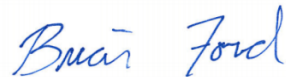


## Cascade Corporation- Fairview, OR

Sample Delivery Group: L1129331  
Samples Received: 08/15/2019  
Project Number: PNG0564  
Description: Cascade TSA

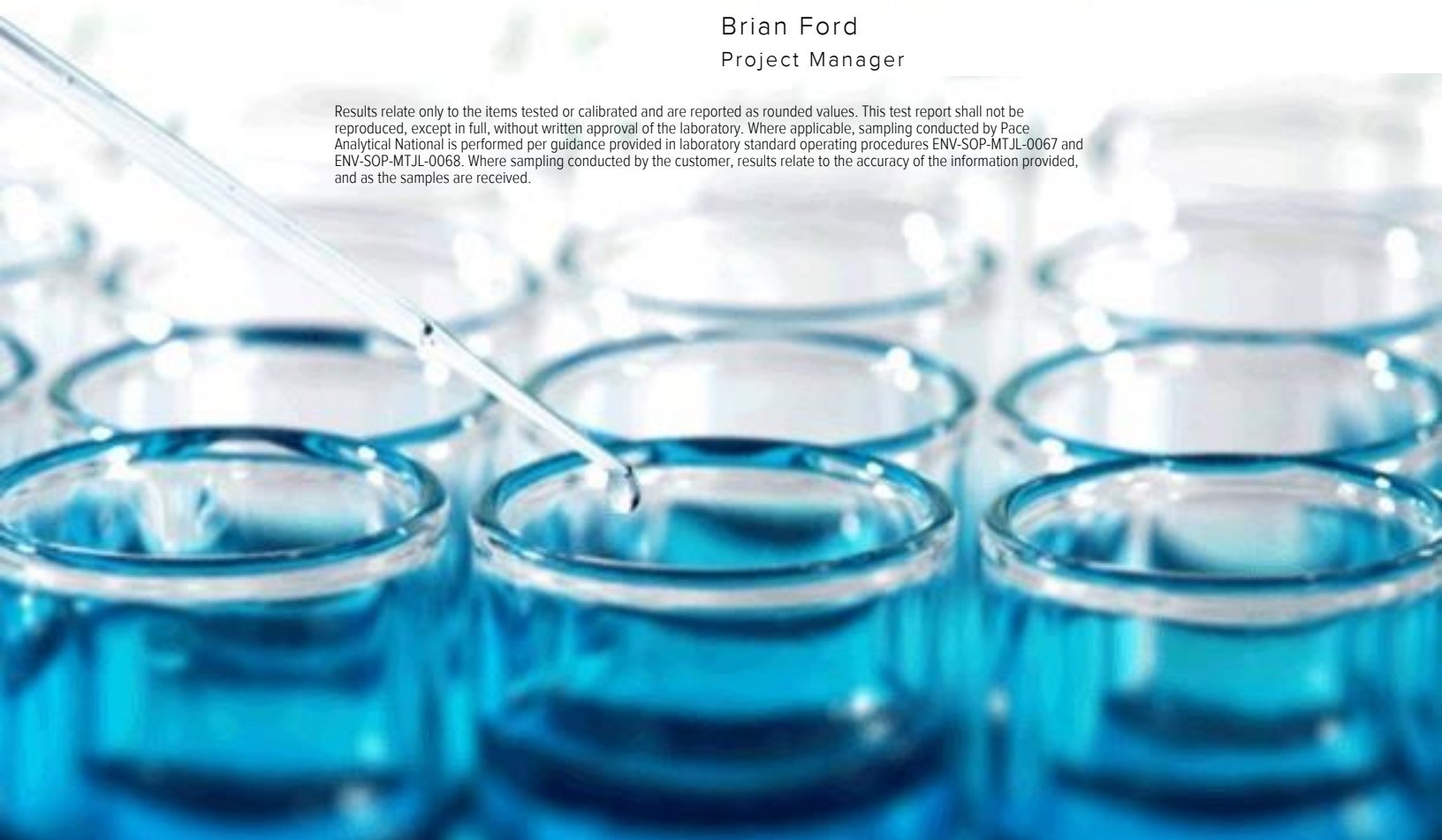
Report To: Cindy Bartlett  
2201 NE 201st Avenue  
Fairview, OR 97024-9718

Entire Report Reviewed By:



Brian Ford  
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.





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<b>Tc: Table of Contents</b>	<b>2</b>	
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<b>Cn: Case Narrative</b>	<b>4</b>	
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<b>TRIP BLANK #404 L1129331-02</b>	<b>7</b>	<b><sup>4</sup>Cn</b>
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<b>Sc: Sample Chain of Custody</b>	<b>16</b>	<b><sup>8</sup>Al</b>
		<b><sup>9</sup>Sc</b>

# SAMPLE SUMMARY

## CMW36DG-081319 L1129331-01 GW

Collected by: Pat Yadon  
 Collected date/time: 08/13/19 14:00  
 Received date/time: 08/15/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1330890	1	08/19/19 06:04	08/19/19 06:04	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1331185	1	08/21/19 00:33	08/21/19 00:33	ADM	Mt. Juliet, TN

1  
Cp

2  
Tc

3  
Ss

## TRIP BLANK #404 L1129331-02 GW

Collected by: Pat Yadon  
 Collected date/time: 08/13/19 00:00  
 Received date/time: 08/15/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1330890	1	08/18/19 23:57	08/18/19 23:57	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1331185	1	08/20/19 21:15	08/20/19 21:15	ADM	Mt. Juliet, TN

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc



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.

Brian Ford  
Project Manager

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



Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		25.0	1	08/19/2019 06:04	WG1330890
Acrolein	ND		50.0	1	08/19/2019 06:04	WG1330890
Acrylonitrile	ND		5.00	1	08/19/2019 06:04	WG1330890
Benzene	ND		0.500	1	08/21/2019 00:33	WG1331185
Bromobenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
Bromodichloromethane	ND		0.500	1	08/19/2019 06:04	WG1330890
Bromoform	ND		0.500	1	08/19/2019 06:04	WG1330890
Bromomethane	ND		2.50	1	08/19/2019 06:04	WG1330890
n-Butylbenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
sec-Butylbenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
tert-Butylbenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
Carbon disulfide	ND		0.500	1	08/19/2019 06:04	WG1330890
Carbon tetrachloride	1.04		0.500	1	08/19/2019 06:04	WG1330890
Chlorobenzene	ND		0.500	1	08/21/2019 00:33	WG1331185
Chlorodibromomethane	ND		0.500	1	08/19/2019 06:04	WG1330890
Chloroethane	ND		2.50	1	08/19/2019 06:04	WG1330890
Chloroform	1.22		0.500	1	08/19/2019 06:04	WG1330890
Chloromethane	ND		1.25	1	08/19/2019 06:04	WG1330890
2-Chlorotoluene	ND		0.500	1	08/19/2019 06:04	WG1330890
4-Chlorotoluene	ND		0.500	1	08/19/2019 06:04	WG1330890
1,2-Dibromo-3-Chloropropane	ND		2.50	1	08/19/2019 06:04	WG1330890
1,2-Dibromoethane	ND		0.500	1	08/19/2019 06:04	WG1330890
Dibromomethane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,2-Dichlorobenzene	ND		0.500	1	08/21/2019 00:33	WG1331185
1,3-Dichlorobenzene	ND		0.500	1	08/21/2019 00:33	WG1331185
1,4-Dichlorobenzene	ND		0.500	1	08/21/2019 00:33	WG1331185
Dichlorodifluoromethane	ND		2.50	1	08/19/2019 06:04	WG1330890
1,1-Dichloroethane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,2-Dichloroethane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,1-Dichloroethene	ND		0.500	1	08/19/2019 06:04	WG1330890
cis-1,2-Dichloroethene	ND		0.500	1	08/19/2019 06:04	WG1330890
trans-1,2-Dichloroethene	ND		0.500	1	08/19/2019 06:04	WG1330890
1,2-Dichloropropane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,1-Dichloropropene	ND		0.500	1	08/19/2019 06:04	WG1330890
1,3-Dichloropropane	ND		1.00	1	08/19/2019 06:04	WG1330890
cis-1,3-Dichloropropene	ND		0.500	1	08/19/2019 06:04	WG1330890
trans-1,3-Dichloropropene	ND		0.500	1	08/19/2019 06:04	WG1330890
2,2-Dichloropropane	ND		0.500	1	08/19/2019 06:04	WG1330890
Di-isopropyl ether	ND		0.500	1	08/19/2019 06:04	WG1330890
Ethylbenzene	ND		0.500	1	08/21/2019 00:33	WG1331185
Hexachloro-1,3-butadiene	ND		1.00	1	08/19/2019 06:04	WG1330890
Isopropylbenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
p-Isopropyltoluene	ND		0.500	1	08/19/2019 06:04	WG1330890
2-Butanone (MEK)	ND		5.00	1	08/19/2019 06:04	WG1330890
Methylene Chloride	ND		2.50	1	08/19/2019 06:04	WG1330890
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	08/19/2019 06:04	WG1330890
Methyl tert-butyl ether	ND		0.500	1	08/19/2019 06:04	WG1330890
Naphthalene	ND		2.50	1	08/21/2019 00:33	WG1331185
n-Propylbenzene	ND		0.500	1	08/19/2019 06:04	WG1330890
Styrene	ND		0.500	1	08/19/2019 06:04	WG1330890
1,1,1,2-Tetrachloroethane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,1,2,2-Tetrachloroethane	ND		0.500	1	08/19/2019 06:04	WG1330890
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	08/21/2019 00:33	WG1331185
Tetrachloroethene	ND		0.500	1	08/19/2019 06:04	WG1330890
Toluene	ND		0.500	1	08/21/2019 00:33	WG1331185
1,2,3-Trichlorobenzene	ND		0.500	1	08/21/2019 00:33	WG1331185

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



Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	08/21/2019 00:33	<a href="#">WG1331185</a>
1,1,1-Trichloroethane	ND		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
1,1,2-Trichloroethane	ND		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
Trichloroethene	ND		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
Trichlorofluoromethane	ND		2.50	1	08/21/2019 00:33	<a href="#">WG1331185</a>
1,2,3-Trichloropropane	ND		2.50	1	08/19/2019 06:04	<a href="#">WG1330890</a>
1,2,4-Trimethylbenzene	1.14		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
1,2,3-Trimethylbenzene	0.572		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
1,3,5-Trimethylbenzene	ND		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
Vinyl chloride	ND		0.500	1	08/19/2019 06:04	<a href="#">WG1330890</a>
Xylenes, Total	ND		1.50	1	08/21/2019 00:33	<a href="#">WG1331185</a>
(S) Toluene-d8	103		80.0-120		08/19/2019 06:04	<a href="#">WG1330890</a>
(S) Toluene-d8	103		80.0-120		08/21/2019 00:33	<a href="#">WG1331185</a>
(S) 4-Bromofluorobenzene	98.8		77.0-126		08/19/2019 06:04	<a href="#">WG1330890</a>
(S) 4-Bromofluorobenzene	97.3		77.0-126		08/21/2019 00:33	<a href="#">WG1331185</a>
(S) 1,2-Dichloroethane-d4	99.6		70.0-130		08/19/2019 06:04	<a href="#">WG1330890</a>
(S) 1,2-Dichloroethane-d4	101		70.0-130		08/21/2019 00:33	<a href="#">WG1331185</a>

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



Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		25.0	1	08/18/2019 23:57	WG1330890
Acrolein	ND		50.0	1	08/18/2019 23:57	WG1330890
Acrylonitrile	ND		5.00	1	08/18/2019 23:57	WG1330890
Benzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Bromobenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Bromodichloromethane	ND		0.500	1	08/18/2019 23:57	WG1330890
Bromoform	ND		0.500	1	08/18/2019 23:57	WG1330890
Bromomethane	ND		2.50	1	08/18/2019 23:57	WG1330890
n-Butylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
sec-Butylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
tert-Butylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Carbon disulfide	ND		0.500	1	08/18/2019 23:57	WG1330890
Carbon tetrachloride	ND		0.500	1	08/18/2019 23:57	WG1330890
Chlorobenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Chlorodibromomethane	ND		0.500	1	08/18/2019 23:57	WG1330890
Chloroethane	ND		2.50	1	08/18/2019 23:57	WG1330890
Chloroform	ND		0.500	1	08/18/2019 23:57	WG1330890
Chloromethane	ND		1.25	1	08/18/2019 23:57	WG1330890
2-Chlorotoluene	ND		0.500	1	08/18/2019 23:57	WG1330890
4-Chlorotoluene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,2-Dibromo-3-Chloropropane	ND		2.50	1	08/18/2019 23:57	WG1330890
1,2-Dibromoethane	ND		0.500	1	08/18/2019 23:57	WG1330890
Dibromomethane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,2-Dichlorobenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,3-Dichlorobenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,4-Dichlorobenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Dichlorodifluoromethane	ND		2.50	1	08/18/2019 23:57	WG1330890
1,1-Dichloroethane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,2-Dichloroethane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,1-Dichloroethene	ND		0.500	1	08/18/2019 23:57	WG1330890
cis-1,2-Dichloroethene	ND		0.500	1	08/18/2019 23:57	WG1330890
trans-1,2-Dichloroethene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,2-Dichloropropane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,1-Dichloropropene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,3-Dichloropropane	ND		1.00	1	08/18/2019 23:57	WG1330890
cis-1,3-Dichloropropene	ND		0.500	1	08/18/2019 23:57	WG1330890
trans-1,3-Dichloropropene	ND		0.500	1	08/18/2019 23:57	WG1330890
2,2-Dichloropropane	ND		0.500	1	08/18/2019 23:57	WG1330890
Di-isopropyl ether	ND		0.500	1	08/18/2019 23:57	WG1330890
Ethylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Hexachloro-1,3-butadiene	ND		1.00	1	08/18/2019 23:57	WG1330890
Isopropylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
p-Isopropyltoluene	ND		0.500	1	08/18/2019 23:57	WG1330890
2-Butanone (MEK)	ND		5.00	1	08/18/2019 23:57	WG1330890
Methylene Chloride	ND		2.50	1	08/18/2019 23:57	WG1330890
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	08/18/2019 23:57	WG1330890
Methyl tert-butyl ether	ND		0.500	1	08/18/2019 23:57	WG1330890
Naphthalene	ND		2.50	1	08/20/2019 21:15	WG1331185
n-Propylbenzene	ND		0.500	1	08/18/2019 23:57	WG1330890
Styrene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,1,1,2-Tetrachloroethane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,1,2,2-Tetrachloroethane	ND		0.500	1	08/18/2019 23:57	WG1330890
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	08/18/2019 23:57	WG1330890
Tetrachloroethene	ND		0.500	1	08/18/2019 23:57	WG1330890
Toluene	ND		0.500	1	08/18/2019 23:57	WG1330890
1,2,3-Trichlorobenzene	ND		0.500	1	08/20/2019 21:15	WG1331185

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 08/13/19 00:00

L1129331

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	08/20/2019 21:15	<a href="#">WG1331185</a>
1,1,1-Trichloroethane	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
1,1,2-Trichloroethane	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
Trichloroethene	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
Trichlorofluoromethane	ND		2.50	1	08/18/2019 23:57	<a href="#">WG1330890</a>
1,2,3-Trichloropropane	ND		2.50	1	08/18/2019 23:57	<a href="#">WG1330890</a>
1,2,4-Trimethylbenzene	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
1,2,3-Trimethylbenzene	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
1,3,5-Trimethylbenzene	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
Vinyl chloride	ND		0.500	1	08/18/2019 23:57	<a href="#">WG1330890</a>
Xylenes, Total	ND		1.50	1	08/18/2019 23:57	<a href="#">WG1330890</a>
(S) Toluene-d8	104		80.0-120		08/18/2019 23:57	<a href="#">WG1330890</a>
(S) Toluene-d8	102		80.0-120		08/20/2019 21:15	<a href="#">WG1331185</a>
(S) 4-Bromofluorobenzene	98.4		77.0-126		08/18/2019 23:57	<a href="#">WG1330890</a>
(S) 4-Bromofluorobenzene	99.2		77.0-126		08/20/2019 21:15	<a href="#">WG1331185</a>
(S) 1,2-Dichloroethane-d4	105		70.0-130		08/18/2019 23:57	<a href="#">WG1330890</a>
(S) 1,2-Dichloroethane-d4	101		70.0-130		08/20/2019 21:15	<a href="#">WG1331185</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3441787-2 08/18/19 22:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		1.05	25.0
Acrolein	U		3.97	50.0
Acrylonitrile	U		0.873	5.00
Benzene	U		0.0896	0.500
Bromobenzene	U		0.133	0.500
Bromodichloromethane	U		0.0800	0.500
Bromoform	U		0.186	0.500
n-Butylbenzene	U		0.143	0.500
Bromomethane	U		0.157	2.50
sec-Butylbenzene	U		0.134	0.500
tert-Butylbenzene	U		0.183	0.500
Carbon disulfide	U		0.101	0.500
Carbon tetrachloride	U		0.159	0.500
Chlorobenzene	U		0.140	0.500
Chlorodibromomethane	U		0.128	0.500
Chloroethane	U		0.141	2.50
2-Chlorotoluene	U		0.111	0.500
4-Chlorotoluene	U		0.0972	0.500
Chloroform	U		0.0860	0.500
1,2-Dibromo-3-Chloropropane	U		0.325	2.50
Chloromethane	U		0.153	1.25
1,2-Dibromoethane	U		0.193	0.500
Dibromomethane	U		0.117	0.500
1,2-Dichlorobenzene	U		0.101	0.500
1,3-Dichlorobenzene	U		0.130	0.500
1,4-Dichlorobenzene	U		0.121	0.500
cis-1,2-Dichloroethene	U		0.0933	0.500
Dichlorodifluoromethane	U		0.127	2.50
1,1-Dichloroethane	U		0.114	0.500
1,1-Dichloropropene	U		0.128	0.500
1,2-Dichloroethane	U		0.108	0.500
1,3-Dichloropropane	U		0.147	1.00
1,1-Dichloroethene	U		0.188	0.500
trans-1,2-Dichloroethene	U		0.152	0.500
1,2-Dichloropropane	U		0.190	0.500
2,2-Dichloropropane	U		0.0929	0.500
Di-isopropyl ether	U		0.0924	0.500
cis-1,3-Dichloropropene	U		0.0976	0.500
Hexachloro-1,3-butadiene	U		0.157	1.00
trans-1,3-Dichloropropene	U		0.222	0.500

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Method Blank (MB)

(MB) R3441787-2 08/18/19 22:22

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.158	0.500
p-Isopropyltoluene	U		0.138	0.500
n-Propylbenzene	U		0.162	0.500
1,1,1,2-Tetrachloroethane	U		0.120	0.500
Isopropylbenzene	U		0.126	0.500
2-Butanone (MEK)	U		1.28	5.00
Methylene Chloride	U		1.07	2.50
4-Methyl-2-pentanone (MIBK)	U		0.823	5.00
Methyl tert-butyl ether	U		0.102	0.500
1,2,3-Trichloropropane	U		0.247	2.50
1,2,4-Trimethylbenzene	U		0.123	0.500
1,2,3-Trimethylbenzene	U		0.0739	0.500
1,3,5-Trimethylbenzene	U		0.124	0.500
Styrene	U		0.117	0.500
1,1,2,2-Tetrachloroethane	U		0.130	0.500
1,1,2-Trichlorotrifluoroethane	U		0.164	0.500
Tetrachloroethene	U		0.199	0.500
Toluene	U		0.412	0.500
1,1,1-Trichloroethane	U		0.0940	0.500
1,1,2-Trichloroethane	U		0.186	0.500
Trichloroethene	U		0.153	0.500
Trichlorofluoromethane	U		0.130	2.50
Vinyl chloride	U		0.118	0.500
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	103			80.0-120
(S) 4-Bromofluorobenzene	96.4			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3441787-1 08/18/19 21:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromobenzene	25.0	26.6	107	73.0-121	
n-Butylbenzene	25.0	26.5	106	73.0-125	
sec-Butylbenzene	25.0	25.8	103	75.0-125	
tert-Butylbenzene	25.0	26.4	106	76.0-124	
2-Chlorotoluene	25.0	25.8	103	76.0-123	
4-Chlorotoluene	25.0	26.6	107	75.0-122	



Laboratory Control Sample (LCS)

(LCS) R3441787-1 08/18/19 21:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
1,2-Dibromo-3-Chloropropane	25.0	22.3	89.4	58.0-134	
1,2-Dibromoethane	25.0	27.4	110	80.0-122	
Dibromomethane	25.0	27.4	110	80.0-120	
cis-1,2-Dichloroethene	25.0	24.7	98.6	73.0-120	
1,1-Dichloropropene	25.0	26.7	107	74.0-126	
1,3-Dichloropropane	25.0	28.2	113	80.0-120	
2,2-Dichloropropane	25.0	19.9	79.7	58.0-130	
Di-isopropyl ether	25.0	23.9	95.8	58.0-138	
Hexachloro-1,3-butadiene	25.0	24.2	96.7	54.0-138	
Acetone	125	127	101	19.0-160	
Acrolein	125	145	116	10.0-160	
Acrylonitrile	125	140	112	55.0-149	
Benzene	25.0	25.8	103	70.0-123	
p-Isopropyltoluene	25.0	26.9	108	76.0-125	
Bromodichloromethane	25.0	26.8	107	75.0-120	
Bromoform	25.0	28.1	112	68.0-132	
Bromomethane	25.0	26.8	107	10.0-160	
n-Propylbenzene	25.0	26.4	106	77.0-124	
1,1,1,2-Tetrachloroethane	25.0	25.8	103	75.0-125	
Carbon disulfide	25.0	24.5	98.1	61.0-128	
Carbon tetrachloride	25.0	24.3	97.2	68.0-126	
Chlorobenzene	25.0	26.1	104	80.0-121	
Chlorodibromomethane	25.0	27.0	108	77.0-125	
Chloroethane	25.0	27.2	109	47.0-150	
Chloroform	25.0	25.2	101	73.0-120	
Chloromethane	25.0	25.0	99.8	41.0-142	
1,2,3-Trichloropropane	25.0	28.5	114	73.0-130	
1,2,4-Trimethylbenzene	25.0	26.5	106	76.0-121	
1,2,3-Trimethylbenzene	25.0	26.0	104	77.0-120	
1,3,5-Trimethylbenzene	25.0	25.5	102	76.0-122	
1,2-Dichlorobenzene	25.0	25.1	100	79.0-121	
1,3-Dichlorobenzene	25.0	25.7	103	79.0-120	
1,4-Dichlorobenzene	25.0	24.3	97.0	79.0-120	
Dichlorodifluoromethane	25.0	32.0	128	51.0-149	
1,1-Dichloroethane	25.0	26.0	104	70.0-126	
1,2-Dichloroethane	25.0	25.2	101	70.0-128	
1,1-Dichloroethene	25.0	26.1	105	71.0-124	
trans-1,2-Dichloroethene	25.0	24.0	95.9	73.0-120	
1,2-Dichloropropane	25.0	28.1	112	77.0-125	
cis-1,3-Dichloropropene	25.0	27.9	112	80.0-123	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Laboratory Control Sample (LCS)

(LCS) R3441787-1 08/18/19 21:18

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
trans-1,3-Dichloropropene	25.0	28.8	115	78.0-124	
Ethylbenzene	25.0	26.2	105	79.0-123	
Isopropylbenzene	25.0	25.9	104	76.0-127	
2-Butanone (MEK)	125	153	123	44.0-160	
Methylene Chloride	25.0	24.2	96.9	67.0-120	
4-Methyl-2-pentanone (MIBK)	125	138	110	68.0-142	
Methyl tert-butyl ether	25.0	18.5	74.1	68.0-125	
Styrene	25.0	26.7	107	73.0-130	
1,1,2,2-Tetrachloroethane	25.0	26.9	108	65.0-130	
1,1,2-Trichlorotrifluoroethane	25.0	25.8	103	69.0-132	
Tetrachloroethene	25.0	26.9	108	72.0-132	
Toluene	25.0	25.5	102	79.0-120	
1,1,1-Trichloroethane	25.0	23.2	92.7	73.0-124	
1,1,2-Trichloroethane	25.0	26.3	105	80.0-120	
Trichloroethene	25.0	25.0	99.8	78.0-124	
Trichlorofluoromethane	25.0	25.4	102	59.0-147	
Vinyl chloride	25.0	23.1	92.4	67.0-131	
Xylenes, Total	75.0	76.9	103	79.0-123	
<i>(S) Toluene-d8</i>			103	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			99.4	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			102	70.0-130	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



Method Blank (MB)

(MB) R3442501-3 08/20/19 20:35

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.0896	0.500
Chlorobenzene	U		0.140	0.500
1,2-Dichlorobenzene	U		0.101	0.500
1,3-Dichlorobenzene	U		0.130	0.500
1,4-Dichlorobenzene	U		0.121	0.500
Ethylbenzene	U		0.158	0.500
Naphthalene	U		0.174	2.50
1,1,2-Trichlorotrifluoroethane	U		0.164	0.500
Toluene	U		0.412	0.500
1,2,3-Trichlorobenzene	U		0.164	0.500
1,2,4-Trichlorobenzene	U		0.355	0.500
Trichlorofluoromethane	U		0.130	2.50
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	102			80.0-120
(S) 4-Bromofluorobenzene	99.9			77.0-126
(S) 1,2-Dichloroethane-d4	100			70.0-130

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

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

(LCS) R3442501-1 08/20/19 19:10 • (LCSD) R3442501-2 08/20/19 19:30

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	25.0	25.2	25.0	101	100	70.0-123			0.934	20
Naphthalene	25.0	25.1	26.4	100	106	54.0-135			5.03	20
Chlorobenzene	25.0	24.0	24.1	96.0	96.4	80.0-121			0.394	20
1,2-Dichlorobenzene	25.0	24.0	24.6	96.1	98.6	79.0-121			2.49	20
1,3-Dichlorobenzene	25.0	24.3	24.2	97.3	97.0	79.0-120			0.400	20
1,4-Dichlorobenzene	25.0	24.0	24.4	95.8	97.6	79.0-120			1.83	20
Ethylbenzene	25.0	24.3	24.7	97.2	99.0	79.0-123			1.86	20
1,1,2-Trichlorotrifluoroethane	25.0	25.2	25.0	101	100	69.0-132			0.607	20
Toluene	25.0	24.0	24.2	95.8	96.9	79.0-120			1.08	20
1,2,3-Trichlorobenzene	25.0	24.0	25.5	96.2	102	50.0-138			6.05	20
1,2,4-Trichlorobenzene	25.0	24.4	25.3	97.6	101	57.0-137			3.56	20
Trichlorofluoromethane	25.0	24.3	24.6	97.4	98.5	59.0-147			1.20	20
Xylenes, Total	75.0	73.3	73.8	97.7	98.4	79.0-123			0.680	20
(S) Toluene-d8				101	102	80.0-120				
(S) 4-Bromofluorobenzene				97.9	101	77.0-126				
(S) 1,2-Dichloroethane-d4				110	108	70.0-130				



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.

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

Qualifier Description

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



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

\* 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 National.

## State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

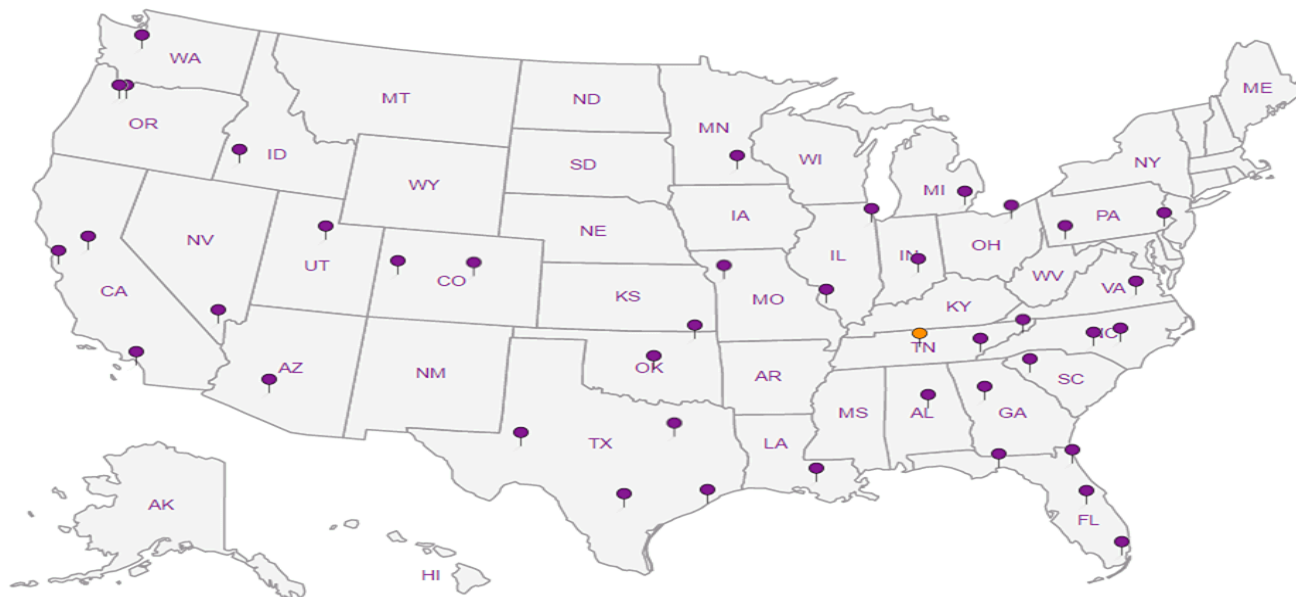
## Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

## Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

