.567	25
1,3-Butadiene	3.75	3.34	3.40	89.1	90.7	70.0-130			1.78	25
Carbon disulfide	3.75	3.77	3.80	101	101	70.0-130			0.793	25
Carbon tetrachloride	3.75	3.98	3.98	106	106	70.0-130			0.000	25
Chlorobenzene	3.75	3.83	3.83	102	102	70.0-130			0.000	25
Chloroethane	3.75	3.47	3.46	92.5	92.3	70.0-130			0.289	25
Chloroform	3.75	3.65	3.66	97.3	97.6	70.0-130			0.274	25
Chloromethane	3.75	3.51	3.54	93.6	94.4	70.0-130			0.851	25
2-Chlorotoluene	3.75	3.73	3.76	99.5	100	70.0-130			0.801	25
Cyclohexane	3.75	3.54	3.50	94.4	93.3	70.0-130			1.14	25
Dibromochloromethane	3.75	4.17	4.24	111	113	70.0-130			1.66	25
1,2-Dibromoethane	3.75	3.92	3.95	105	105	70.0-130			0.762	25
1,2-Dichlorobenzene	3.75	3.75	3.87	100	103	70.0-130			3.15	25
1,3-Dichlorobenzene	3.75	3.78	3.84	101	102	70.0-130			1.57	25
1,4-Dichlorobenzene	3.75	3.76	3.85	100	103	70.0-130			2.37	25
1,2-Dichloroethane	3.75	3.69	3.68	98.4	98.1	70.0-130			0.271	25
1,1-Dichloroethane	3.75	3.61	3.57	96.3	95.2	70.0-130			1.11	25
1,1-Dichloroethene	3.75	3.47	3.47	92.5	92.5	70.0-130			0.000	25
cis-1,2-Dichloroethene	3.75	3.61	3.59	96.3	95.7	70.0-130			0.556	25
trans-1,2-Dichloroethene	3.75	3.56	3.53	94.9	94.1	70.0-130			0.846	25
1,2-Dichloropropane	3.75	3.73	3.64	99.5	97.1	70.0-130			2.44	25
cis-1,3-Dichloropropene	3.75	4.34	4.00	116	107	70.0-130			8.15	25
trans-1,3-Dichloropropene	3.75	4.18	4.23	111	113	70.0-130			1.19	25
1,4-Dioxane	3.75	3.42	3.40	91.2	90.7	70.0-140			0.587	25
Ethanol	3.75	3.44	3.48	91.7	92.8	55.0-148			1.16	25
Ethylbenzene	3.75	3.69	3.66	98.4	97.6	70.0-130			0.816	25
4-Ethyltoluene	3.75	3.80	3.85	101	103	70.0-130			1.31	25
Trichlorofluoromethane	3.75	3.59	3.52	95.7	93.9	70.0-130			1.97	25
Dichlorodifluoromethane	3.75	3.68	3.50	98.1	93.3	64.0-139			5.01	25
1,1,2-Trichlorotrifluoroethane	3.75	3.56	3.52	94.9	93.9	70.0-130			1.13	25
1,2-Dichlorotetrafluoroethane	3.75	3.57	3.55	95.2	94.7	70.0-130			0.562	25
Heptane	3.75	3.54	3.54	94.4	94.4	70.0-130			0.000	25
Hexachloro-1,3-butadiene	3.75	3.66	3.73	97.6	99.5	70.0-151			1.89	25
n-Hexane	3.75	3.47	3.45	92.5	92.0	70.0-130			0.578	25
Isopropylbenzene	3.75	3.70	3.77	98.7	101	70.0-130			1.87	25
Methylene Chloride	3.75	3.41	3.40	90.9	90.7	70.0-130			0.294	25
Methyl Butyl Ketone	3.75	3.02	3.09	80.5	82.4	70.0-149			2.29	25
2-Butanone (MEK)	3.75	3.41	3.48	90.9	92.8	70.0-130			2.03	25
4-Methyl-2-pentanone (MIBK)	3.75	3.24	3.10	86.4	82.7	70.0-139			4.42	25

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3928364-1 05/23/23 09:15 • (LCSD) R3928364-3 05/23/23 10:56

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Methyl methacrylate	3.75	3.60	3.67	96.0	97.9	70.0-130			1.93	25
MTBE	3.75	3.50	3.56	93.3	94.9	70.0-130			1.70	25
Naphthalene	3.75	3.54	3.60	94.4	96.0	70.0-159			1.68	25
2-Propanol	3.75	3.29	3.43	87.7	91.5	70.0-139			4.17	25
Propene	3.75	3.40	3.44	90.7	91.7	64.0-144			1.17	25
Styrene	3.75	3.71	3.74	98.9	99.7	70.0-130			0.805	25
1,1,2,2-Tetrachloroethane	3.75	3.77	3.79	101	101	70.0-130			0.529	25
Tetrahydrofuran	3.75	3.34	3.50	89.1	93.3	70.0-137			4.68	25
Toluene	3.75	3.71	3.73	98.9	99.5	70.0-130			0.538	25
1,2,4-Trichlorobenzene	3.75	3.62	3.72	96.5	99.2	70.0-160			2.72	25
1,1,1-Trichloroethane	3.75	3.86	3.85	103	103	70.0-130			0.259	25
1,1,2-Trichloroethane	3.75	3.89	3.87	104	103	70.0-130			0.515	25
Trichloroethylene	3.75	3.70	3.70	98.7	98.7	70.0-130			0.000	25
1,2,4-Trimethylbenzene	3.75	3.77	3.82	101	102	70.0-130			1.32	25
1,3,5-Trimethylbenzene	3.75	3.77	3.82	101	102	70.0-130			1.32	25
2,2,4-Trimethylpentane	3.75	3.61	3.61	96.3	96.3	70.0-130			0.000	25
Vinyl chloride	3.75	3.56	3.57	94.9	95.2	70.0-130			0.281	25
Vinyl Bromide	3.75	3.59	3.53	95.7	94.1	70.0-130			1.69	25
Vinyl acetate	3.75	4.95	5.12	132	137	70.0-130	J4	J4	3.38	25
Xylenes, Total	11.3	11.2	11.3	99.1	100	70.0-130			0.889	25
m&p-Xylene	7.50	7.44	7.52	99.2	100	70.0-130			1.07	25
o-Xylene	3.75	3.72	3.73	99.2	99.5	70.0-130			0.268	25
(S) 1,4-Bromofluorobenzene				102	102	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3931973-3 06/01/23 10:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Tetrachloroethylene	U		0.0814	0.271
<i>(S) 1,4-Bromofluorobenzene</i>	95.3			60.0-140

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

(LCS) R3931973-1 06/01/23 08:57 • (LCSD) R3931973-2 06/01/23 09:36

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Tetrachloroethylene	3.75	4.49	4.58	120	122	70.0-130			1.98	25
<i>(S) 1,4-Bromofluorobenzene</i>				96.6	96.6	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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.

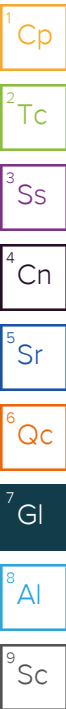
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

J4	The associated batch QC was outside the established quality control range for accuracy.
----	---



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	LA000356
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.

¹ Cp

² Tc

³ Ss

⁴ Cn

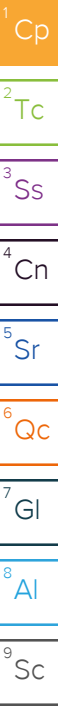
⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



SCS Engineers - Madison, WI

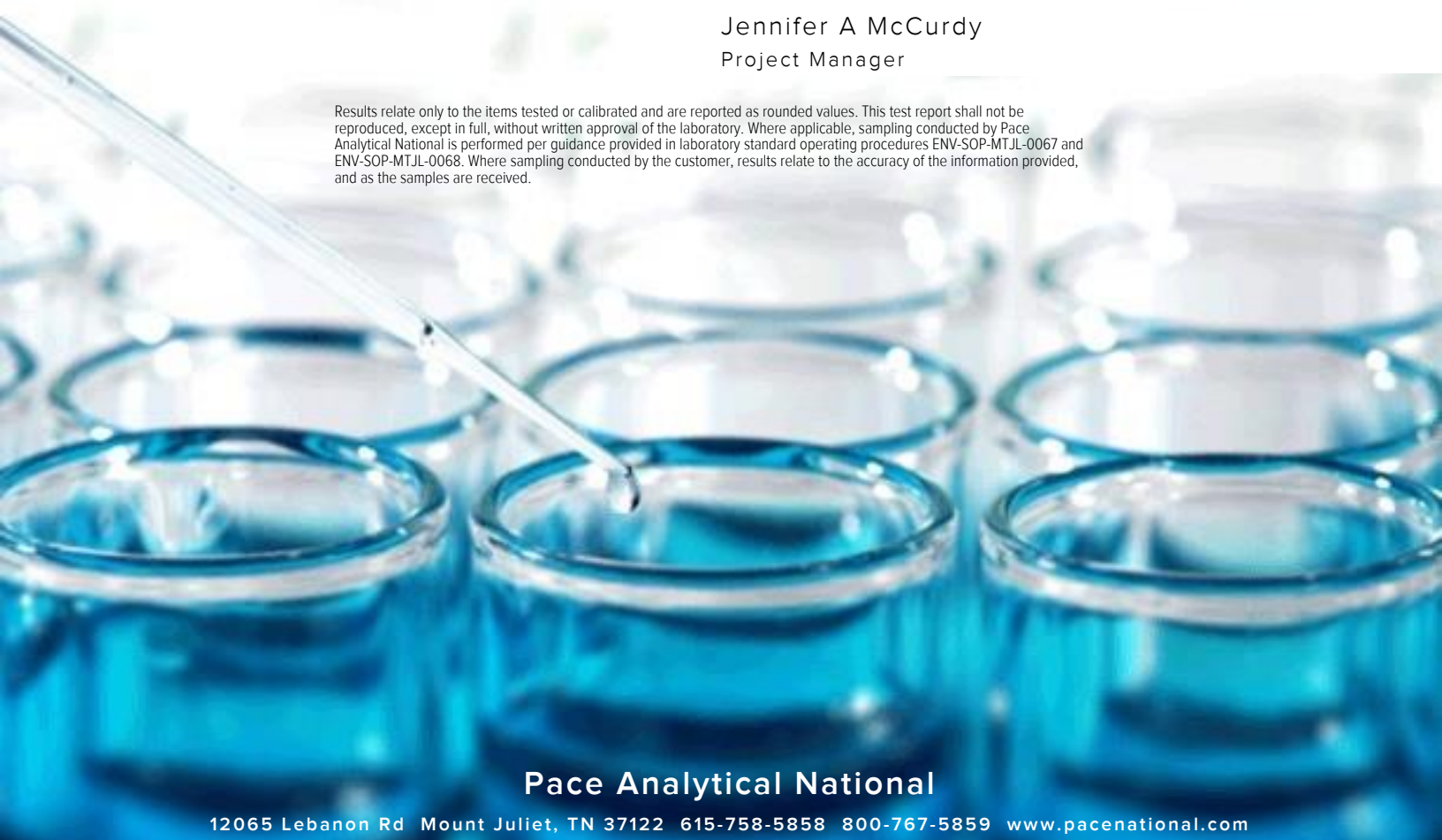
Sample Delivery Group: L1625270
Samples Received: 06/13/2023
Project Number: 25220211.01
Description: Highway Cleaners
Site: FORMER HIGHWAY CLEANERS
Report To: Robert Langdon
2830 Dairy Drive
Madison, WI 53718-6751

Entire Report Reviewed By:



Jennifer A McCurdy
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.

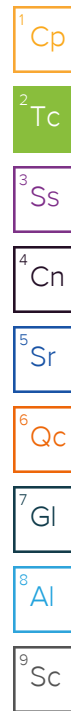


Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
SVE-11 L1625270-01	5
Qc: Quality Control Summary	7
Volatile Organic Compounds (MS) by Method TO-15	7
Gl: Glossary of Terms	11
Al: Accreditations & Locations	12
Sc: Sample Chain of Custody	13



SAMPLE SUMMARY

SVE-11 L1625270-01 Air

Collected by: Ethan Schaefer
Collected date/time: 06/12/23 10:30
Received date/time: 06/13/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15	WG2077406	1	06/14/23 13:10	06/14/23 13:10	JAP	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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.



Jennifer A McCurdy
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

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
Acetone	67-64-1	58.10	1.95	4.63	9.84	23.4		1	WG2077406
Allyl chloride	107-05-1	76.53	0.380	1.19	ND	ND		1	WG2077406
Benzene	71-43-2	78.10	0.238	0.760	ND	ND		1	WG2077406
Benzyl Chloride	100-44-7	127	0.199	1.03	ND	ND		1	WG2077406
Bromodichloromethane	75-27-4	164	0.234	1.57	ND	ND		1	WG2077406
Bromoform	75-25-2	253	0.244	2.52	ND	ND		1	WG2077406
Bromomethane	74-83-9	94.90	0.327	1.27	ND	ND		1	WG2077406
1,3-Butadiene	106-99-0	54.10	0.347	0.768	ND	ND		1	WG2077406
Carbon disulfide	75-15-0	76.10	0.340	1.06	ND	ND		1	WG2077406
Carbon tetrachloride	56-23-5	154	0.244	1.54	ND	ND		1	WG2077406
Chlorobenzene	108-90-7	113	0.277	1.28	ND	ND		1	WG2077406
Chloroethane	75-00-3	64.50	0.332	0.876	ND	ND		1	WG2077406
Chloroform	67-66-3	119	0.239	1.16	0.271	1.32		1	WG2077406
Chloromethane	74-87-3	50.50	0.343	0.708	0.526	1.09		1	WG2077406
2-Chlorotoluene	95-49-8	126	0.276	1.42	ND	ND		1	WG2077406
Cyclohexane	110-82-7	84.20	0.251	0.864	0.873	3.01		1	WG2077406
Dibromochloromethane	124-48-1	208	0.242	2.06	ND	ND		1	WG2077406
1,2-Dibromoethane	106-93-4	188	0.240	1.85	ND	ND		1	WG2077406
1,2-Dichlorobenzene	95-50-1	147	0.427	2.57	ND	ND		1	WG2077406
1,3-Dichlorobenzene	541-73-1	147	0.607	3.65	ND	ND		1	WG2077406
1,4-Dichlorobenzene	106-46-7	147	0.186	1.12	ND	ND		1	WG2077406
1,2-Dichloroethane	107-06-2	99	0.233	0.943	ND	ND		1	WG2077406
1,1-Dichloroethane	75-34-3	98	0.241	0.966	ND	ND		1	WG2077406
1,1-Dichloroethene	75-35-4	96.90	0.254	1.01	ND	ND		1	WG2077406
cis-1,2-Dichloroethene	156-59-2	96.90	0.261	1.03	ND	ND		1	WG2077406
trans-1,2-Dichloroethene	156-60-5	96.90	0.224	0.888	ND	ND		1	WG2077406
1,2-Dichloropropane	78-87-5	113	0.253	1.17	ND	ND		1	WG2077406
cis-1,3-Dichloropropene	10061-01-5	111	0.230	1.04	ND	ND		1	WG2077406
trans-1,3-Dichloropropene	10061-02-6	111	0.243	1.10	ND	ND		1	WG2077406
1,4-Dioxane	123-91-1	88.10	0.278	1.00	ND	ND		1	WG2077406
Ethanol	64-17-5	46.10	0.883	1.66	12.8	24.1		1	WG2077406
Ethylbenzene	100-41-4	106	0.278	1.21	ND	ND		1	WG2077406
4-Ethyltoluene	622-96-8	120	0.261	1.28	ND	ND		1	WG2077406
Trichlorofluoromethane	75-69-4	137.40	0.273	1.53	0.409	2.30		1	WG2077406
Dichlorodifluoromethane	75-71-8	120.92	0.457	2.26	5.93	29.3		1	WG2077406
1,1,2-Trichlorotrifluoroethane	76-13-1	187.40	0.264	2.02	ND	ND		1	WG2077406
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.297	2.08	ND	ND		1	WG2077406
Heptane	142-82-5	100	0.347	1.42	ND	ND		1	WG2077406
Hexachloro-1,3-butadiene	87-68-3	261	0.350	3.74	ND	ND		1	WG2077406
n-Hexane	110-54-3	86.20	0.687	2.42	3.12	11.0		1	WG2077406
Isopropylbenzene	98-82-8	120.20	0.259	1.27	ND	ND		1	WG2077406
Methylene Chloride	75-09-2	84.90	0.326	1.13	ND	ND		1	WG2077406
Methyl Butyl Ketone	591-78-6	100	0.443	1.81	ND	ND		1	WG2077406
2-Butanone (MEK)	78-93-3	72.10	0.271	0.799	1.22	3.60		1	WG2077406
4-Methyl-2-pentanone (MIBK)	108-10-1	100.10	0.255	1.04	ND	ND		1	WG2077406
Methyl methacrylate	80-62-6	100.12	0.292	1.20	ND	ND		1	WG2077406
MTBE	1634-04-4	88.10	0.216	0.778	ND	ND		1	WG2077406
Naphthalene	91-20-3	128	1.17	6.13	ND	ND		1	WG2077406
2-Propanol	67-63-0	60.10	0.880	2.16	1.25	3.07		1	WG2077406
Propene	115-07-1	42.10	0.311	0.536	ND	ND		1	WG2077406
Styrene	100-42-5	104	0.263	1.12	ND	ND		1	WG2077406
1,1,2,2-Tetrachloroethane	79-34-5	168	0.248	1.70	ND	ND		1	WG2077406
Tetrachloroethylene	127-18-4	166	0.271	1.84	70.3	477		1	WG2077406
Tetrahydrofuran	109-99-9	72.10	0.245	0.722	ND	ND		1	WG2077406
Toluene	108-88-3	92.10	0.290	1.09	0.840	3.16		1	WG2077406
1,2,4-Trichlorobenzene	120-82-1	181	0.493	3.65	ND	ND		1	WG2077406

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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
1,1,1-Trichloroethane	71-55-6	133	0.245	1.33	ND	ND		1	WG2077406
1,1,2-Trichloroethane	79-00-5	133	0.258	1.40	ND	ND		1	WG2077406
Trichloroethylene	79-01-6	131	0.227	1.22	0.268	1.44		1	WG2077406
1,2,4-Trimethylbenzene	95-63-6	120	0.255	1.25	ND	ND		1	WG2077406
1,3,5-Trimethylbenzene	108-67-8	120	0.260	1.28	ND	ND		1	WG2077406
2,2,4-Trimethylpentane	540-84-1	114.22	0.443	2.07	46.9	219		1	WG2077406
Vinyl chloride	75-01-4	62.50	0.316	0.808	ND	ND		1	WG2077406
Vinyl Bromide	593-60-2	106.95	0.284	1.24	ND	ND		1	WG2077406
Vinyl acetate	108-05-4	86.10	0.387	1.36	ND	ND		1	WG2077406
Xylenes, Total	1330-20-7	106.16	0.450	1.95	ND	ND		1	WG2077406
m&p-Xylene	1330-20-7	106	0.450	1.95	ND	ND		1	WG2077406
o-Xylene	95-47-6	106	0.276	1.20	ND	ND		1	WG2077406
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		95.1				WG2077406

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3938225-3 06/14/23 11:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Acetone	U		0.584	1.95
Allyl chloride	U		0.114	0.380
Benzene	U		0.0715	0.238
Benzyl Chloride	U		0.0598	0.199
Bromodichloromethane	U		0.0702	0.234
Bromoform	U		0.0732	0.244
Bromomethane	U		0.0982	0.327
1,3-Butadiene	U		0.104	0.347
Carbon disulfide	U		0.102	0.340
Carbon tetrachloride	U		0.0732	0.244
Chlorobenzene	U		0.0832	0.277
Chloroethane	U		0.0996	0.332
Chloroform	U		0.0717	0.239
Chloromethane	U		0.103	0.343
2-Chlorotoluene	U		0.0828	0.276
Cyclohexane	U		0.0753	0.251
Dibromochloromethane	U		0.0727	0.242
1,2-Dibromoethane	U		0.0721	0.240
1,2-Dichlorobenzene	U		0.128	0.427
1,3-Dichlorobenzene	U		0.182	0.607
1,4-Dichlorobenzene	U		0.0557	0.186
1,2-Dichloroethane	U		0.0700	0.233
1,1-Dichloroethane	U		0.0723	0.241
1,1-Dichloroethene	U		0.0762	0.254
cis-1,2-Dichloroethene	U		0.0784	0.261
trans-1,2-Dichloroethene	U		0.0673	0.224
1,2-Dichloropropane	U		0.0760	0.253
cis-1,3-Dichloropropene	U		0.0689	0.230
trans-1,3-Dichloropropene	U		0.0728	0.243
1,4-Dioxane	U		0.0833	0.278
Ethanol	U		0.265	0.883
Ethylbenzene	U		0.0835	0.278
4-Ethyltoluene	U		0.0783	0.261
Trichlorofluoromethane	U		0.0819	0.273
Dichlorodifluoromethane	U		0.137	0.457
1,1,2-Trichlorotrifluoroethane	U		0.0793	0.264
1,2-Dichlorotetrafluoroethane	U		0.0890	0.297
Heptane	U		0.104	0.347
Hexachloro-1,3-butadiene	U		0.105	0.350
n-Hexane	U		0.206	0.687

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3938225-3 06/14/23 11:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Isopropylbenzene	U		0.0777	0.259
Methylene Chloride	U		0.0979	0.326
Methyl Butyl Ketone	U		0.133	0.443
2-Butanone (MEK)	U		0.0814	0.271
4-Methyl-2-pentanone (MIBK)	U		0.0765	0.255
Methyl methacrylate	U		0.0876	0.292
MTBE	U		0.0647	0.216
Naphthalene	U		0.350	1.17
2-Propanol	U		0.264	0.880
Propene	U		0.0932	0.311
Styrene	U		0.0788	0.263
1,1,2,2-Tetrachloroethane	U		0.0743	0.248
Tetrachloroethylene	U		0.0814	0.271
Tetrahydrofuran	U		0.0734	0.245
Toluene	U		0.0870	0.290
1,2,4-Trichlorobenzene	U		0.148	0.493
1,1,1-Trichloroethane	U		0.0736	0.245
1,1,2-Trichloroethane	U		0.0775	0.258
Trichloroethylene	U		0.0680	0.227
1,2,4-Trimethylbenzene	U		0.0764	0.255
1,3,5-Trimethylbenzene	U		0.0779	0.260
2,2,4-Trimethylpentane	U		0.133	0.443
Vinyl chloride	U		0.0949	0.316
Vinyl Bromide	U		0.0852	0.284
Vinyl acetate	U		0.116	0.387
Xylenes, Total	U		0.135	0.450
m&p-Xylene	U		0.135	0.450
o-Xylene	U		0.0828	0.276
(S) 1,4-Bromofluorobenzene	93.0			60.0-140

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

(LCS) R3938225-1 06/14/23 10:15 • (LCSD) R3938225-2 06/14/23 10:45

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Acetone	3.75	3.73	3.82	99.5	102	70.0-130			2.38	25
Allyl chloride	3.75	3.73	3.70	99.5	98.7	70.0-130			0.808	25
Benzene	3.75	3.78	3.82	101	102	70.0-130			1.05	25
Benzyl Chloride	3.75	3.77	3.68	101	98.1	70.0-152			2.42	25

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

(LCS) R3938225-1 06/14/23 10:15 • (LCSD) R3938225-2 06/14/23 10:45

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromodichloromethane	3.75	4.02	3.98	107	106	70.0-130			1.00	25
Bromoform	3.75	4.54	4.25	121	113	70.0-130			6.60	25
Bromomethane	3.75	3.70	3.73	98.7	99.5	70.0-130			0.808	25
1,3-Butadiene	3.75	3.54	3.53	94.4	94.1	70.0-130			0.283	25
Carbon disulfide	3.75	3.84	3.80	102	101	70.0-130			1.05	25
Carbon tetrachloride	3.75	4.07	4.00	109	107	70.0-130			1.73	25
Chlorobenzene	3.75	3.77	3.76	101	100	70.0-130			0.266	25
Chloroethane	3.75	3.69	3.83	98.4	102	70.0-130			3.72	25
Chloroform	3.75	3.79	3.75	101	100	70.0-130			1.06	25
Chloromethane	3.75	3.63	3.68	96.8	98.1	70.0-130			1.37	25
2-Chlorotoluene	3.75	3.93	3.86	105	103	70.0-130			1.80	25
Cyclohexane	3.75	3.85	3.84	103	102	70.0-130			0.260	25
Dibromochloromethane	3.75	4.30	4.25	115	113	70.0-130			1.17	25
1,2-Dibromoethane	3.75	4.01	3.98	107	106	70.0-130			0.751	25
1,2-Dichlorobenzene	3.75	3.89	3.79	104	101	70.0-130			2.60	25
1,3-Dichlorobenzene	3.75	3.92	3.93	105	105	70.0-130			0.255	25
1,4-Dichlorobenzene	3.75	3.97	3.90	106	104	70.0-130			1.78	25
1,2-Dichloroethane	3.75	3.73	3.68	99.5	98.1	70.0-130			1.35	25
1,1-Dichloroethane	3.75	3.80	3.80	101	101	70.0-130			0.000	25
1,1-Dichloroethene	3.75	3.71	3.71	98.9	98.9	70.0-130			0.000	25
cis-1,2-Dichloroethene	3.75	3.84	3.78	102	101	70.0-130			1.57	25
trans-1,2-Dichloroethene	3.75	3.81	3.85	102	103	70.0-130			1.04	25
1,2-Dichloropropane	3.75	3.75	3.60	100	96.0	70.0-130			4.08	25
cis-1,3-Dichloropropene	3.75	3.73	3.74	99.5	99.7	70.0-130			0.268	25
trans-1,3-Dichloropropene	3.75	3.67	3.65	97.9	97.3	70.0-130			0.546	25
1,4-Dioxane	3.75	3.85	3.69	103	98.4	70.0-140			4.24	25
Ethanol	3.75	3.92	3.73	105	99.5	55.0-148			4.97	25
Ethylbenzene	3.75	3.81	3.75	102	100	70.0-130			1.59	25
4-Ethyltoluene	3.75	4.05	3.97	108	106	70.0-130			2.00	25
Trichlorofluoromethane	3.75	3.82	3.73	102	99.5	70.0-130			2.38	25
Dichlorodifluoromethane	3.75	3.77	3.77	101	101	64.0-139			0.000	25
1,1,2-Trichlorotrifluoroethane	3.75	3.78	3.77	101	101	70.0-130			0.265	25
1,2-Dichlorotetrafluoroethane	3.75	3.70	3.72	98.7	99.2	70.0-130			0.539	25
Heptane	3.75	3.77	3.74	101	99.7	70.0-130			0.799	25
Hexachloro-1,3-butadiene	3.75	3.68	3.68	98.1	98.1	70.0-151			0.000	25
n-Hexane	3.75	3.76	3.85	100	103	70.0-130			2.37	25
Isopropylbenzene	3.75	3.86	3.74	103	99.7	70.0-130			3.16	25
Methylene Chloride	3.75	3.68	3.64	98.1	97.1	70.0-130			1.09	25
Methyl Butyl Ketone	3.75	3.89	3.83	104	102	70.0-149			1.55	25
2-Butanone (MEK)	3.75	3.93	4.13	105	110	70.0-130			4.96	25

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3938225-1 06/14/23 10:15 • (LCSD) R3938225-2 06/14/23 10:45

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	3.75	3.75	3.74	100	99.7	70.0-139			0.267	25
Methyl methacrylate	3.75	3.60	3.58	96.0	95.5	70.0-130			0.557	25
MTBE	3.75	3.63	3.66	96.8	97.6	70.0-130			0.823	25
Naphthalene	3.75	4.40	4.35	117	116	70.0-159			1.14	25
2-Propanol	3.75	3.94	3.86	105	103	70.0-139			2.05	25
Propene	3.75	3.51	3.55	93.6	94.7	64.0-144			1.13	25
Styrene	3.75	3.95	3.98	105	106	70.0-130			0.757	25
1,1,2,2-Tetrachloroethane	3.75	3.90	3.80	104	101	70.0-130			2.60	25
Tetrachloroethylene	3.75	3.83	3.84	102	102	70.0-130			0.261	25
Tetrahydrofuran	3.75	3.73	3.83	99.5	102	70.0-137			2.65	25
Toluene	3.75	3.94	3.89	105	104	70.0-130			1.28	25
1,2,4-Trichlorobenzene	3.75	4.20	4.11	112	110	70.0-160			2.17	25
1,1,1-Trichloroethane	3.75	3.72	3.71	99.2	98.9	70.0-130			0.269	25
1,1,2-Trichloroethane	3.75	4.00	3.79	107	101	70.0-130			5.39	25
Trichloroethylene	3.75	3.76	3.77	100	101	70.0-130			0.266	25
1,2,4-Trimethylbenzene	3.75	4.15	3.98	111	106	70.0-130			4.18	25
1,3,5-Trimethylbenzene	3.75	4.09	3.99	109	106	70.0-130			2.48	25
2,2,4-Trimethylpentane	3.75	3.77	3.77	101	101	70.0-130			0.000	25
Vinyl chloride	3.75	3.73	3.65	99.5	97.3	70.0-130			2.17	25
Vinyl Bromide	3.75	3.79	3.77	101	101	70.0-130			0.529	25
Vinyl acetate	3.75	3.36	3.52	89.6	93.9	70.0-130			4.65	25
Xylenes, Total	11.3	11.9	11.6	105	103	70.0-130			2.55	25
m&p-Xylene	7.50	7.86	7.66	105	102	70.0-130			2.58	25
o-Xylene	3.75	4.04	3.96	108	106	70.0-130			2.00	25
<i>(S) 1,4-Bromofluorobenzene</i>				102	99.9	60.0-140				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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.

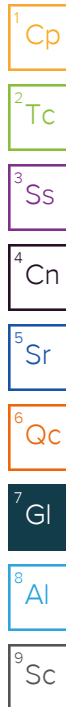
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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	LA000356
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:
SCS Engineers - Madison, WI
 2830 Dairy Drive
 Madison, WI 53718-6751

Billing Information:
Robert Langdon
 2830 Dairy Drive
 Madison, WI 53718-6751

Analysis

Chain of Custody Page ___ of ___

 PEOPLE ADVANCING SCIENCE
MT JULIET, TN
 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/hubs/pas-standard-terms.pdf>

Report To:
Robert Langdon

Email To:
 rlangdon@scsengineers.com

Project Description:
Highway Cleaners

City/State Collected:
Roscoche, WI

Please Circle:
 PT MT **CT** ET

Phone:
608-216-7342


Client Project #
25220211.01

Lab Project #
SCSENGMWI-25220211

Collected by (print):
Ethan Schaefer

Site/Facility ID #
Former Highway Cleaners

P.O. #

Collected by (signature):


Rush? (Lab MUST Be Notified)
 Same Day Three Day
 Next Day Five Day
 Two Day

Date Results Needed

Sample ID

Can #

Flow Cont. #

Date

Time

Initial

Final

SUE-11

3158

011940

6/12/23

1025-1030

-28

-5

TO-15 Summa

SDG # **L1625270**
1231

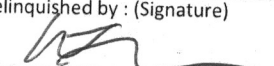
Acctnum: **SCSENGMWI**
 Template: **T228090**
 Prelogin: **P997695**
 PM: 3828 - Jennifer A McCurdy
 PB: **CL 06/06/23**

Shipped Via: **FedEX Ground**

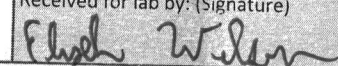
Rem./Contaminant Sample # (lab only)
 -91

Sample Receipt Checklist
 COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N If Applicable
 Bottles arrive intact: Y N VOA Zero Headspace: Y N
 Correct bottles used: Y N Pres. Correct/Check: Y N
 Sufficient volume sent: Y N
 RAD Screen <0.5 mR/hr: Y N

Remarks:
 Summa can filled faster than normal. Usual fill takes around 5 minutes. This one took 2-3 minutes. All connections were tightened.

Relinquished by: (Signature) 
 Date: **6/12/23** Time: **1330**

Samples returned via:
 UPS FedEx Courier

Received by: (Signature) 
 Date: **6/13/23** Time: **0915**

Tracking #
 Hold #
 Condition: (lab use only) **OK**
 COC Seal Intact: Y N NA
 NCF:

**Table 1. SVE System Operation Summary and Air Emissions
Former Highway Cleaners, Boscobel, Wisconsin**

Date	Time on Hour Meter	Flow Rate ⁽¹⁾	System Vacuum	PCE ⁽²⁾	PCE	PCE Removed Over Period ⁽³⁾	PCE Removal Rate	Total PCE Removed	Total VOCs ⁽⁴⁾	Total VOCs	VOCs Removed Over Period ⁽⁵⁾	VOC Removal Rate	Total VOCs Removed
	hrs	CFM	in. water	ug/m3	lb/ft ³	lbs	lbs/hr	lbs	ug/m3	lb/ft ³	lbs	lbs/hr	lbs
7/27/22	0.3	111.5	-20	377	2.4E-08	-	-	-	1,286.2	8.0E-08	-	-	-
7/28/22	23.0	112.4	-20	303	1.9E-08	0.003	0.0001	0.003	610.3	3.8E-08	0.009	0.0004	0.009
7/29/22	47.5	110.9	-20	594	3.7E-08	0.005	0.0002	0.008	668.7	4.2E-08	0.007	0.0003	0.016
8/3/22	169.8	110.3	-20	1,800	1.1E-07	0.060	0.0005	0.068	2,414.4	1.5E-07	0.078	0.0006	0.093
8/10/22	337.9	109.9	-21	44.7	2.8E-09	0.064	0.0004	0.132	183.0	1.1E-08	0.090	0.0005	0.183
8/17/22	505.0	110.2	-22	1,340	8.4E-08	0.048	0.0003	0.180	1,681.2	1.0E-07	0.064	0.0004	0.248
9/16/22	1,225.0	109.6	-21	2,270	1.4E-07	0.533	0.0007	0.713	2,494.9	1.6E-07	0.617	0.0009	0.864
10/13/22	1,873.2	107.8	-18	1,880	1.2E-07	0.543	0.0008	1.256	1,994.3	1.2E-07	0.587	0.0009	1.452
12/21/22 ⁽⁶⁾	3,473.8	109.3	-21	NS	1.2E-07	1.231	0.0008	2.487	NS	1.2E-07	1.306	0.0008	2.758
4/6/23 ⁽⁷⁾	3,473.8	41.9	-20	NS	-	-	-	2.487	NS	-	-	-	2.758
4/20/23	3,807	114.5	-24	1,950	1.2E-07	0.279	0.0008	2.766	2,058.7	1.3E-07	0.294	0.0009	3.052
5/17/23	4,455	105.6	-24	815	5.1E-08	0.354	0.0005	3.120	1,128.9	7.0E-08	0.408	0.0006	3.461
6/12/23	5,079	101.4	-24	477	3.0E-08	0.153	0.0002	3.273	802.8	5.0E-08	0.229	0.0004	3.689

Abbreviations:

NS = not sampled

PCE = tetrachloroethene

VOCs = volatile organic compounds

Notes:

(1) Velocity measured using pitot tube mounted on the 2" Sch 40 steel discharge pipe, ID = 2.067".

(2) PCE concentrations based on Summa canister TO-15 sample results of SVE system exhaust gas. If not detected, reporting or detection limits are used.

(3) PCE removed over period (lbs) = PCE (lb/ft³) * Exhaust Flow Rate (CFM) * Time Between Periods (hrs) * 60 (min/hr).

(4) VOC concentrations based on Summa canister TO-15 sample results of SVE system exhaust gas. If not detected, reporting or detection limits are used.

(5) VOC removed over period (lbs) = VOCs (lb/ft³) * Exhaust Flow Rate (CFM) * Time Between Periods (hrs) * 60 (min/hr).

(6) SVE system shut down automatically on approximately December 18, 2022 due to water in knockout tank and freezing conditions.

(7) SVE system was restarted.

Last revision by: KRG Date: 6/23/2023
 Checked by: JSN/MBH Date: 6/22/2023
 Proj Mgr QA/QC: REL Date: 6/23/2023

I:\25220211.01\Data and Calculations\Tables\SVE System Summary Rev 230622.xls\SVE System