

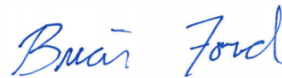
July 16, 2018

Cascade Corporation- Fairview, OR

Sample Delivery Group: L1007465
Samples Received: 07/07/2018
Project Number: PNG0564
Description:

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 National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY



D-16DG L1007465-01 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1135539	1	07/09/18 22:56	07/09/18 22:56	BMB

Collected by
Collected date/time
Received date/time

¹ Cp

² Tc

³ Ss

TRIP BLANK L1007465-02 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1135539	1	07/09/18 21:54	07/09/18 21:54	BMB

Collected by
Collected date/time
Received date/time

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 radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 07/06/18 06:40

L1007465

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	111		25.0	1	07/09/2018 22:56	WG1135539
Acrolein	ND		50.0	1	07/09/2018 22:56	WG1135539
Acrylonitrile	ND		5.00	1	07/09/2018 22:56	WG1135539
Benzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Bromobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Bromodichloromethane	ND		0.500	1	07/09/2018 22:56	WG1135539
Bromoform	ND		0.500	1	07/09/2018 22:56	WG1135539
Bromomethane	ND		2.50	1	07/09/2018 22:56	WG1135539
n-Butylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
sec-Butylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
tert-Butylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Carbon disulfide	ND		0.500	1	07/09/2018 22:56	WG1135539
Carbon tetrachloride	ND		0.500	1	07/09/2018 22:56	WG1135539
Chlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Chlorodibromomethane	ND		0.500	1	07/09/2018 22:56	WG1135539
Chloroethane	ND		2.50	1	07/09/2018 22:56	WG1135539
Chloroform	ND		0.500	1	07/09/2018 22:56	WG1135539
Chloromethane	ND		1.25	1	07/09/2018 22:56	WG1135539
2-Chlorotoluene	ND		0.500	1	07/09/2018 22:56	WG1135539
4-Chlorotoluene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2-Dibromo-3-Chloropropane	ND		2.50	1	07/09/2018 22:56	WG1135539
1,2-Dibromoethane	ND		0.500	1	07/09/2018 22:56	WG1135539
Dibromomethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2-Dichlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,3-Dichlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,4-Dichlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Dichlorodifluoromethane	ND		2.50	1	07/09/2018 22:56	WG1135539
1,1-Dichloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2-Dichloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1-Dichloroethene	ND		0.500	1	07/09/2018 22:56	WG1135539
cis-1,2-Dichloroethene	ND		0.500	1	07/09/2018 22:56	WG1135539
trans-1,2-Dichloroethene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2-Dichloropropane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1-Dichloropropene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,3-Dichloropropane	ND		1.00	1	07/09/2018 22:56	WG1135539
cis-1,3-Dichloropropene	ND		0.500	1	07/09/2018 22:56	WG1135539
trans-1,3-Dichloropropene	ND		0.500	1	07/09/2018 22:56	WG1135539
2,2-Dichloropropane	ND		0.500	1	07/09/2018 22:56	WG1135539
Di-isopropyl ether	ND		0.500	1	07/09/2018 22:56	WG1135539
Ethylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Hexachloro-1,3-butadiene	ND	<u>J4</u>	1.00	1	07/09/2018 22:56	WG1135539
Isopropylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
p-Isopropyltoluene	ND		0.500	1	07/09/2018 22:56	WG1135539
2-Butanone (MEK)	5.98		5.00	1	07/09/2018 22:56	WG1135539
Methylene Chloride	ND		2.50	1	07/09/2018 22:56	WG1135539
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	07/09/2018 22:56	WG1135539
Methyl tert-butyl ether	ND		0.500	1	07/09/2018 22:56	WG1135539
Naphthalene	ND		2.50	1	07/09/2018 22:56	WG1135539
n-Propylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Styrene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1,1,2-Tetrachloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1,2,2-Tetrachloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
Tetrachloroethene	ND		0.500	1	07/09/2018 22:56	WG1135539
Toluene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2,3-Trichlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 07/06/18 06:40

L1007465

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1,1-Trichloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
1,1,2-Trichloroethane	ND		0.500	1	07/09/2018 22:56	WG1135539
Trichloroethene	ND		0.500	1	07/09/2018 22:56	WG1135539
Trichlorofluoromethane	ND		2.50	1	07/09/2018 22:56	WG1135539
1,2,3-Trichloropropane	ND		2.50	1	07/09/2018 22:56	WG1135539
1,2,4-Trimethylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,2,3-Trimethylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
1,3,5-Trimethylbenzene	ND		0.500	1	07/09/2018 22:56	WG1135539
Vinyl chloride	ND		0.500	1	07/09/2018 22:56	WG1135539
Xylenes, Total	ND		1.50	1	07/09/2018 22:56	WG1135539
(S) Toluene-d8	107		80.0-120		07/09/2018 22:56	WG1135539
(S) Dibromofluoromethane	96.2		76.0-123		07/09/2018 22:56	WG1135539
(S) 4-Bromofluorobenzene	101		80.0-120		07/09/2018 22:56	WG1135539

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 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Acetone	ND		25.0	1	07/09/2018 21:54	WG1135539
Acrolein	ND		50.0	1	07/09/2018 21:54	WG1135539
Acrylonitrile	ND		5.00	1	07/09/2018 21:54	WG1135539
Benzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Bromobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Bromodichloromethane	ND		0.500	1	07/09/2018 21:54	WG1135539
Bromoform	ND		0.500	1	07/09/2018 21:54	WG1135539
Bromomethane	ND		2.50	1	07/09/2018 21:54	WG1135539
n-Butylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
sec-Butylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
tert-Butylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Carbon disulfide	ND		0.500	1	07/09/2018 21:54	WG1135539
Carbon tetrachloride	ND		0.500	1	07/09/2018 21:54	WG1135539
Chlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Chlorodibromomethane	ND		0.500	1	07/09/2018 21:54	WG1135539
Chloroethane	ND		2.50	1	07/09/2018 21:54	WG1135539
Chloroform	ND		0.500	1	07/09/2018 21:54	WG1135539
Chloromethane	ND		1.25	1	07/09/2018 21:54	WG1135539
2-Chlorotoluene	ND		0.500	1	07/09/2018 21:54	WG1135539
4-Chlorotoluene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2-Dibromo-3-Chloropropane	ND		2.50	1	07/09/2018 21:54	WG1135539
1,2-Dibromoethane	ND		0.500	1	07/09/2018 21:54	WG1135539
Dibromomethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2-Dichlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,3-Dichlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,4-Dichlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Dichlorodifluoromethane	ND		2.50	1	07/09/2018 21:54	WG1135539
1,1-Dichloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2-Dichloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1-Dichloroethene	ND		0.500	1	07/09/2018 21:54	WG1135539
cis-1,2-Dichloroethene	ND		0.500	1	07/09/2018 21:54	WG1135539
trans-1,2-Dichloroethene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2-Dichloropropane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1-Dichloropropene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,3-Dichloropropane	ND		1.00	1	07/09/2018 21:54	WG1135539
cis-1,3-Dichloropropene	ND		0.500	1	07/09/2018 21:54	WG1135539
trans-1,3-Dichloropropene	ND		0.500	1	07/09/2018 21:54	WG1135539
2,2-Dichloropropane	ND		0.500	1	07/09/2018 21:54	WG1135539
Di-isopropyl ether	ND		0.500	1	07/09/2018 21:54	WG1135539
Ethylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Hexachloro-1,3-butadiene	ND	J4	1.00	1	07/09/2018 21:54	WG1135539
Isopropylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
p-Isopropyltoluene	ND		0.500	1	07/09/2018 21:54	WG1135539
2-Butanone (MEK)	ND		5.00	1	07/09/2018 21:54	WG1135539
Methylene Chloride	ND		2.50	1	07/09/2018 21:54	WG1135539
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	07/09/2018 21:54	WG1135539
Methyl tert-butyl ether	ND		0.500	1	07/09/2018 21:54	WG1135539
Naphthalene	ND		2.50	1	07/09/2018 21:54	WG1135539
n-Propylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Styrene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1,1,2-Tetrachloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1,2,2-Tetrachloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
Tetrachloroethene	ND		0.500	1	07/09/2018 21:54	WG1135539
Toluene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2,3-Trichlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539

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



Collected date/time: 07/06/18 06:40

L1007465

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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1,1-Trichloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
1,1,2-Trichloroethane	ND		0.500	1	07/09/2018 21:54	WG1135539
Trichloroethene	ND		0.500	1	07/09/2018 21:54	WG1135539
Trichlorofluoromethane	ND		2.50	1	07/09/2018 21:54	WG1135539
1,2,3-Trichloropropane	ND		2.50	1	07/09/2018 21:54	WG1135539
1,2,4-Trimethylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,2,3-Trimethylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
1,3,5-Trimethylbenzene	ND		0.500	1	07/09/2018 21:54	WG1135539
Vinyl chloride	ND		0.500	1	07/09/2018 21:54	WG1135539
Xylenes, Total	ND		1.50	1	07/09/2018 21:54	WG1135539
(S) Toluene-d8	106		80.0-120		07/09/2018 21:54	WG1135539
(S) Dibromofluoromethane	97.2		76.0-123		07/09/2018 21:54	WG1135539
(S) 4-Bromofluorobenzene	98.6		80.0-120		07/09/2018 21:54	WG1135539

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



Method Blank (MB)

(MB) R3325112-4 07/09/18 20:53

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
Bromomethane	U		0.157	2.50
n-Butylbenzene	U		0.143	0.500
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
Chloroform	U		0.0860	0.500
Chloromethane	U		0.153	1.25
2-Chlorotoluene	U		0.111	0.500
4-Chlorotoluene	U		0.0972	0.500
1,2-Dibromo-3-Chloropropane	U		0.325	2.50
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
Dichlorodifluoromethane	U		0.127	2.50
1,1-Dichloroethane	U		0.114	0.500
1,2-Dichloroethane	U		0.108	0.500
1,1-Dichloroethene	U		0.188	0.500
cis-1,2-Dichloroethene	U		0.0933	0.500
trans-1,2-Dichloroethene	U		0.152	0.500
1,2-Dichloropropane	U		0.190	0.500
1,1-Dichloropropene	U		0.128	0.500
1,3-Dichloropropane	U		0.147	1.00
cis-1,3-Dichloropropene	U		0.0976	0.500
trans-1,3-Dichloropropene	U		0.222	0.500
2,2-Dichloropropane	U		0.0929	0.500
Di-isopropyl ether	U		0.0924	0.500
Ethylbenzene	U		0.158	0.500

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3325112-4 07/09/18 20:53

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	U		0.157	1.00
Isopropylbenzene	U		0.126	0.500
p-Isopropyltoluene	U		0.138	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
Naphthalene	U		0.174	2.50
n-Propylbenzene	U		0.162	0.500
Styrene	U		0.117	0.500
1,1,1,2-Tetrachloroethane	U		0.120	0.500
1,1,2,2-Tetrachloroethane	U		0.130	0.500
Tetrachloroethene	U		0.199	0.500
Toluene	U		0.412	0.500
1,1,2-Trichlorotrifluoroethane	U		0.164	0.500
1,2,3-Trichlorobenzene	U		0.164	0.500
1,2,4-Trichlorobenzene	U		0.355	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
1,2,3-Trichloropropane	U		0.247	2.50
1,2,3-Trimethylbenzene	U		0.0739	0.500
1,2,4-Trimethylbenzene	U		0.123	0.500
1,3,5-Trimethylbenzene	U		0.124	0.500
Vinyl chloride	U		0.118	0.500
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	106			80.0-120
(S) Dibromofluoromethane	96.9			76.0-123
(S) 4-Bromofluorobenzene	100			80.0-120

- 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) R3325112-1 07/09/18 19:32 • (LCSD) R3325112-2 07/09/18 19:52

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 %
Acetone	125	139	133	111	107	10.0-160			4.16	23
Acrolein	125	106	104	84.9	82.9	10.0-160			2.41	20
Acrylonitrile	125	120	118	96.3	94.2	60.0-142			2.22	20



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

(LCS) R3325112-1 07/09/18 19:32 • (LCSD) R3325112-2 07/09/18 19:52

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Benzene	25.0	23.5	23.2	93.9	92.6	69.0-123			1.33	20
Bromobenzene	25.0	22.7	21.5	90.9	86.1	79.0-120			5.42	20
Bromodichloromethane	25.0	23.0	22.7	91.8	90.6	76.0-120			1.30	20
Bromoform	25.0	21.7	21.3	86.9	85.3	67.0-132			1.89	20
Bromomethane	25.0	25.7	25.1	103	100	18.0-160			2.34	20
n-Butylbenzene	25.0	26.1	25.6	104	102	72.0-126			1.98	20
sec-Butylbenzene	25.0	25.4	24.2	102	97.0	74.0-121			4.65	20
tert-Butylbenzene	25.0	25.5	24.4	102	97.8	75.0-122			4.25	20
Carbon disulfide	25.0	21.0	21.4	83.9	85.6	55.0-127			2.04	20
Carbon tetrachloride	25.0	23.3	22.5	93.0	89.8	63.0-122			3.47	20
Chlorobenzene	25.0	25.2	25.0	101	100	79.0-121			0.930	20
Chlorodibromomethane	25.0	25.1	24.6	100	98.4	75.0-125			1.95	20
Chloroethane	25.0	21.8	24.5	87.4	98.0	47.0-152			11.5	20
Chloroform	25.0	23.7	23.4	94.9	93.5	72.0-121			1.46	20
Chloromethane	25.0	21.8	21.9	87.2	87.8	48.0-139			0.678	20
2-Chlorotoluene	25.0	24.0	23.0	96.2	91.9	74.0-122			4.56	20
4-Chlorotoluene	25.0	23.9	22.8	95.5	91.1	79.0-120			4.68	20
1,2-Dibromo-3-Chloropropane	25.0	24.8	24.0	99.2	96.0	64.0-127			3.29	20
1,2-Dibromoethane	25.0	25.6	25.3	102	101	77.0-123			1.18	20
Dibromomethane	25.0	25.0	24.8	99.9	99.3	78.0-120			0.611	20
1,2-Dichlorobenzene	25.0	24.7	24.1	98.7	96.3	80.0-120			2.45	20
1,3-Dichlorobenzene	25.0	24.6	23.7	98.2	94.9	72.0-123			3.46	20
1,4-Dichlorobenzene	25.0	24.0	23.4	95.9	93.7	77.0-120			2.30	20
Dichlorodifluoromethane	25.0	25.5	27.1	102	108	49.0-155			6.02	20
1,1-Dichloroethane	25.0	23.4	23.1	93.7	92.5	70.0-126			1.30	20
1,2-Dichloroethane	25.0	24.0	23.4	95.9	93.4	67.0-126			2.62	20
1,1-Dichloroethene	25.0	23.2	23.3	92.6	93.1	64.0-129			0.573	20
cis-1,2-Dichloroethene	25.0	23.4	23.4	93.5	93.5	73.0-120			0.0267	20
trans-1,2-Dichloroethene	25.0	23.7	23.8	94.7	95.2	71.0-121			0.569	20
1,2-Dichloropropane	25.0	25.2	24.1	101	96.5	75.0-125			4.26	20
1,1-Dichloropropene	25.0	24.9	24.6	99.5	98.2	71.0-129			1.26	20
1,3-Dichloropropane	25.0	25.1	24.8	100	99.3	80.0-121			1.03	20
cis-1,3-Dichloropropene	25.0	24.5	24.3	98.2	97.4	79.0-123			0.804	20
trans-1,3-Dichloropropene	25.0	24.8	24.8	99.0	99.1	74.0-127			0.0857	20
2,2-Dichloropropane	25.0	23.6	22.4	94.5	89.7	60.0-125			5.18	20
Di-isopropyl ether	25.0	23.2	22.7	92.7	90.9	59.0-133			1.88	20
Ethylbenzene	25.0	26.1	25.3	104	101	77.0-120			2.99	20
Hexachloro-1,3-butadiene	25.0	34.1	36.9	136	148	64.0-131	J4	J4	7.92	20
Isopropylbenzene	25.0	24.8	23.6	99.2	94.3	75.0-120			5.11	20
p-Isopropyltoluene	25.0	26.2	25.2	105	101	74.0-126			3.87	20

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) R3325112-1 07/09/18 19:32 • (LCSD) R3325112-2 07/09/18 19:52

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 %
2-Butanone (MEK)	125	119	116	95.6	92.9	37.0-158			2.85	20
Methylene Chloride	25.0	21.7	21.8	86.6	87.4	66.0-121			0.871	20
4-Methyl-2-pentanone (MIBK)	125	124	121	99.4	96.7	59.0-143			2.76	20
Methyl tert-butyl ether	25.0	24.2	23.5	97.0	94.1	64.0-123			3.06	20
Naphthalene	25.0	26.2	27.7	105	111	62.0-128			5.82	20
n-Propylbenzene	25.0	23.7	22.7	94.7	90.6	79.0-120			4.39	20
Styrene	25.0	24.0	22.9	96.0	91.4	78.0-124			4.91	20
1,1,1,2-Tetrachloroethane	25.0	25.0	24.5	100	98.1	75.0-122			2.01	20
1,1,2,2-Tetrachloroethane	25.0	22.9	22.6	91.5	90.3	71.0-122			1.31	20
Tetrachloroethene	25.0	25.6	24.9	102	99.7	70.0-127			2.78	20
Toluene	25.0	24.7	24.3	98.7	97.0	77.0-120			1.73	20
1,1,2-Trichlorotrifluoroethane	25.0	24.3	24.3	97.3	97.0	61.0-136			0.232	20
1,2,3-Trichlorobenzene	25.0	30.4	32.8	121	131	61.0-133			7.64	20
1,2,4-Trichlorobenzene	25.0	27.0	28.4	108	114	69.0-129			5.18	20
1,1,1-Trichloroethane	25.0	25.0	24.5	100	97.8	68.0-122			2.33	20
1,1,2-Trichloroethane	25.0	24.9	24.9	99.8	99.8	78.0-120			0.00577	20
Trichloroethene	25.0	25.9	25.1	104	100	78.0-120			3.03	20
Trichlorofluoromethane	25.0	23.4	23.4	93.5	93.4	56.0-137			0.0829	20
1,2,3-Trichloropropane	25.0	25.3	24.3	101	97.2	72.0-124			3.93	20
1,2,3-Trimethylbenzene	25.0	24.6	23.4	98.3	93.7	75.0-120			4.79	20
1,2,4-Trimethylbenzene	25.0	25.5	24.2	102	96.8	75.0-120			5.31	20
1,3,5-Trimethylbenzene	25.0	24.7	23.4	98.6	93.6	75.0-120			5.23	20
Vinyl chloride	25.0	23.2	23.8	92.8	95.3	64.0-133			2.71	20
Xylenes, Total	75.0	78.4	77.3	105	103	77.0-120			1.41	20
(S) Toluene-d8				104	104	80.0-120				
(S) Dibromofluoromethane				96.1	95.9	76.0-123				
(S) 4-Bromofluorobenzene				98.8	96.3	80.0-120				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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.

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.
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

J4	The associated batch QC was outside the established quality control range for accuracy.
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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 ¹	n/a
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}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	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

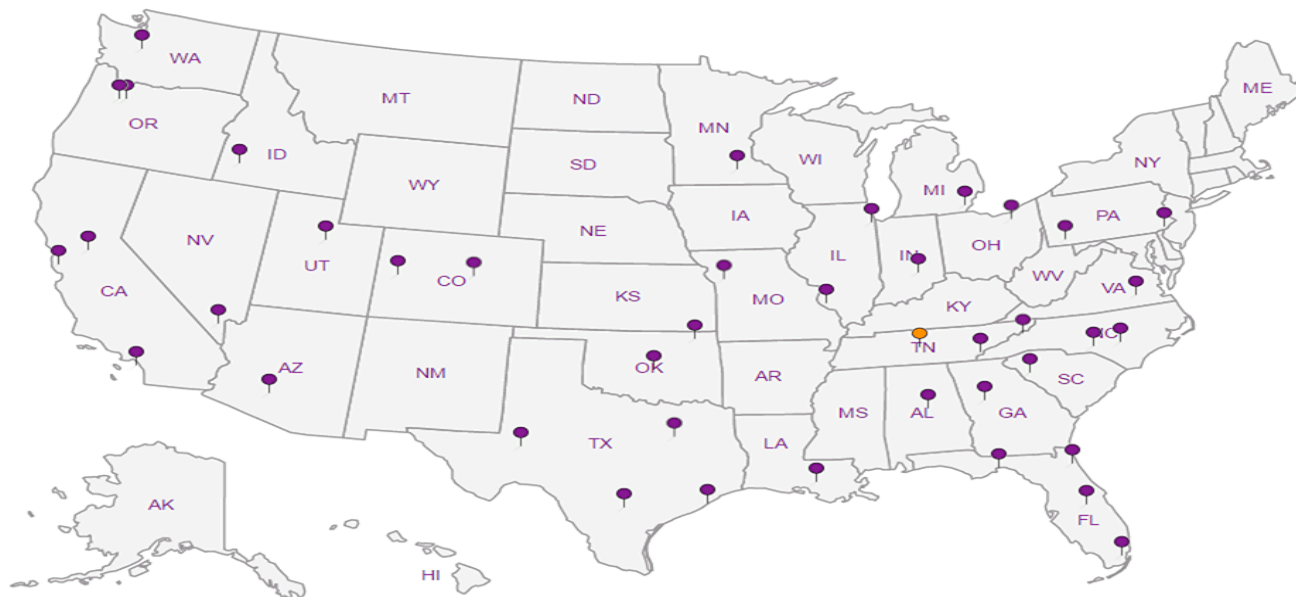
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 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

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

