

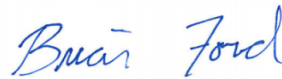
May 03, 2018

Cascade Corporation- Fairview, OR

Sample Delivery Group: L990344
Samples Received: 05/02/2018
Project Number: CASCADE CTS
Description: Cascade CTS

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

Entire Report Reviewed By:



Brian Ford
Technical Service Representative

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



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



TS-C-EFF-0501118 L990344-01 GW

			Collected by PY/DT	Collected date/time	Received date/time
				05/01/18 08:50	05/02/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1106043	1	05/02/18 21:16	05/02/18 21:16	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1106043	1	05/03/18 12:28	05/03/18 12:28	JHH

¹ Cp² Tc³ Ss

TS-C-EFF-0501118-D L990344-02 GW

			Collected by PY/DT	Collected date/time	Received date/time
				05/01/18 08:51	05/02/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1106043	1	05/02/18 21:37	05/02/18 21:37	ACG
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1106043	1	05/03/18 13:08	05/03/18 13:08	JHH

⁴ Cn⁵ Sr⁶ Qc

TS-C-INF-0501118 L990344-03 GW

			Collected by PY/DT	Collected date/time	Received date/time
				05/01/18 08:58	05/02/18 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1106043	1	05/02/18 21:58	05/02/18 21:58	ACG

⁷ Gl⁸ Al⁹ 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
Technical Service Representative

Project Narrative

See report L990332 for trip blank.

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 ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		25.0	1	05/02/2018 21:16	WG1106043
Acrolein	ND		50.0	1	05/02/2018 21:16	WG1106043
Acrylonitrile	ND		5.00	1	05/02/2018 21:16	WG1106043
Benzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Bromobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Bromodichloromethane	ND		0.500	1	05/02/2018 21:16	WG1106043
Bromoform	ND		0.500	1	05/02/2018 21:16	WG1106043
Bromomethane	ND		2.50	1	05/02/2018 21:16	WG1106043
n-Butylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
sec-Butylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
tert-Butylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Carbon disulfide	ND		0.500	1	05/02/2018 21:16	WG1106043
Carbon tetrachloride	ND		0.500	1	05/02/2018 21:16	WG1106043
Chlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Chlorodibromomethane	ND		0.500	1	05/02/2018 21:16	WG1106043
Chloroethane	ND		2.50	1	05/02/2018 21:16	WG1106043
Chloroform	ND		0.500	1	05/02/2018 21:16	WG1106043
Chloromethane	ND		1.25	1	05/02/2018 21:16	WG1106043
2-Chlorotoluene	ND		0.500	1	05/02/2018 21:16	WG1106043
4-Chlorotoluene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,2-Dibromo-3-Chloropropane	ND		2.50	1	05/02/2018 21:16	WG1106043
1,2-Dibromoethane	ND		0.500	1	05/02/2018 21:16	WG1106043
Dibromomethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,2-Dichlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,3-Dichlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,4-Dichlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Dichlorodifluoromethane	ND		2.50	1	05/02/2018 21:16	WG1106043
1,1-Dichloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,2-Dichloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1-Dichloroethene	ND		0.500	1	05/02/2018 21:16	WG1106043
cis-1,2-Dichloroethene	ND		0.500	1	05/02/2018 21:16	WG1106043
trans-1,2-Dichloroethene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,2-Dichloropropane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1-Dichloropropene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,3-Dichloropropane	ND		1.00	1	05/02/2018 21:16	WG1106043
cis-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:16	WG1106043
trans-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:16	WG1106043
2,2-Dichloropropane	ND		0.500	1	05/02/2018 21:16	WG1106043
Di-isopropyl ether	ND		0.500	1	05/02/2018 21:16	WG1106043
Ethylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Hexachloro-1,3-butadiene	ND		1.00	1	05/02/2018 21:16	WG1106043
Isopropylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
p-Isopropyltoluene	ND		0.500	1	05/02/2018 21:16	WG1106043
2-Butanone (MEK)	ND		5.00	1	05/02/2018 21:16	WG1106043
Methylene Chloride	ND		2.50	1	05/02/2018 21:16	WG1106043
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	05/02/2018 21:16	WG1106043
Methyl tert-butyl ether	ND		0.500	1	05/02/2018 21:16	WG1106043
Naphthalene	ND		2.50	1	05/02/2018 21:16	WG1106043
n-Propylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Styrene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1,1,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1,2,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
Tetrachloroethene	ND		0.500	1	05/02/2018 21:16	WG1106043
Toluene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,2,3-Trichlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043

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 ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1,1-Trichloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
1,1,2-Trichloroethane	ND		0.500	1	05/02/2018 21:16	WG1106043
Trichloroethene	ND		0.500	1	05/02/2018 21:16	WG1106043
Trichlorofluoromethane	ND		2.50	1	05/02/2018 21:16	WG1106043
1,2,3-Trichloropropane	ND		2.50	1	05/02/2018 21:16	WG1106043
1,2,4-Trimethylbenzene	ND		0.500	1	05/03/2018 12:28	WG1106043
1,2,3-Trimethylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
1,3,5-Trimethylbenzene	ND		0.500	1	05/02/2018 21:16	WG1106043
Vinyl chloride	ND		0.500	1	05/02/2018 21:16	WG1106043
Xylenes, Total	ND		1.50	1	05/02/2018 21:16	WG1106043
(S) Toluene-d8	106		80.0-120		05/03/2018 12:28	WG1106043
(S) Toluene-d8	104		80.0-120		05/02/2018 21:16	WG1106043
(S) Dibromofluoromethane	100		76.0-123		05/03/2018 12:28	WG1106043
(S) Dibromofluoromethane	97.7		76.0-123		05/02/2018 21:16	WG1106043
(S) 4-Bromofluorobenzene	109		80.0-120		05/03/2018 12:28	WG1106043
(S) 4-Bromofluorobenzene	110		80.0-120		05/02/2018 21:16	WG1106043

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		25.0	1	05/02/2018 21:37	WG1106043
Acrolein	ND		50.0	1	05/02/2018 21:37	WG1106043
Acrylonitrile	ND		5.00	1	05/02/2018 21:37	WG1106043
Benzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Bromobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Bromodichloromethane	ND		0.500	1	05/02/2018 21:37	WG1106043
Bromoform	ND		0.500	1	05/02/2018 21:37	WG1106043
Bromomethane	ND		2.50	1	05/02/2018 21:37	WG1106043
n-Butylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
sec-Butylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
tert-Butylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Carbon disulfide	ND		0.500	1	05/02/2018 21:37	WG1106043
Carbon tetrachloride	ND		0.500	1	05/02/2018 21:37	WG1106043
Chlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Chlorodibromomethane	ND		0.500	1	05/02/2018 21:37	WG1106043
Chloroethane	ND		2.50	1	05/02/2018 21:37	WG1106043
Chloroform	ND		0.500	1	05/02/2018 21:37	WG1106043
Chloromethane	ND		1.25	1	05/02/2018 21:37	WG1106043
2-Chlorotoluene	ND		0.500	1	05/02/2018 21:37	WG1106043
4-Chlorotoluene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,2-Dibromo-3-Chloropropane	ND		2.50	1	05/02/2018 21:37	WG1106043
1,2-Dibromoethane	ND		0.500	1	05/02/2018 21:37	WG1106043
Dibromomethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,2-Dichlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,3-Dichlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,4-Dichlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Dichlorodifluoromethane	ND		2.50	1	05/02/2018 21:37	WG1106043
1,1-Dichloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,2-Dichloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1-Dichloroethene	ND		0.500	1	05/02/2018 21:37	WG1106043
cis-1,2-Dichloroethene	ND		0.500	1	05/02/2018 21:37	WG1106043
trans-1,2-Dichloroethene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,2-Dichloropropane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1-Dichloropropene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,3-Dichloropropane	ND		1.00	1	05/02/2018 21:37	WG1106043
cis-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:37	WG1106043
trans-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:37	WG1106043
2,2-Dichloropropane	ND		0.500	1	05/02/2018 21:37	WG1106043
Di-isopropyl ether	ND		0.500	1	05/02/2018 21:37	WG1106043
Ethylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Hexachloro-1,3-butadiene	ND		1.00	1	05/02/2018 21:37	WG1106043
Isopropylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
p-Isopropyltoluene	ND		0.500	1	05/02/2018 21:37	WG1106043
2-Butanone (MEK)	ND		5.00	1	05/02/2018 21:37	WG1106043
Methylene Chloride	ND		2.50	1	05/02/2018 21:37	WG1106043
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	05/02/2018 21:37	WG1106043
Methyl tert-butyl ether	ND		0.500	1	05/02/2018 21:37	WG1106043
Naphthalene	ND		2.50	1	05/02/2018 21:37	WG1106043
n-Propylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Styrene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1,1,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1,2,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
Tetrachloroethene	ND		0.500	1	05/02/2018 21:37	WG1106043
Toluene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,2,3-Trichlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043

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 ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,4-Trichlorobenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1,1-Trichloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
1,1,2-Trichloroethane	ND		0.500	1	05/02/2018 21:37	WG1106043
Trichloroethene	ND		0.500	1	05/02/2018 21:37	WG1106043
Trichlorofluoromethane	ND		2.50	1	05/02/2018 21:37	WG1106043
1,2,3-Trichloropropane	ND		2.50	1	05/02/2018 21:37	WG1106043
1,2,4-Trimethylbenzene	ND		0.500	1	05/03/2018 13:08	WG1106043
1,2,3-Trimethylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
1,3,5-Trimethylbenzene	ND		0.500	1	05/02/2018 21:37	WG1106043
Vinyl chloride	ND		0.500	1	05/02/2018 21:37	WG1106043
Xylenes, Total	ND		1.50	1	05/02/2018 21:37	WG1106043
(S) Toluene-d8	105		80.0-120		05/02/2018 21:37	WG1106043
(S) Toluene-d8	104		80.0-120		05/03/2018 13:08	WG1106043
(S) Dibromofluoromethane	101		76.0-123		05/03/2018 13:08	WG1106043
(S) Dibromofluoromethane	97.0		76.0-123		05/02/2018 21:37	WG1106043
(S) 4-Bromofluorobenzene	113		80.0-120		05/03/2018 13:08	WG1106043
(S) 4-Bromofluorobenzene	108		80.0-120		05/02/2018 21:37	WG1106043

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



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

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	ND		25.0	1	05/02/2018 21:58	WG1106043
Acrolein	ND		50.0	1	05/02/2018 21:58	WG1106043
Acrylonitrile	ND		5.00	1	05/02/2018 21:58	WG1106043
Benzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Bromobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Bromodichloromethane	ND		0.500	1	05/02/2018 21:58	WG1106043
Bromoform	ND		0.500	1	05/02/2018 21:58	WG1106043
Bromomethane	ND		2.50	1	05/02/2018 21:58	WG1106043
n-Butylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
sec-Butylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
tert-Butylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Carbon disulfide	ND		0.500	1	05/02/2018 21:58	WG1106043
Carbon tetrachloride	ND		0.500	1	05/02/2018 21:58	WG1106043
Chlorobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Chlorodibromomethane	ND		0.500	1	05/02/2018 21:58	WG1106043
Chloroethane	ND		2.50	1	05/02/2018 21:58	WG1106043
Chloroform	ND		0.500	1	05/02/2018 21:58	WG1106043
Chloromethane	ND		1.25	1	05/02/2018 21:58	WG1106043
2-Chlorotoluene	ND		0.500	1	05/02/2018 21:58	WG1106043
4-Chlorotoluene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2-Dibromo-3-Chloropropane	ND		2.50	1	05/02/2018 21:58	WG1106043
1,2-Dibromoethane	ND		0.500	1	05/02/2018 21:58	WG1106043
Dibromomethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2-Dichlorobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,3-Dichlorobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,4-Dichlorobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Dichlorodifluoromethane	ND		2.50	1	05/02/2018 21:58	WG1106043
1,1-Dichloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2-Dichloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1-Dichloroethene	ND		0.500	1	05/02/2018 21:58	WG1106043
cis-1,2-Dichloroethene	0.739		0.500	1	05/02/2018 21:58	WG1106043
trans-1,2-Dichloroethene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2-Dichloropropane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1-Dichloropropene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,3-Dichloropropane	ND		1.00	1	05/02/2018 21:58	WG1106043
cis-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:58	WG1106043
trans-1,3-Dichloropropene	ND		0.500	1	05/02/2018 21:58	WG1106043
2,2-Dichloropropane	ND		0.500	1	05/02/2018 21:58	WG1106043
Di-isopropyl ether	ND		0.500	1	05/02/2018 21:58	WG1106043
Ethylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Hexachloro-1,3-butadiene	ND		1.00	1	05/02/2018 21:58	WG1106043
Isopropylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
p-Isopropyltoluene	ND		0.500	1	05/02/2018 21:58	WG1106043
2-Butanone (MEK)	ND		5.00	1	05/02/2018 21:58	WG1106043
Methylene Chloride	ND		2.50	1	05/02/2018 21:58	WG1106043
4-Methyl-2-pentanone (MIBK)	ND		5.00	1	05/02/2018 21:58	WG1106043
Methyl tert-butyl ether	ND		0.500	1	05/02/2018 21:58	WG1106043
Naphthalene	ND		2.50	1	05/02/2018 21:58	WG1106043
n-Propylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Styrene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1,1,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1,2,2-Tetrachloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1,2-Trichlorotrifluoroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
Tetrachloroethene	ND		0.500	1	05/02/2018 21:58	WG1106043
Toluene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2,3-Trichlorobenzene	ND		0.500	1	05/02/2018 21:58	WG1106043

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 05/01/18 08:58

L990344

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	05/02/2018 21:58	WG1106043
1,1,1-Trichloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
1,1,2-Trichloroethane	ND		0.500	1	05/02/2018 21:58	WG1106043
Trichloroethene	5.95		0.500	1	05/02/2018 21:58	WG1106043
Trichlorofluoromethane	ND		2.50	1	05/02/2018 21:58	WG1106043
1,2,3-Trichloropropane	ND		2.50	1	05/02/2018 21:58	WG1106043
1,2,4-Trimethylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,2,3-Trimethylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
1,3,5-Trimethylbenzene	ND		0.500	1	05/02/2018 21:58	WG1106043
Vinyl chloride	ND		0.500	1	05/02/2018 21:58	WG1106043
Xylenes, Total	ND		1.50	1	05/02/2018 21:58	WG1106043
(S) Toluene-d8	106		80.0-120		05/02/2018 21:58	WG1106043
(S) Dibromofluoromethane	95.8		76.0-123		05/02/2018 21:58	WG1106043
(S) 4-Bromofluorobenzene	110		80.0-120		05/02/2018 21:58	WG1106043

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3306658-3 05/02/18 14:55

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
Carbon disulfide	U		0.101	0.500
n-Butylbenzene	U		0.143	0.500
sec-Butylbenzene	U		0.134	0.500
tert-Butylbenzene	U		0.183	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

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3306658-3 05/02/18 14:55

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hexachloro-1,3-butadiene	0.402	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
1,1,2-Trichlorotrifluoroethane	U		0.164	0.500
Tetrachloroethene	U		0.199	0.500
Toluene	U		0.412	0.500
1,2,3-Trichlorobenzene	0.247	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
1,2,4-Trimethylbenzene	U		0.123	0.500
1,2,3-Trimethylbenzene	U		0.0739	0.500
1,3,5-Trimethylbenzene	U		0.124	0.500
Vinyl chloride	U		0.118	0.500
Xylenes, Total	U		0.316	1.50
(S) Toluene-d8	106			80.0-120
(S) Dibromofluoromethane	97.2			76.0-123
(S) 4-Bromofluorobenzene	102			80.0-120

1

Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

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

(LCS) R3306658-1 05/02/18 13:51 • (LCSD) R3306658-2 05/02/18 14:13

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 %
Carbon disulfide	25.0	23.6	23.5	94.4	93.8	55.0-127			0.599	20
Acetone	125	124	131	99.1	105	10.0-160			5.30	23
Acrolein	125	141	146	113	117	10.0-160			3.16	20



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

(LCS) R3306658-1 05/02/18 13:51 • (LCSD) R3306658-2 05/02/18 14:13

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 %
Acrylonitrile	125	121	122	97.1	97.3	60.0-142			0.171	20
Benzene	25.0	23.7	23.2	94.6	92.9	69.0-123			1.87	20
Bromobenzene	25.0	24.3	24.5	97.2	98.0	79.0-120			0.838	20
Bromodichloromethane	25.0	25.6	25.5	102	102	76.0-120			0.279	20
Bromoform	25.0	25.5	26.2	102	105	67.0-132			2.77	20
Bromomethane	25.0	19.7	20.1	79.0	80.2	18.0-160			1.57	20
n-Butylbenzene	25.0	23.7	23.7	95.0	94.9	72.0-126			0.0624	20
sec-Butylbenzene	25.0	24.6	24.7	98.3	98.8	74.0-121			0.484	20
tert-Butylbenzene	25.0	25.2	24.8	101	99.1	75.0-122			1.53	20
Carbon tetrachloride	25.0	23.6	23.0	94.3	92.1	63.0-122			2.41	20
Chlorobenzene	25.0	24.5	24.5	98.1	98.1	79.0-121			0.0138	20
Chlorodibromomethane	25.0	25.5	25.1	102	100	75.0-125			1.77	20
Chloroethane	25.0	24.4	23.2	97.5	92.8	47.0-152			4.91	20
Chloroform	25.0	24.0	23.5	95.9	94.0	72.0-121			1.94	20
Chloromethane	25.0	23.4	23.4	93.7	93.7	48.0-139			0.0622	20
2-Chlorotoluene	25.0	24.3	24.2	97.0	96.7	74.0-122			0.380	20
4-Chlorotoluene	25.0	24.1	23.8	96.6	95.0	79.0-120			1.61	20
1,2-Dibromo-3-Chloropropane	25.0	25.4	25.8	101	103	64.0-127			1.80	20
1,2-Dibromoethane	25.0	24.9	24.8	99.6	99.0	77.0-123			0.539	20
Dibromomethane	25.0	24.1	24.5	96.3	98.0	78.0-120			1.71	20
1,2-Dichlorobenzene	25.0	24.0	23.5	95.8	94.0	80.0-120			1.96	20
1,3-Dichlorobenzene	25.0	24.5	24.6	97.8	98.3	72.0-123			0.422	20
1,4-Dichlorobenzene	25.0	23.6	23.8	94.4	95.4	77.0-120			1.03	20
Dichlorodifluoromethane	25.0	25.5	24.7	102	98.7	49.0-155			3.32	20
1,1-Dichloroethane	25.0	24.2	23.4	96.6	93.8	70.0-126			3.00	20
1,2-Dichloroethane	25.0	23.2	23.3	93.0	93.3	67.0-126			0.347	20
1,1-Dichloroethene	25.0	24.1	23.6	96.5	94.4	64.0-129			2.24	20
cis-1,2-Dichloroethene	25.0	23.9	23.5	95.7	94.1	73.0-120			1.68	20
trans-1,2-Dichloroethene	25.0	23.6	23.0	94.5	92.0	71.0-121			2.69	20
1,2-Dichloropropane	25.0	24.1	24.1	96.4	96.3	75.0-125			0.109	20
1,1-Dichloropropene	25.0	25.0	24.1	100	96.3	71.0-129			3.96	20
1,3-Dichloropropane	25.0	25.0	24.7	100	98.9	80.0-121			1.13	20
cis-1,3-Dichloropropene	25.0	24.6	24.5	98.6	98.1	79.0-123			0.487	20
trans-1,3-Dichloropropene	25.0	25.3	24.3	101	97.4	74.0-127			3.67	20
2,2-Dichloropropane	25.0	24.4	23.7	97.5	95.0	60.0-125			2.59	20
Di-isopropyl ether	25.0	24.6	24.3	98.3	97.3	59.0-133			0.971	20
Ethylbenzene	25.0	25.3	25.2	101	101	77.0-120			0.164	20
Hexachloro-1,3-butadiene	25.0	22.6	23.3	90.6	93.2	64.0-131			2.88	20
Isopropylbenzene	25.0	24.8	24.4	99.1	97.7	75.0-120			1.42	20
p-Isopropyltoluene	25.0	25.0	24.6	100	98.4	74.0-126			1.58	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



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

(LCS) R3306658-1 05/02/18 13:51 • (LCSD) R3306658-2 05/02/18 14:13

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	129	133	103	106	37.0-158			3.15	20
Methylene Chloride	25.0	22.7	22.3	90.7	89.3	66.0-121			1.60	20
4-Methyl-2-pentanone (MIBK)	125	129	129	104	103	59.0-143			0.186	20
Methyl tert-butyl ether	25.0	23.9	24.5	95.7	98.0	64.0-123			2.32	20
Naphthalene	25.0	24.6	24.8	98.3	99.3	62.0-128			0.957	20
n-Propylbenzene	25.0	24.1	23.8	96.5	95.3	79.0-120			1.28	20
Styrene	25.0	25.4	25.2	102	101	78.0-124			0.685	20
1,1,1,2-Tetrachloroethane	25.0	25.9	25.5	104	102	75.0-122			1.67	20
1,1,2,2-Tetrachloroethane	25.0	24.2	23.3	96.7	93.2	71.0-122			3.60	20
1,1,2-Trichlorotrifluoroethane	25.0	24.4	24.1	97.5	96.3	61.0-136			1.19	20
Tetrachloroethene	25.0	24.8	24.0	99.3	96.2	70.0-127			3.22	20
Toluene	25.0	23.6	23.3	94.5	93.0	77.0-120			1.52	20
1,2,3-Trichlorobenzene	25.0	24.4	25.1	97.5	100	61.0-133			2.78	20
1,2,4-Trichlorobenzene	25.0	24.2	24.2	96.9	96.6	69.0-129			0.320	20
1,1,1-Trichloroethane	25.0	23.8	23.5	95.4	94.1	68.0-122			1.33	20
1,1,2-Trichloroethane	25.0	25.4	24.8	102	99.3	78.0-120			2.24	20
Trichloroethene	25.0	24.9	25.9	99.5	104	78.0-120			4.07	20
Trichlorofluoromethane	25.0	25.1	23.8	101	95.0	56.0-137			5.62	20
1,2,3-Trichloropropane	25.0	25.1	24.9	100	99.7	72.0-124			0.685	20
1,2,4-Trimethylbenzene	25.0	25.1	24.9	101	99.7	75.0-120			0.822	20
1,2,3-Trimethylbenzene	25.0	24.3	24.3	97.4	97.0	75.0-120			0.359	20
1,3,5-Trimethylbenzene	25.0	25.1	24.9	101	99.8	75.0-120			0.804	20
Vinyl chloride	25.0	24.6	24.1	98.3	96.5	64.0-133			1.83	20
Xylenes, Total	75.0	75.9	74.3	101	99.1	77.0-120			2.13	20
(S) Toluene-d8				102	102	80.0-120				
(S) Dibromofluoromethane				98.1	96.9	76.0-123				
(S) 4-Bromofluorobenzene				98.8	98.8	80.0-120				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



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.

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



ESC Lab Sciences 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 ESC Lab Sciences.

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	TN2000002
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

ESC Lab Sciences 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. ESC Lab Sciences performs all testing at our central laboratory.

