

November 20, 2017

Churchill Energy, Inc.

Sample Delivery Group: L949781
Samples Received: 11/08/2017
Project Number:
Description: Champlin Limon 1-19/2-19

Report To: Gary Kluksdahl
8177 South Norfolk Street
Englewood, CO 80112

Entire Report Reviewed By:



Shane Gambill
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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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



4 L949781-01 Solid

Collected by
Tim Rogers

Collected date/time
11/06/17 11:00

Received date/time
11/08/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 14:51	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 00:46	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 16:58	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:40	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 00:46	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 15:42	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 11:48	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 05:26	DMG

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

5 L949781-02 Solid

Collected by
Tim Rogers

Collected date/time
11/06/17 11:00

Received date/time
11/08/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:00	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 00:56	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 16:58	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:43	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 00:56	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 16:04	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 12:20	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 05:50	DMG

6 L949781-03 Solid

Collected by
Tim Rogers

Collected date/time
11/06/17 11:00

Received date/time
11/08/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:04	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 00:59	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 17:00	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:45	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 00:59	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/12/17 21:08	DWR
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 12:31	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 06:15	DMG

7 L949781-04 Solid

Collected by
Tim Rogers

Collected date/time
11/06/17 11:00

Received date/time
11/08/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:07	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 01:02	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 17:00	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:47	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 01:02	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 16:49	BMB



7 L949781-04 Solid

			Collected by	Collected date/time	Received date/time
			Tim Rogers	11/06/17 11:00	11/08/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 12:42	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 06:39	DMG

1 Cp

2 Tc

3 Ss

8 L949781-05 Solid

			Collected by	Collected date/time	Received date/time
			Tim Rogers	11/06/17 11:00	11/08/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:10	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 01:06	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 17:01	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:49	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 01:06	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 17:11	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	10	11/15/17 00:32	11/16/17 12:53	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 07:52	DMG

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

9 L949781-06 Solid

			Collected by	Collected date/time	Received date/time
			Tim Rogers	11/06/17 11:00	11/08/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:14	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 01:09	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 17:01	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:51	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 01:09	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 17:33	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 13:04	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 08:17	DMG

10 L949781-07 Solid

			Collected by	Collected date/time	Received date/time
			Tim Rogers	11/06/17 11:00	11/08/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1041845	1	11/12/17 08:15	11/13/17 15:17	ST
Calculated Results	WG1041264	1	11/12/17 05:32	11/13/17 01:12	CCE
Wet Chemistry by Method 3060A/7196A	WG1040853	1	11/10/17 10:16	11/10/17 17:02	GB
Wet Chemistry by Method 9045D	WG1042085	1	11/13/17 10:57	11/13/17 13:27	ER
Wet Chemistry by Method 9050AMod	WG1042096	1	11/14/17 16:58	11/14/17 17:25	MA
Mercury by Method 7471A	WG1041190	1	11/13/17 12:00	11/14/17 11:54	ABL
Metals (ICP) by Method 6010B	WG1041264	1	11/12/17 05:32	11/13/17 01:12	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1041422	1	11/10/17 10:03	11/10/17 17:55	BMB
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1041947	1	11/15/17 00:32	11/16/17 13:14	DMW
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1042320	1	11/16/17 17:43	11/17/17 08:41	DMG



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. 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.

Shane Gambill
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.7		1	11/13/2017 14:51	WG1041845

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	5.10		1.00	1	11/13/2017 00:46	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 16:58	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.58	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-01 WG1042085: 6.58 at 18.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	505		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:40	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.47		2.00	1	11/13/2017 00:46	WG1041264
Barium	64.8		0.500	1	11/13/2017 00:46	WG1041264
Cadmium	ND		0.500	1	11/13/2017 00:46	WG1041264
Chromium	5.10		1.00	1	11/13/2017 00:46	WG1041264
Copper	3.78		2.00	1	11/13/2017 00:46	WG1041264
Lead	6.83		0.500	1	11/13/2017 00:46	WG1041264
Nickel	5.72		2.00	1	11/13/2017 00:46	WG1041264
Selenium	ND		2.00	1	11/13/2017 00:46	WG1041264
Silver	ND		1.00	1	11/13/2017 00:46	WG1041264
Zinc	21.3		5.00	1	11/13/2017 00:46	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	11/10/2017 15:42	WG1041422
Toluene	ND		0.00500	1	11/10/2017 15:42	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 15:42	WG1041422
Total Xylene	ND	J6	0.00150	1	11/10/2017 15:42	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 15:42	WG1041422

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 11/06/17 11:00

L949781

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	93.1		77.0-120		11/10/2017 15:42	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	99.6		75.0-128		11/10/2017 15:42	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	11/16/2017 11:48	WG1041947
(S) o-Terphenyl	55.9		18.0-148		11/16/2017 11:48	WG1041947

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 05:26	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 05:26	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 05:26	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 05:26	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 05:26	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 05:26	WG1042320
(S) p-Terphenyl-d14	83.5		23.0-120		11/17/2017 05:26	WG1042320
(S) Nitrobenzene-d5	78.3		14.0-149		11/17/2017 05:26	WG1042320
(S) 2-Fluorobiphenyl	83.4		34.0-125		11/17/2017 05:26	WG1042320

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.156		1	11/13/2017 15:00	WG1041845

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	3.01		1.00	1	11/13/2017 00:56	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 16:58	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.55	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-02 WG1042085: 6.55 at 19.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	36.3		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

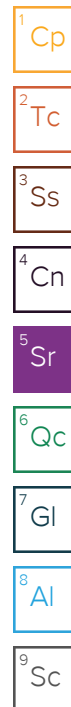
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:43	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 00:56	WG1041264
Barium	42.1		0.500	1	11/13/2017 00:56	WG1041264
Cadmium	ND		0.500	1	11/13/2017 00:56	WG1041264
Chromium	3.01		1.00	1	11/13/2017 00:56	WG1041264
Copper	2.77		2.00	1	11/13/2017 00:56	WG1041264
Lead	5.36		0.500	1	11/13/2017 00:56	WG1041264
Nickel	2.98		2.00	1	11/13/2017 00:56	WG1041264
Selenium	ND		2.00	1	11/13/2017 00:56	WG1041264
Silver	ND		1.00	1	11/13/2017 00:56	WG1041264
Zinc	14.8		5.00	1	11/13/2017 00:56	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	11/10/2017 16:04	WG1041422
Toluene	ND		0.00500	1	11/10/2017 16:04	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 16:04	WG1041422
Total Xylene	ND		0.00150	1	11/10/2017 16:04	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 16:04	WG1041422





Collected date/time: 11/06/17 11:00

L949781

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	92.3		77.0-120		11/10/2017 16:04	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	98.8		75.0-128		11/10/2017 16:04	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	11/16/2017 12:20	WG1041947
(S) o-Terphenyl	52.6		18.0-148		11/16/2017 12:20	WG1041947

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 05:50	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 05:50	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 05:50	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 05:50	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 05:50	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 05:50	WG1042320
(S) p-Terphenyl-d14	69.2		23.0-120		11/17/2017 05:50	WG1042320
(S) Nitrobenzene-d5	76.6		14.0-149		11/17/2017 05:50	WG1042320
(S) 2-Fluorobiphenyl	70.6		34.0-125		11/17/2017 05:50	WG1042320

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.61		1	11/13/2017 15:04	WG1041845

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	2.80		1.00	1	11/13/2017 00:59	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 17:00	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	6.95	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-03 WG1042085: 6.95 at 17.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	101		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

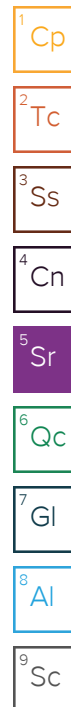
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:45	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 00:59	WG1041264
Barium	37.5		0.500	1	11/13/2017 00:59	WG1041264
Cadmium	ND		0.500	1	11/13/2017 00:59	WG1041264
Chromium	2.80		1.00	1	11/13/2017 00:59	WG1041264
Copper	2.28		2.00	1	11/13/2017 00:59	WG1041264
Lead	4.62		0.500	1	11/13/2017 00:59	WG1041264
Nickel	2.90		2.00	1	11/13/2017 00:59	WG1041264
Selenium	ND		2.00	1	11/13/2017 00:59	WG1041264
Silver	ND		1.00	1	11/13/2017 00:59	WG1041264
Zinc	13.2		5.00	1	11/13/2017 00:59	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	11/12/2017 21:08	WG1041422
Toluene	ND		0.00500	1	11/12/2017 21:08	WG1041422
Ethylbenzene	ND		0.000500	1	11/12/2017 21:08	WG1041422
Total Xylene	ND		0.00150	1	11/12/2017 21:08	WG1041422
TPH (GC/FID) Low Fraction	0.128		0.100	1	11/12/2017 21:08	WG1041422





Collected date/time: 11/06/17 11:00

L949781

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	91.9		77.0-120		11/12/2017 21:08	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	99.5		75.0-128		11/12/2017 21:08	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	11/16/2017 12:31	WG1041947
(S) o-Terphenyl	54.0		18.0-148		11/16/2017 12:31	WG1041947

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 06:15	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 06:15	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 06:15	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 06:15	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 06:15	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 06:15	WG1042320
(S) p-Terphenyl-d14	54.7		23.0-120		11/17/2017 06:15	WG1042320
(S) Nitrobenzene-d5	71.1		14.0-149		11/17/2017 06:15	WG1042320
(S) 2-Fluorobiphenyl	59.7		34.0-125		11/17/2017 06:15	WG1042320

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.803		1	11/13/2017 15:07	WG1041845

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	2.90		1.00	1	11/13/2017 01:02	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 17:00	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.61	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-04 WG1042085: 6.61 at 19.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	53.5		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:47	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 01:02	WG1041264
Barium	41.9		0.500	1	11/13/2017 01:02	WG1041264
Cadmium	ND		0.500	1	11/13/2017 01:02	WG1041264
Chromium	2.90		1.00	1	11/13/2017 01:02	WG1041264
Copper	2.83		2.00	1	11/13/2017 01:02	WG1041264
Lead	5.06		0.500	1	11/13/2017 01:02	WG1041264
Nickel	3.36		2.00	1	11/13/2017 01:02	WG1041264
Selenium	ND		2.00	1	11/13/2017 01:02	WG1041264
Silver	ND		1.00	1	11/13/2017 01:02	WG1041264
Zinc	14.6		5.00	1	11/13/2017 01:02	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	11/10/2017 16:49	WG1041422
Toluene	ND		0.00500	1	11/10/2017 16:49	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 16:49	WG1041422
Total Xylene	ND		0.00150	1	11/10/2017 16:49	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 16:49	WG1041422



Collected date/time: 11/06/17 11:00

L949781

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	93.0		77.0-120		11/10/2017 16:49	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	100		75.0-128		11/10/2017 16:49	WG1041422

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	11/16/2017 12:42	WG1041947
(S) o-Terphenyl	56.7		18.0-148		11/16/2017 12:42	WG1041947

6 Qc

7 Gl

8 Al

9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 06:39	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 06:39	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 06:39	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 06:39	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 06:39	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 06:39	WG1042320
(S) p-Terphenyl-d14	80.6		23.0-120		11/17/2017 06:39	WG1042320
(S) Nitrobenzene-d5	75.9		14.0-149		11/17/2017 06:39	WG1042320
(S) 2-Fluorobiphenyl	79.5		34.0-125		11/17/2017 06:39	WG1042320



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.53		1	11/13/2017 15:10	WG1041845

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	2.33		1.00	1	11/13/2017 01:06	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 17:01	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.12	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-05 WG1042085: 7.12 at 16.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	116		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:49	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 01:06	WG1041264
Barium	34.5		0.500	1	11/13/2017 01:06	WG1041264
Cadmium	ND		0.500	1	11/13/2017 01:06	WG1041264
Chromium	2.33		1.00	1	11/13/2017 01:06	WG1041264
Copper	2.26		2.00	1	11/13/2017 01:06	WG1041264
Lead	4.68		0.500	1	11/13/2017 01:06	WG1041264
Nickel	2.52		2.00	1	11/13/2017 01:06	WG1041264
Selenium	ND		2.00	1	11/13/2017 01:06	WG1041264
Silver	ND		1.00	1	11/13/2017 01:06	WG1041264
Zinc	13.8		5.00	1	11/13/2017 01:06	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00104		0.000500	1	11/10/2017 17:11	WG1041422
Toluene	ND		0.00500	1	11/10/2017 17:11	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 17:11	WG1041422
Total Xylene	ND		0.00150	1	11/10/2017 17:11	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 17:11	WG1041422

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	90.0		77.0-120		11/10/2017 17:11	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	96.7		75.0-128		11/10/2017 17:11	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		40.0	10	11/16/2017 12:53	WG1041947
(S) o-Terphenyl	65.3		18.0-148		11/16/2017 12:53	WG1041947

Sample Narrative:

L949781-05 WG1041947: Dilution due to matrix impact during extract concentration procedure

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 07:52	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 07:52	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 07:52	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 07:52	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 07:52	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 07:52	WG1042320
(S) p-Terphenyl-d14	86.6		23.0-120		11/17/2017 07:52	WG1042320
(S) Nitrobenzene-d5	86.4		14.0-149		11/17/2017 07:52	WG1042320
(S) 2-Fluorobiphenyl	89.0		34.0-125		11/17/2017 07:52	WG1042320

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.271		1	11/13/2017 15:14	WG1041845

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	3.62		1.00	1	11/13/2017 01:09	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 17:01	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.05	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-06 WG1042085: 6.05 at 17.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	31.5		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

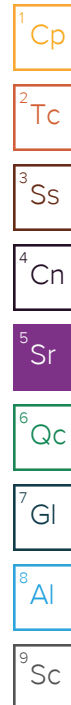
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:51	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 01:09	WG1041264
Barium	46.8		0.500	1	11/13/2017 01:09	WG1041264
Cadmium	ND		0.500	1	11/13/2017 01:09	WG1041264
Chromium	3.62		1.00	1	11/13/2017 01:09	WG1041264
Copper	3.46		2.00	1	11/13/2017 01:09	WG1041264
Lead	6.65		0.500	1	11/13/2017 01:09	WG1041264
Nickel	3.72		2.00	1	11/13/2017 01:09	WG1041264
Selenium	ND		2.00	1	11/13/2017 01:09	WG1041264
Silver	ND		1.00	1	11/13/2017 01:09	WG1041264
Zinc	17.4		5.00	1	11/13/2017 01:09	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	11/10/2017 17:33	WG1041422
Toluene	ND		0.00500	1	11/10/2017 17:33	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 17:33	WG1041422
Total Xylene	ND		0.00150	1	11/10/2017 17:33	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 17:33	WG1041422





Collected date/time: 11/06/17 11:00

L949781

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	91.3		77.0-120		11/10/2017 17:33	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	97.6		75.0-128		11/10/2017 17:33	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		4.00	1	11/16/2017 13:04	WG1041947
(S) o-Terphenyl	45.8		18.0-148		11/16/2017 13:04	WG1041947

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 08:17	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 08:17	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 08:17	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 08:17	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 08:17	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 08:17	WG1042320
(S) p-Terphenyl-d14	84.3		23.0-120		11/17/2017 08:17	WG1042320
(S) Nitrobenzene-d5	87.9		14.0-149		11/17/2017 08:17	WG1042320
(S) 2-Fluorobiphenyl	88.3		34.0-125		11/17/2017 08:17	WG1042320

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.228		1	11/13/2017 15:17	WG1041845

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	3.95		1.00	1	11/13/2017 01:12	WG1041264

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	11/10/2017 17:02	WG1040853

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.27	T8	1	11/13/2017 13:27	WG1042085

Sample Narrative:

L949781-07 WG1042085: 6.27 at 17.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	61.7		10.0	1	11/14/2017 17:25	WG1042096

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/14/2017 11:54	WG1041190

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/13/2017 01:12	WG1041264
Barium	51.8		0.500	1	11/13/2017 01:12	WG1041264
Cadmium	ND		0.500	1	11/13/2017 01:12	WG1041264
Chromium	3.95		1.00	1	11/13/2017 01:12	WG1041264
Copper	3.17		2.00	1	11/13/2017 01:12	WG1041264
Lead	6.77		0.500	1	11/13/2017 01:12	WG1041264
Nickel	3.51		2.00	1	11/13/2017 01:12	WG1041264
Selenium	ND		2.00	1	11/13/2017 01:12	WG1041264
Silver	ND		1.00	1	11/13/2017 01:12	WG1041264
Zinc	18.1		5.00	1	11/13/2017 01:12	WG1041264

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000639		0.000500	1	11/10/2017 17:55	WG1041422
Toluene	ND		0.00500	1	11/10/2017 17:55	WG1041422
Ethylbenzene	ND		0.000500	1	11/10/2017 17:55	WG1041422
Total Xylene	ND		0.00150	1	11/10/2017 17:55	WG1041422
TPH (GC/FID) Low Fraction	ND		0.100	1	11/10/2017 17:55	WG1041422

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

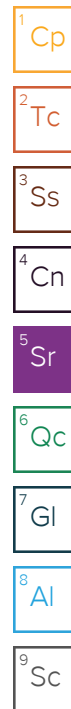
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	91.4		77.0-120		11/10/2017 17:55	WG1041422
(S) a,a,a-Trifluorotoluene(PID)	97.8		75.0-128		11/10/2017 17:55	WG1041422

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	5.21		4.00	1	11/16/2017 13:14	WG1041947
(S) o-Terphenyl	46.0		18.0-148		11/16/2017 13:14	WG1041947

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Acenaphthene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Acenaphthylene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Benzo(a)anthracene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Benzo(a)pyrene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Benzo(b)fluoranthene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Benzo(g,h,i)perylene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Benzo(k)fluoranthene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Chrysene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Dibenz(a,h)anthracene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Fluoranthene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Fluorene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Naphthalene	ND		0.0200	1	11/17/2017 08:41	WG1042320
Phenanthrene	ND		0.00600	1	11/17/2017 08:41	WG1042320
Pyrene	ND		0.00600	1	11/17/2017 08:41	WG1042320
1-Methylnaphthalene	ND		0.0200	1	11/17/2017 08:41	WG1042320
2-Methylnaphthalene	ND		0.0200	1	11/17/2017 08:41	WG1042320
2-Chloronaphthalene	ND		0.0200	1	11/17/2017 08:41	WG1042320
(S) p-Terphenyl-d14	87.7		23.0-120		11/17/2017 08:41	WG1042320
(S) Nitrobenzene-d5	87.4		14.0-149		11/17/2017 08:41	WG1042320
(S) 2-Fluorobiphenyl	90.1		34.0-125		11/17/2017 08:41	WG1042320





Method Blank (MB)

(MB) R3264745-1 11/10/17 16:44

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.64	2.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L949313-02 Original Sample (OS) • Duplicate (DUP)

(OS) L949313-02 11/10/17 16:48 • (DUP) R3264745-8 11/10/17 16:50

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	0.000	1	0		20

L949781-07 Original Sample (OS) • Duplicate (DUP)

(OS) L949781-07 11/10/17 17:02 • (DUP) R3264745-9 11/10/17 17:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	1.64	1	0		20

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

(LCS) R3264745-2 11/10/17 16:44 • (LCSD) R3264745-3 11/10/17 16:44

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Chromium,Hexavalent	56.9	36.6	37.2	64	65	30-170			2	20

L949313-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949313-01 11/10/17 16:45 • (MS) R3264745-4 11/10/17 16:46 • (MSD) R3264745-5 11/10/17 16:46

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	21.4	20.2	101	95	1	75-125			6	20

L949780-01 Original Sample (OS) • Duplicate (DUP)

(OS) L949780-01 11/13/17 13:27 • (DUP) R3265178-3 11/13/17 13:27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	<1	<1	1	0.000		1

Sample Narrative:
OS: 0.45 at 19.3C
DUP: 0.39 at 19.3C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L949876-01 Original Sample (OS) • Duplicate (DUP)

(OS) L949876-01 11/13/17 13:27 • (DUP) R3265178-5 11/13/17 13:27

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	2.60	2.58	1	0.772		1

Sample Narrative:
OS: 2.6 at 18.2C
DUP: 2.58 at 18C

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

(LCS) R3265178-1 11/13/17 13:27 • (LCSD) R3265178-2 11/13/17 13:27

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	su	su	su	%	%	%			%	%
pH	5.96	5.99	5.98	101	100	98.3-102			0.167	1

Sample Narrative:
LCS: 5.99 at 18.2C
LCSD: 5.98 at 18.2C



Method Blank (MB)

(MB) WG1042096-1 11/14/17 17:25

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L949313-01 Original Sample (OS) • Duplicate (DUP)

(OS) L949313-01 11/14/17 17:25 • (DUP) WG1042096-4 11/14/17 17:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	36.6	36.8	1	0.545		20

L949781-07 Original Sample (OS) • Duplicate (DUP)

(OS) L949781-07 11/14/17 17:25 • (DUP) WG1042096-5 11/14/17 17:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	61.7	61.9	1	0.324		20

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

(LCS) WG1042096-2 11/14/17 17:25 • (LCSD) WG1042096-3 11/14/17 17:25

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	umhos/cm	umhos/cm	umhos/cm	%	%	%			%	%
Specific Conductance	559	562	560	101	100	85.0-115			0.357	20



Method Blank (MB)

(MB) R3265414-1 11/14/17 10:50

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.0028	0.0200

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

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

(LCS) R3265414-2 11/14/17 10:52 • (LCSD) R3265414-3 11/14/17 10:54

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.300	0.264	0.254	88	85	80-120			4	20

L949367-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949367-21 11/14/17 10:56 • (MS) R3265414-4 11/14/17 10:59 • (MSD) R3265414-5 11/14/17 11:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.300	0.0299	0.308	0.358	93	109	1	75-125			15	20

⁷Gl

⁸Al

⁹Sc



L949781-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3264995-1 11/12/17 23:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.65	2.00
Barium	U		0.17	0.500
Cadmium	U		0.07	0.500
Chromium	U		0.14	1.00
Copper	U		0.53	2.00
Lead	U		0.19	0.500
Nickel	U		0.49	2.00
Selenium	U		0.74	2.00
Silver	U		0.28	1.00
Zinc	U		0.59	5.00

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) R3264995-2 11/12/17 23:41 • (LCSD) R3264995-3 11/12/17 23:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	100	101	100	101	80-120			0	20
Barium	100	105	105	105	105	80-120			0	20
Cadmium	100	99.7	99.7	100	100	80-120			0	20
Chromium	100	101	102	101	102	80-120			0	20
Copper	100	101	102	101	102	80-120			0	20
Lead	100	101	101	101	101	80-120			0	20
Nickel	100	103	103	103	103	80-120			0	20
Selenium	100	101	101	101	101	80-120			0	20
Silver	20.0	19.2	19.4	96	97	80-120			1	20
Zinc	100	101	101	101	101	80-120			0	20

L949623-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949623-01 11/12/17 23:47 • (MS) R3264995-6 11/12/17 23:57 • (MSD) R3264995-7 11/13/17 00:00

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	118	4.94	91.2	107	73	86	1	75-125	J6		16	20
Barium	118	168	256	260	74	78	1	75-125	J6		2	20
Cadmium	118	0.155	88.1	103	75	88	1	75-125			16	20
Chromium	118	26.6	110	125	71	84	1	75-125	J6		13	20
Copper	118	21.9	109	124	74	86	1	75-125	J6		13	20
Lead	118	11.2	102	117	77	89	1	75-125			14	20



L949623-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949623-01 11/12/17 23:47 • (MS) R3264995-6 11/12/17 23:57 • (MSD) R3264995-7 11/13/17 00:00

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Nickel	118	37.5	130	142	79	89	1	75-125			9	20
Selenium	118	U	86.9	103	74	87	1	75-125	<u>J6</u>		17	20
Silver	23.6	U	17.5	20.5	74	87	1	75-125	<u>J6</u>		16	20
Zinc	118	51.5	135	148	71	82	1	75-125	<u>J6</u>		9	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3264903-5 11/10/17 12:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000272	U	0.000150	0.00500
Ethylbenzene	0.000124	U	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.6			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	103			75.0-128

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) R3264903-1 11/10/17 10:25 • (LCSD) R3264903-2 11/10/17 10:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0504	0.0511	101	102	71.0-121			1.38	20
Toluene	0.0500	0.0518	0.0517	104	103	72.0-120			0.240	20
Ethylbenzene	0.0500	0.0535	0.0534	107	107	76.0-121			0.250	20
Total Xylene	0.150	0.159	0.158	106	105	75.0-124			0.820	20
(S) a,a,a-Trifluorotoluene(FID)				95.5	95.4	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				102	101	75.0-128				

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

(LCS) R3264903-3 11/10/17 11:09 • (LCSD) R3264903-4 11/10/17 11:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.04	5.15	91.7	93.7	70.0-136			2.14	20
(S) a,a,a-Trifluorotoluene(FID)				107	107	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				118	114	75.0-128				



L949781-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949781-01 11/10/17 15:42 • (MS) R3264903-6 11/10/17 13:52 • (MSD) R3264903-7 11/10/17 14:14												
Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	ND	0.0342	0.0400	67.9	79.4	1	10.0-146			15.6	29
Toluene	0.0500	ND	0.0332	0.0382	65.6	75.7	1	10.0-143			14.2	30
Ethylbenzene	0.0500	ND	0.0317	0.0364	63.1	72.5	1	10.0-147			13.8	31
Total Xylene	0.150	ND	0.0944	0.108	62.4	71.7	1	10.0-149	J6		13.8	30
(S) a,a,a-Trifluorotoluene(FID)					92.7	93.0		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					98.9	98.9		75.0-128				

L949781-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949781-01 11/10/17 15:42 • (MS) R3264903-8 11/10/17 14:36 • (MSD) R3264903-9 11/10/17 14:58												
Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	3.05	2.92	55.0	52.6	1	10.0-147			4.34	30
(S) a,a,a-Trifluorotoluene(FID)					96.3	95.9		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					102	102		75.0-128				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3266149-1 11/16/17 10:43

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	61.2			18.0-148

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

(LCS) R3266149-2 11/16/17 10:53 • (LCSD) R3266149-3 11/16/17 11:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	60.0	43.5	47.2	72.6	78.7	50.0-150			8.15	20
(S) o-Terphenyl				61.6	69.3	18.0-148				

L949781-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949781-01 11/16/17 11:48 • (MS) R3266149-4 11/16/17 11:58 • (MSD) R3266149-5 11/16/17 12:09

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	60.0	ND	40.1	37.2	64.4	59.5	1	50.0-150			7.58	20
(S) o-Terphenyl					62.2	58.8		18.0-148				

¹Cp ${}^2\text{Tc}$ 3S_S ${}^4\text{Cn}$ ^5Sr ${}^6\text{Qc}$

GI

 Al°

Sc



Method Blank (MB)

(MB) R3266523-3 11/17/17 05:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	89.9			14.0-149
(S) 2-Fluorobiphenyl	91.5			34.0-125
(S) p-Terphenyl-d14	94.3			23.0-120

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) R3266523-1 11/17/17 04:13 • (LCSD) R3266523-2 11/17/17 04:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0770	0.0730	96.2	91.3	50.0-125			5.30	20
Acenaphthene	0.0800	0.0783	0.0754	97.9	94.3	52.0-120			3.77	20
Acenaphthylene	0.0800	0.0767	0.0741	95.9	92.6	51.0-120			3.53	20
Benzo(a)anthracene	0.0800	0.0755	0.0722	94.3	90.2	46.0-121			4.47	20
Benzo(a)pyrene	0.0800	0.0605	0.0559	75.6	69.9	42.0-121			7.89	20
Benzo(b)fluoranthene	0.0800	0.0723	0.0716	90.3	89.5	42.0-123			0.875	20
Benzo(g,h,i)perylene	0.0800	0.0785	0.0754	98.1	94.2	43.0-128			4.08	20
Benzo(k)fluoranthene	0.0800	0.0721	0.0688	90.2	86.0	45.0-128			4.68	20
Chrysene	0.0800	0.0786	0.0756	98.3	94.5	48.0-127			3.93	20
Dibenz(a,h)anthracene	0.0800	0.0798	0.0765	99.7	95.6	43.0-132			4.23	20
Fluoranthene	0.0800	0.0819	0.0776	102	97.0	49.0-129			5.37	20

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

(LCS) R3266523-1 11/17/17 04:13 • (LCSD) R3266523-2 11/17/17 04:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	0.0800	0.0780	0.0752	97.6	93.9	50.0-120			3.78	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0777	0.0742	97.1	92.8	44.0-131			4.51	20
Naphthalene	0.0800	0.0743	0.0719	92.9	89.8	50.0-120			3.35	20
Phenanthrene	0.0800	0.0747	0.0722	93.4	90.3	48.0-120			3.38	20
Pyrene	0.0800	0.0786	0.0754	98.3	94.3	48.0-135			4.16	20
1-Methylnaphthalene	0.0800	0.0794	0.0773	99.2	96.6	52.0-122			2.63	20
2-Methylnaphthalene	0.0800	0.0749	0.0728	93.6	91.0	52.0-120			2.74	20
2-Chloronaphthalene	0.0800	0.0771	0.0742	96.3	92.7	50.0-120			3.84	20
(S) Nitrobenzene-d5				87.7	85.9	14.0-149				
(S) 2-Fluorobiphenyl				92.5	90.3	34.0-125				
(S) p-Terphenyl-d14				92.0	90.2	23.0-120				

L949781-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L949781-04 11/17/17 06:39 • (MS) R3266523-4 11/17/17 07:03 • (MSD) R3266523-5 11/17/17 07:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0804	0.0795	101	99.4	1	20.0-136			1.11	24
Acenaphthene	0.0800	ND	0.0772	0.0747	96.4	93.4	1	29.0-124			3.21	20
Acenaphthylene	0.0800	ND	0.0755	0.0733	94.4	91.7	1	35.0-120			2.92	20
Benzo(a)anthracene	0.0800	ND	0.0731	0.0705	90.4	87.2	1	13.0-132			3.64	27
Benzo(a)pyrene	0.0800	ND	0.0708	0.0685	88.5	85.6	1	14.0-138			3.33	27
Benzo(b)fluoranthene	0.0800	ND	0.0718	0.0635	89.8	79.4	1	10.0-129			12.3	31
Benzo(g,h,i)perylene	0.0800	ND	0.0784	0.0757	96.4	93.1	1	10.0-133			3.46	30
Benzo(k)fluoranthene	0.0800	ND	0.0655	0.0692	81.8	86.4	1	15.0-131			5.49	27
Chrysene	0.0800	ND	0.0759	0.0728	94.8	91.1	1	15.0-137			4.06	25
Dibenz(a,h)anthracene	0.0800	ND	0.0763	0.0733	95.4	91.6	1	15.0-132			4.12	27
Fluoranthene	0.0800	ND	0.0816	0.0809	101	100	1	13.0-139			0.798	28
Fluorene	0.0800	ND	0.0769	0.0746	96.1	93.3	1	27.0-122			3.02	22
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0750	0.0720	93.8	90.0	1	11.0-133			4.11	29
Naphthalene	0.0800	ND	0.0737	0.0714	92.2	89.2	1	18.0-136			3.23	21
Phenanthrene	0.0800	ND	0.0727	0.0729	90.9	91.1	1	15.0-133			0.296	25
Pyrene	0.0800	ND	0.0755	0.0727	94.3	90.8	1	11.0-146			3.77	29
1-Methylnaphthalene	0.0800	ND	0.0792	0.0768	98.9	96.0	1	24.0-137			3.02	22
2-Methylnaphthalene	0.0800	ND	0.0745	0.0725	93.1	90.6	1	23.0-136			2.80	22
2-Chloronaphthalene	0.0800	ND	0.0757	0.0731	94.7	91.3	1	36.0-120			3.55	20
(S) Nitrobenzene-d5					87.9	84.3		14.0-149				
(S) 2-Fluorobiphenyl					90.8	85.3		34.0-125				
(S) p-Terphenyl-d14					89.2	82.5		23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Guide to Reading and Understanding Your Laboratory Report

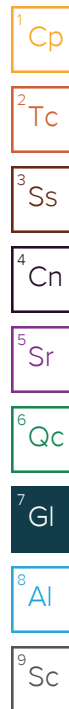
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
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, 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.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
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.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.





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.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

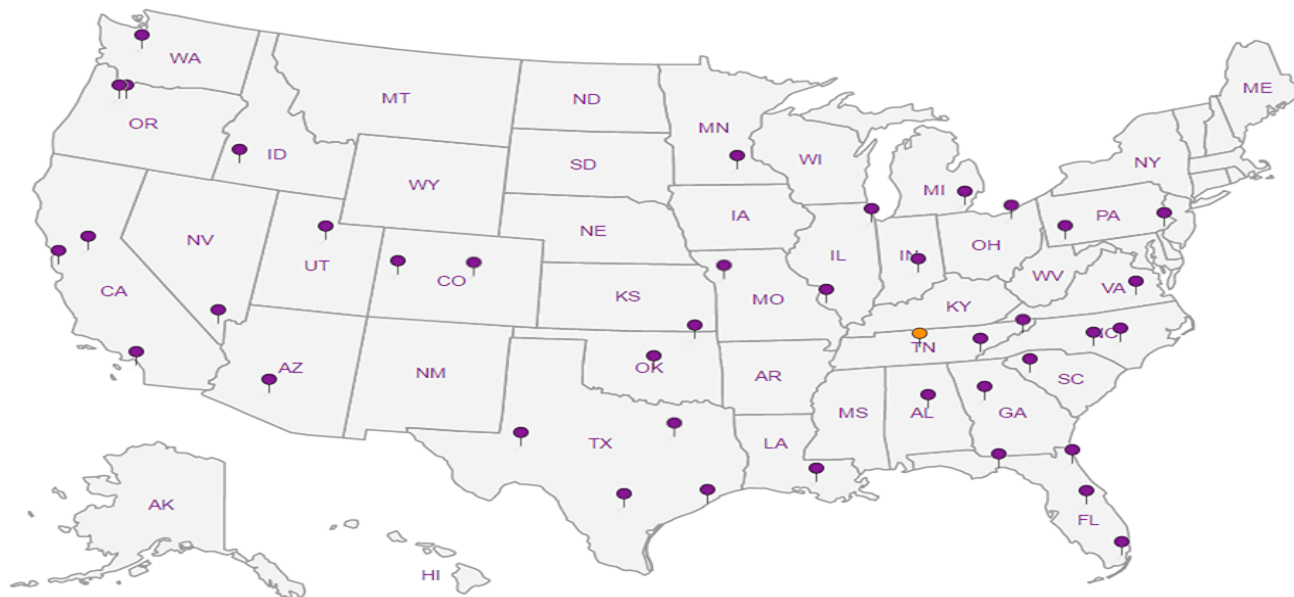
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{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.**



Churchill Energy, Inc.
8177 S. Norfolk St.
Englewood, CO 80112

Billing Information:

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page of



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



949781
F016

Accnum: CHUENGECO

Template:

Prelogin:

TSR: Shane Gambill

PB:

Shipped Via:

Remarks Sample # (lab only)

Report to:

Gary Kluksdahl

Email To:

gary.kluksdahl@comcast.net

Project

Description: Champlin Limon 1-19/2-19

City/State
Collected: Limon CO

Phone: 303-840-7000

Client Project #

Lab Project #

Fax:

2

Collected by (print):

Tim L. Rogers

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed
As Seen As Com

Immediately

Packed on Ice N Y

No.
of

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of
4 N 39° 15' 01.70" W 103° 42' 36.90"		SS	0'6"	11-06-17	11 AM	4
5 N 39° 15' 02.02" W 103° 42' 37.02"		SS	0'6"	11/06/17	11 AM	1
6 N 39° 15' 00.88" W 103° 42' 37.33"		SS	0'6"	11/06/17	11 AM	1
7 N 39° 15' 00.11" W 103° 42' 42.04"		SS	0'6"	11-06-17	11 AM	1
8 N 39° 14' 59.45" W 103° 42' 42.09"		SS	0'6"	11-06-17	11 AM	1
9 N 39° 15' 01.62" W 103° 42' 41.92"		SS	0'6"	11-06-17	11 AM	1
10 N 39° 15' 01.48" W 103° 42' 42.02"		SS	0'6"	11/06/17	11 AM	1
		SS				
		SS				
		SS				

BTEX/GRO - 4oz Soil Jar
PAHSIM/DRO - 4oz Soil Jar
CR6/Metals - 4oz Soil Jar
SAR, pH, SPCON - 8oz Soil Jar

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking # 4094 8307 3711

pH Temp

Flow Other

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 07.11 °C
Bottles Received: 28

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Date: 11-8-17
Time: 0845

Hold:

Condition
NCF / OK

Matthew Lockhart

ESC Lab Sciences
Non-Conformance Form

Login #: 949781	Client: CHUENGEO	Date: 11/08/17	Evaluated by: Matthew Lockhart
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Non-Conformance (check applicable items)

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	
Improper temperature	Chain of custody is incomplete	Insufficient packing material around container
Improper container type	Please specify Metals requested.	Insufficient packing material inside cooler
Improper preservation	Please specify TCLP requested.	Improper handling by carrier (FedEx / UPS / Courier)
Insufficient sample volume.	Received additional samples not listed on coc.	Sample was frozen
Sample is biphasic.	Sample ids on containers do not match ids on coc	Container lid not intact
Vials received with headspace.	Trip Blank not received.	If no Chain of Custody:
Broken container	X Client did not "X" analysis.	Received by:
Broken container:	Chain of Custody is missing	Date/Time:
Sufficient sample remains		Temp./Cont. Rec./pH:
		Carrier:
		Tracking#

Login Comments: Client did not mark analysis for Sample ID: 5.6, 7, 8, 9, and 10

Client informed by:	Call	Email	Voice Mail	Date: 11/09/17	Time:
TSR Initials: CSG	Client Contact: Gary Kluksdahl				

Login Instructions:

Please proceed with samples 5,6,7,8,9,10 for all analysis listed on the COC, for the metals please log for MRCRA8, CUICP, NIICP, ZNIICP.

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