

June 08, 2020

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Caerus Oil and Gas

Sample Delivery Group: L1223398
Samples Received: 05/29/2020
Project Number:
Description: LW USA #1

Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward

Chris Ward
Project Manager

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SAMPLE SUMMARY



20200528-USA1-SP1 L1223398-01 Solid

Collected by
Blair K Rollins
Collected date/time
05/28/20 08:45
Received date/time
05/29/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1484858	1	06/03/20 21:00	06/03/20 21:00	EL	Mt. Juliet, TN
Calculated Results	WG1485943	1	06/02/20 15:58	06/05/20 13:06	JIC	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1484449	1	06/04/20 15:16	06/05/20 13:06	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1486603	1	06/04/20 11:00	06/04/20 12:43	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1485393	1	06/01/20 18:56	06/01/20 20:55	AKA	Mt. Juliet, TN
Mercury by Method 7471A	WG1486087	1	06/02/20 21:10	06/03/20 10:33	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1485943	1	06/02/20 15:58	06/03/20 15:31	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1485898	100	05/30/20 16:16	06/03/20 00:22	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1485369	8	05/30/20 16:16	06/01/20 18:11	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1485896	1	06/02/20 23:23	06/03/20 10:10	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1486851	1	06/04/20 09:35	06/05/20 00:20	AAT	Mt. Juliet, TN

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

20200528-USA1-SP2 L1223398-02 Solid

Collected by
Blair K Rollins
Collected date/time
05/28/20 09:00
Received date/time
05/29/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1484858	1	06/03/20 21:03	06/03/20 21:03	EL	Mt. Juliet, TN
Calculated Results	WG1485943	1	06/02/20 15:58	06/05/20 13:07	JIC	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1484449	1	06/04/20 15:16	06/05/20 13:07	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1486603	1	06/04/20 11:00	06/04/20 12:43	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1485393	1	06/01/20 18:56	06/01/20 20:55	AKA	Mt. Juliet, TN
Mercury by Method 7471A	WG1486087	1	06/02/20 21:10	06/03/20 10:35	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1485943	1	06/02/20 15:58	06/03/20 15:53	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1485898	100	05/30/20 16:16	06/03/20 00:46	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1485369	8	05/30/20 16:16	06/01/20 18:30	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1485896	1	06/02/20 23:23	06/03/20 10:35	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1486851	1	06/04/20 09:35	06/05/20 00:41	AAT	Mt. Juliet, TN

20200528-USA1-POR(6') L1223398-03 Solid

Collected by
Blair K Rollins
Collected date/time
05/28/20 14:45
Received date/time
05/29/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1484858	1	06/03/20 21:06	06/03/20 21:06	EL	Mt. Juliet, TN
Calculated Results	WG1485943	1	06/02/20 15:58	06/05/20 13:07	JIC	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1484449	1	06/04/20 15:16	06/05/20 13:07	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1486603	1	06/04/20 11:00	06/04/20 12:43	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1485393	1	06/01/20 18:56	06/01/20 20:55	AKA	Mt. Juliet, TN
Mercury by Method 7471A	WG1486087	1	06/02/20 21:10	06/03/20 10:41	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1485943	1	06/02/20 15:58	06/03/20 16:01	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1485898	200	05/30/20 16:16	06/03/20 01:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1485369	20	05/30/20 16:16	06/01/20 18:49	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1485896	1	06/02/20 23:23	06/03/20 10:48	DMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1486853	1	06/04/20 11:42	06/04/20 17:50	AAT	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

- 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	65.2		1	06/03/2020 21:00	WG1484858

1 Cp

2 Tc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	11.0		1.00	1	06/05/2020 13:06	WG1485943

3 Ss

4 Cn

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/05/2020 13:06	WG1484449

5 Sr

6 Qc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.92	<u>T8</u>	1	06/04/2020 12:43	WG1486603

7 Gl

8 Al

Sample Narrative:

L1223398-01 WG1486603: 7.92 at 23.7C

9 Sc

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	6250		10.0	1	06/01/2020 20:55	WG1485393

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	06/03/2020 10:33	WG1486087

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.56		2.00	1	06/03/2020 15:31	WG1485943
Barium	584	<u>O1V</u>	0.500	1	06/03/2020 15:31	WG1485943
Cadmium	ND		0.500	1	06/03/2020 15:31	WG1485943
Chromium	11.0		1.00	1	06/03/2020 15:31	WG1485943
Copper	10.4		2.00	1	06/03/2020 15:31	WG1485943
Lead	8.03		0.500	1	06/03/2020 15:31	WG1485943
Nickel	9.73		2.00	1	06/03/2020 15:31	WG1485943
Selenium	ND		2.00	1	06/03/2020 15:31	WG1485943
Silver	ND		1.00	1	06/03/2020 15:31	WG1485943
Zinc	63.9		5.00	1	06/03/2020 15:31	WG1485943

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	65.5		10.0	100	06/03/2020 00:22	WG1485898
(S) a, a, a-Trifluorotoluene(FID)	99.6		77.0-120		06/03/2020 00:22	WG1485898



Collected date/time: 05/28/20 08:45

L1223398

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	3.43		0.00800	8	06/01/2020 18:11	WG1485369
Toluene	12.3		0.0400	8	06/01/2020 18:11	WG1485369
Ethylbenzene	0.325		0.0200	8	06/01/2020 18:11	WG1485369
Total Xylenes	4.92		0.0520	8	06/01/2020 18:11	WG1485369
(S) Toluene-d8	110		75.0-131		06/01/2020 18:11	WG1485369
(S) 4-Bromofluorobenzene	109		67.0-138		06/01/2020 18:11	WG1485369
(S) 1,2-Dichloroethane-d4	95.6		70.0-130		06/01/2020 18:11	WG1485369

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	4.05		4.00	1	06/03/2020 10:10	WG1485896
(S) o-Terphenyl	71.3		18.0-148		06/03/2020 10:10	WG1485896

6 Qc

7 Gl

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	06/05/2020 00:20	WG1486851
Acenaphthene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Acenaphthylene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Benzo(a)anthracene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Benzo(a)pyrene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Benzo(b)fluoranthene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Benzo(g,h,i)perylene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Benzo(k)fluoranthene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Chrysene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Dibenz(a,h)anthracene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Fluoranthene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Fluorene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Naphthalene	ND		0.0200	1	06/05/2020 00:20	WG1486851
Phenanthrene	ND		0.00600	1	06/05/2020 00:20	WG1486851
Pyrene	ND		0.00600	1	06/05/2020 00:20	WG1486851
1-Methylnaphthalene	ND		0.0200	1	06/05/2020 00:20	WG1486851
2-Methylnaphthalene	ND		0.0200	1	06/05/2020 00:20	WG1486851
2-Chloronaphthalene	ND		0.0200	1	06/05/2020 00:20	WG1486851
(S) p-Terphenyl-d14	85.0		23.0-120		06/05/2020 00:20	WG1486851
(S) Nitrobenzene-d5	92.8		14.0-149		06/05/2020 00:20	WG1486851
(S) 2-Fluorobiphenyl	80.7		34.0-125		06/05/2020 00:20	WG1486851

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	64.2		1	06/03/2020 21:03	WG1484858

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	10.1		1.00	1	06/05/2020 13:07	WG1485943

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/05/2020 13:07	WG1484449

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.22	<u>T8</u>	1	06/04/2020 12:43	WG1486603

Sample Narrative:

L1223398-02 WG1486603: 8.22 at 23.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	4470		10.0	1	06/01/2020 20:55	WG1485393

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	06/03/2020 10:35	WG1486087

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.81		2.00	1	06/03/2020 15:53	WG1485943
Barium	640		0.500	1	06/03/2020 15:53	WG1485943
Cadmium	ND		0.500	1	06/03/2020 15:53	WG1485943
Chromium	10.1		1.00	1	06/03/2020 15:53	WG1485943
Copper	10.5		2.00	1	06/03/2020 15:53	WG1485943
Lead	7.29		0.500	1	06/03/2020 15:53	WG1485943
Nickel	10.5		2.00	1	06/03/2020 15:53	WG1485943
Selenium	ND		2.00	1	06/03/2020 15:53	WG1485943
Silver	ND		1.00	1	06/03/2020 15:53	WG1485943
Zinc	62.9		5.00	1	06/03/2020 15:53	WG1485943

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	66.6		10.0	100	06/03/2020 00:46	WG1485898
(S) a, a, a-Trifluorotoluene(FID)	98.1		77.0-120		06/03/2020 00:46	WG1485898

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



Collected date/time: 05/28/20 09:00

L1223398

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	1.71		0.00800	8	06/01/2020 18:30	WG1485369
Toluene	5.65		0.0400	8	06/01/2020 18:30	WG1485369
Ethylbenzene	0.231		0.0200	8	06/01/2020 18:30	WG1485369
Total Xylenes	4.03		0.0520	8	06/01/2020 18:30	WG1485369
(S) Toluene-d8	110		75.0-131		06/01/2020 18:30	WG1485369
(S) 4-Bromofluorobenzene	111		67.0-138		06/01/2020 18:30	WG1485369
(S) 1,2-Dichloroethane-d4	97.4		70.0-130		06/01/2020 18:30	WG1485369

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	18.1		4.00	1	06/03/2020 10:35	WG1485896
(S) o-Terphenyl	49.5		18.0-148		06/03/2020 10:35	WG1485896

6 Qc

7 Gl

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	06/05/2020 00:41	WG1486851
Acenaphthene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Acenaphthylene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Benzo(a)anthracene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Benzo(a)pyrene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Benzo(b)fluoranthene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Benzo(g,h,i)perylene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Benzo(k)fluoranthene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Chrysene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Dibenz(a,h)anthracene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Fluoranthene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Fluorene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Naphthalene	ND		0.0200	1	06/05/2020 00:41	WG1486851
Phenanthrene	ND		0.00600	1	06/05/2020 00:41	WG1486851
Pyrene	ND		0.00600	1	06/05/2020 00:41	WG1486851
1-Methylnaphthalene	ND		0.0200	1	06/05/2020 00:41	WG1486851
2-Methylnaphthalene	ND		0.0200	1	06/05/2020 00:41	WG1486851
2-Chloronaphthalene	ND		0.0200	1	06/05/2020 00:41	WG1486851
(S) p-Terphenyl-d14	59.7		23.0-120		06/05/2020 00:41	WG1486851
(S) Nitrobenzene-d5	89.3		14.0-149		06/05/2020 00:41	WG1486851
(S) 2-Fluorobiphenyl	58.6		34.0-125		06/05/2020 00:41	WG1486851

8 Al

9 Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	16.2		1	06/03/2020 21:06	WG1484858

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

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	10.1		1.00	1	06/05/2020 13:07	WG1485943

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	06/05/2020 13:07	WG1484449

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.64	<u>T8</u>	1	06/04/2020 12:43	WG1486603

Sample Narrative:

L1223398-03 WG1486603: 8.64 at 23.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1770		10.0	1	06/01/2020 20:55	WG1485393

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0435		0.0400	1	06/03/2020 10:41	WG1486087

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.89		2.00	1	06/03/2020 16:01	WG1485943
Barium	562		0.500	1	06/03/2020 16:01	WG1485943
Cadmium	ND		0.500	1	06/03/2020 16:01	WG1485943
Chromium	10.1		1.00	1	06/03/2020 16:01	WG1485943
Copper	9.59		2.00	1	06/03/2020 16:01	WG1485943
Lead	8.58		0.500	1	06/03/2020 16:01	WG1485943
Nickel	10.8		2.00	1	06/03/2020 16:01	WG1485943
Selenium	ND		2.00	1	06/03/2020 16:01	WG1485943
Silver	ND		1.00	1	06/03/2020 16:01	WG1485943
Zinc	33.6		5.00	1	06/03/2020 16:01	WG1485943

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	151	<u>V</u>	20.0	200	06/03/2020 01:10	WG1485898
(S) a, a, a-Trifluorotoluene(FID)	97.2		77.0-120		06/03/2020 01:10	WG1485898



Collected date/time: 05/28/20 14:45

L1223398

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	2.24		0.0200	20	06/01/2020 18:49	WG1485369
Toluene	7.65		0.100	20	06/01/2020 18:49	WG1485369
Ethylbenzene	0.275		0.0500	20	06/01/2020 18:49	WG1485369
Total Xylenes	4.05		0.130	20	06/01/2020 18:49	WG1485369
(S) Toluene-d8	109		75.0-131		06/01/2020 18:49	WG1485369
(S) 4-Bromofluorobenzene	106		67.0-138		06/01/2020 18:49	WG1485369
(S) 1,2-Dichloroethane-d4	93.5		70.0-130		06/01/2020 18:49	WG1485369

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	10.3		4.00	1	06/03/2020 10:48	WG1485896
(S) o-Terphenyl	53.2		18.0-148		06/03/2020 10:48	WG1485896

6 Qc

7 Gl

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	06/04/2020 17:50	WG1486853
Acenaphthene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Acenaphthylene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Benzo(a)anthracene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Benzo(a)pyrene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Benzo(b)fluoranthene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Benzo(g,h,i)perylene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Benzo(k)fluoranthene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Chrysene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Dibenz(a,h)anthracene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Fluoranthene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Fluorene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Naphthalene	0.0285		0.0200	1	06/04/2020 17:50	WG1486853
Phenanthrene	ND		0.00600	1	06/04/2020 17:50	WG1486853
Pyrene	ND		0.00600	1	06/04/2020 17:50	WG1486853
1-Methylnaphthalene	ND		0.0200	1	06/04/2020 17:50	WG1486853
2-Methylnaphthalene	0.0376		0.0200	1	06/04/2020 17:50	WG1486853
2-Chloronaphthalene	ND		0.0200	1	06/04/2020 17:50	WG1486853
(S) p-Terphenyl-d14	73.4		23.0-120		06/04/2020 17:50	WG1486853
(S) Nitrobenzene-d5	111		14.0-149		06/04/2020 17:50	WG1486853
(S) 2-Fluorobiphenyl	73.4		34.0-125		06/04/2020 17:50	WG1486853

8 Al

9 Sc



Method Blank (MB)

(MB) R3535612-1 06/05/20 12:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chromium,Hexavalent	U		0.640	2.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3535612-3 06/05/20 12:57

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3535612-8 06/05/20 13:05

Analyte	Original Result mg/kg	DUP Result	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Chromium,Hexavalent	ND		1	18.1		20

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3535612-2 06/05/20 12:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	22.6	94.2	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3535612-4 06/05/20 12:59 • (MSD) R3535612-5 06/05/20 13:00

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 %
Chromium,Hexavalent	20.0		18.7	18.8	90.0	90.2	1	75.0-125			0.213	20



Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3535018-2 06/04/20 12:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su			%		%
pH	8.07		1	0.000		1

Sample Narrative:

DUP: 8.07 at 23.1C

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3535018-3 06/04/20 12:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su			%		%
pH	8.92		1	0.337		1

Sample Narrative:

DUP: 8.92 at 23.1C

Laboratory Control Sample (LCS)

(LCS) R3535018-1 06/04/20 12:43

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.98	99.8	99.0-101	

Sample Narrative:

LCS: 9.98 at 21.6C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3533882-1 06/01/20 20:55

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1222838-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1222838-06 06/01/20 20:55 • (DUP) R3533882-3 06/01/20 20:55

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	133	133	1	0.225		20

L1223398-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1223398-01 06/01/20 20:55 • (DUP) R3533882-4 06/01/20 20:55

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	6250	6240	1	0.160		20

Laboratory Control Sample (LCS)

(LCS) R3533882-2 06/01/20 20:55

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	445	446	100	85.0-115	



Method Blank (MB)

(MB) R3534507-1 06/03/20 09:59

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.0180	0.0400

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS)

(LCS) R3534507-2 06/03/20 10:01

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	0.500	0.528	106	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3534507-3 06/03/20 10:05 • (MSD) R3534507-4 06/03/20 10:07

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	0.500		0.496	0.539	99.1	108	1	75.0-125			8.41	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3534804-1 06/03/20 15:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		1.00	2.00
Barium	U		0.250	0.500
Cadmium	U		0.250	0.500
Chromium	U		0.500	1.00
Copper	U		1.00	2.00
Lead	U		0.250	0.500
Nickel	U		1.00	2.00
Selenium	U		1.00	2.00
Silver	U		0.500	1.00
Zinc	U		2.50	5.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3534804-2 06/03/20 15:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.4	93.4	80.0-120	
Barium	100	99.1	99.1	80.0-120	
Cadmium	100	94.7	94.7	80.0-120	
Chromium	100	95.8	95.8	80.0-120	
Copper	100	94.2	94.2	80.0-120	
Lead	100	95.3	95.3	80.0-120	
Nickel	100	97.6	97.6	80.0-120	
Selenium	100	95.0	95.0	80.0-120	
Silver	20.0	18.3	91.4	80.0-120	
Zinc	100	95.4	95.4	80.0-120	

L1223398-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1223398-01 06/03/20 15:31 • (MS) R3534804-5 06/03/20 15:40 • (MSD) R3534804-6 06/03/20 15:44

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 %
Arsenic	100	2.56	93.7	96.3	91.2	93.8	1	75.0-125			2.77	20
Barium	100	584	705	597	121	12.8	1	75.0-125	V		16.6	20
Cadmium	100	ND	93.4	95.7	93.2	95.5	1	75.0-125			2.44	20
Chromium	100	11.0	103	105	92.2	93.9	1	75.0-125			1.63	20
Copper	100	10.4	105	105	94.3	95.0	1	75.0-125			0.666	20
Lead	100	8.03	103	105	94.6	97.2	1	75.0-125			2.48	20
Nickel	100	9.73	109	112	98.9	102	1	75.0-125			2.91	20



L1223398-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1223398-01 06/03/20 15:31 • (MS) R3534804-5 06/03/20 15:40 • (MSD) R3534804-6 06/03/20 15:44

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 %
Selenium	100	ND	91.9	93.8	91.9	93.8	1	75.0-125			2.04	20
Silver	20.0	ND	18.9	19.1	94.6	95.7	1	75.0-125			1.20	20
Zinc	100	63.9	145	153	81.5	89.5	1	75.0-125			5.33	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3534484-2 06/02/20 23:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
^(S) a,a,a-Trifluorotoluene(FID)	95.9			77.0-120

¹ Cp

² Tc

³ Ss

⁴ Cn

Laboratory Control Sample (LCS)

(LCS) R3534484-1 06/02/20 22:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.81	106	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3534492-2 06/01/20 11:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
<i>(S) Toluene-d8</i>	110			75.0-131
<i>(S) 4-Bromofluorobenzene</i>	105			67.0-138
<i>(S) 1,2-Dichloroethane-d4</i>	88.2			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3534492-1 06/01/20 10:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.108	86.4	70.0-123	
Ethylbenzene	0.125	0.133	106	74.0-126	
Toluene	0.125	0.121	96.8	75.0-121	
Xylenes, Total	0.375	0.394	105	72.0-127	
<i>(S) Toluene-d8</i>			109	75.0-131	
<i>(S) 4-Bromofluorobenzene</i>			107	67.0-138	
<i>(S) 1,2-Dichloroethane-d4</i>			96.4	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3534735-1 06/03/20 08:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
<i>(S) o-Terphenyl</i>	82.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3534735-2 06/03/20 08:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	38.7	77.4	50.0-150	
<i>(S) o-Terphenyl</i>			84.5	18.0-148	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3535222-2 06/04/20 17:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	91.8			14.0-149
(S) 2-Fluorobiphenyl	87.3			34.0-125
(S) p-Terphenyl-d14	96.8			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)

(LCS) R3535222-1 06/04/20 17:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0726	90.8	50.0-126	
Acenaphthene	0.0800	0.0720	90.0	50.0-120	
Acenaphthylene	0.0800	0.0757	94.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0721	90.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0647	80.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0733	91.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0736	92.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0705	88.1	49.0-125	
Chrysene	0.0800	0.0732	91.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0750	93.8	47.0-125	
Fluoranthene	0.0800	0.0728	91.0	49.0-129	



Laboratory Control Sample (LCS)

(LCS) R3535222-1 06/04/20 17:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0733	91.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0745	93.1	46.0-125	
Naphthalene	0.0800	0.0728	91.0	50.0-120	
Phenanthrene	0.0800	0.0725	90.6	47.0-120	
Pyrene	0.0800	0.0705	88.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0729	91.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0696	87.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0713	89.1	50.0-120	
(S) Nitrobenzene-d5			97.8	14.0-149	
(S) 2-Fluorobiphenyl			90.3	34.0-125	
(S) p-Terphenyl-d14			95.0	23.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3535222-3 06/04/20 21:34 • (MSD) R3535222-4 06/04/20 21:54

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 %
Anthracene	0.0800		0.0520	0.0537	65.0	67.1	1	10.0-145			3.22	30
Acenaphthene	0.0800		0.0512	0.0524	64.0	65.5	1	14.0-127			2.32	27
Acenaphthylene	0.0800		0.0552	0.0560	69.0	70.0	1	21.0-124			1.44	25
Benzo(a)anthracene	0.0800		0.0524	0.0542	65.5	67.8	1	10.0-139			3.38	30
Benzo(a)pyrene	0.0800		0.0505	0.0534	63.1	66.8	1	10.0-141			5.58	31
Benzo(b)fluoranthene	0.0800		0.0508	0.0525	63.5	65.6	1	10.0-140			3.29	36
Benzo(g,h,i)perylene	0.0800		0.0495	0.0518	61.9	64.8	1	10.0-140			4.54	33
Benzo(k)fluoranthene	0.0800		0.0483	0.0526	60.4	65.8	1	10.0-137			8.52	31
Chrysene	0.0800		0.0496	0.0524	62.0	65.5	1	10.0-145			5.49	30
Dibenz(a,h)anthracene	0.0800		0.0503	0.0522	62.9	65.3	1	10.0-132			3.71	31
Fluoranthene	0.0800		0.0518	0.0541	64.8	67.6	1	10.0-153			4.34	33
Fluorene	0.0800		0.0516	0.0537	64.5	67.1	1	11.0-130			3.99	29
Indeno(1,2,3-cd)pyrene	0.0800		0.0504	0.0522	63.0	65.3	1	10.0-137			3.51	32
Naphthalene	0.0800		0.0555	0.0550	69.4	68.8	1	10.0-135			0.905	27
Phenanthrene	0.0800		0.0509	0.0530	63.6	66.3	1	10.0-144			4.04	31
Pyrene	0.0800		0.0499	0.0523	62.4	65.4	1	10.0-148			4.70	35
1-Methylnaphthalene	0.0800		0.0541	0.0542	67.6	67.8	1	10.0-142			0.185	28
2-Methylnaphthalene	0.0800		0.0513	0.0521	64.1	65.1	1	10.0-137			1.55	28
2-Chloronaphthalene	0.0800		0.0517	0.0509	64.6	63.6	1	29.0-120			1.56	24
(S) Nitrobenzene-d5					75.9	73.7		14.0-149				
(S) 2-Fluorobiphenyl					67.7	67.6		34.0-125				
(S) p-Terphenyl-d14					68.2	69.8		23.0-120				



Method Blank (MB)

(MB) R3535236-2 06/04/20 17:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	0.00270	↓	0.00173	0.00600
Benzo(a)pyrene	0.00239	↓	0.00179	0.00600
Benzo(b)fluoranthene	0.00345	↓	0.00153	0.00600
Benzo(g,h,i)perylene	0.00252	↓	0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	0.00274	↓	0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	0.00391	↓	0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	0.00197	↓	0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	0.00285	↓	0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	124			14.0-149
(S) 2-Fluorobiphenyl	90.3			34.0-125
(S) p-Terphenyl-d14	87.8			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)

(LCS) R3535236-1 06/04/20 17:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0727	90.9	50.0-126	
Acenaphthene	0.0800	0.0694	86.8	50.0-120	
Acenaphthylene	0.0800	0.0729	91.1	50.0-120	
Benzo(a)anthracene	0.0800	0.0692	86.5	45.0-120	
Benzo(a)pyrene	0.0800	0.0675	84.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0676	84.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0723	90.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0725	90.6	49.0-125	
Chrysene	0.0800	0.0773	96.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0733	91.6	47.0-125	
Fluoranthene	0.0800	0.0791	98.9	49.0-129	



Laboratory Control Sample (LCS)

(LCS) R3535236-1 06/04/20 17:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0696	87.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0731	91.4	46.0-125	
Naphthalene	0.0800	0.0675	84.4	50.0-120	
Phenanthrene	0.0800	0.0684	85.5	47.0-120	
Pyrene	0.0800	0.0658	82.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0711	88.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0668	83.5	50.0-120	
2-Chloronaphthalene	0.0800	0.0669	83.6	50.0-120	
<i>(S) Nitrobenzene-d5</i>			120	14.0-149	
<i>(S) 2-Fluorobiphenyl</i>			91.0	34.0-125	
<i>(S) p-Terphenyl-d14</i>			88.6	23.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3535236-3 06/05/20 01:47 • (MSD) R3535236-4 06/05/20 02:07

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	0.0788		0.0733	0.0600	76.5	59.6	1	10.0-145			20.0	30
Acenaphthene	0.0788		0.0560	0.0533	71.1	67.6	1	14.0-127			4.94	27
Acenaphthylene	0.0788		0.0576	0.0556	73.1	70.6	1	21.0-124			3.53	25
Benzo(a)anthracene	0.0788		0.128	0.105	68.3	39.1	1	10.0-139			19.7	30
Benzo(a)pyrene	0.0788		0.114	0.102	38.5	23.2	1	10.0-141			11.1	31
Benzo(b)fluoranthene	0.0788		0.138	0.124	14.0	0.000	1	10.0-140		J6	10.7	36
Benzo(g,h,i)perylene	0.0788		0.0924	0.0813	25.6	11.5	1	10.0-140			12.8	33
Benzo(k)fluoranthene	0.0788		0.0866	0.0764	58.0	45.1	1	10.0-137			12.5	31
Chrysene	0.0788		0.125	0.108	45.8	24.2	1	10.0-145			14.6	30
Dibenz(a,h)anthracene	0.0788		0.0654	0.0602	62.3	55.7	1	10.0-132			8.28	31
Fluoranthene	0.0788		0.210	0.160	72.3	8.88	1	10.0-153		J6	27.0	33
Fluorene	0.0788		0.0568	0.0520	72.1	66.0	1	11.0-130			8.82	29
Indeno(1,2,3-cd)pyrene	0.0788		0.0897	0.0803	38.6	26.6	1	10.0-137			11.1	32
Naphthalene	0.0788		0.0574	0.0584	72.8	74.1	1	10.0-135			1.73	27
Phenanthrene	0.0788		0.0954	0.0677	93.8	58.6	1	10.0-144		J3	34.0	31
Pyrene	0.0788		0.153	0.119	54.6	11.4	1	10.0-148			25.0	35
1-Methylnaphthalene	0.0788		0.0576	0.0548	73.1	69.5	1	10.0-142			4.98	28
2-Methylnaphthalene	0.0788		0.0548	0.0533	69.5	67.6	1	10.0-137			2.78	28
2-Chloronaphthalene	0.0788		0.0542	0.0520	68.8	66.0	1	29.0-120			4.14	24
<i>(S) Nitrobenzene-d5</i>					111	109		14.0-149				
<i>(S) 2-Fluorobiphenyl</i>					82.9	83.8		34.0-125				
<i>(S) p-Terphenyl-d14</i>					81.7	83.6		23.0-120				



Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

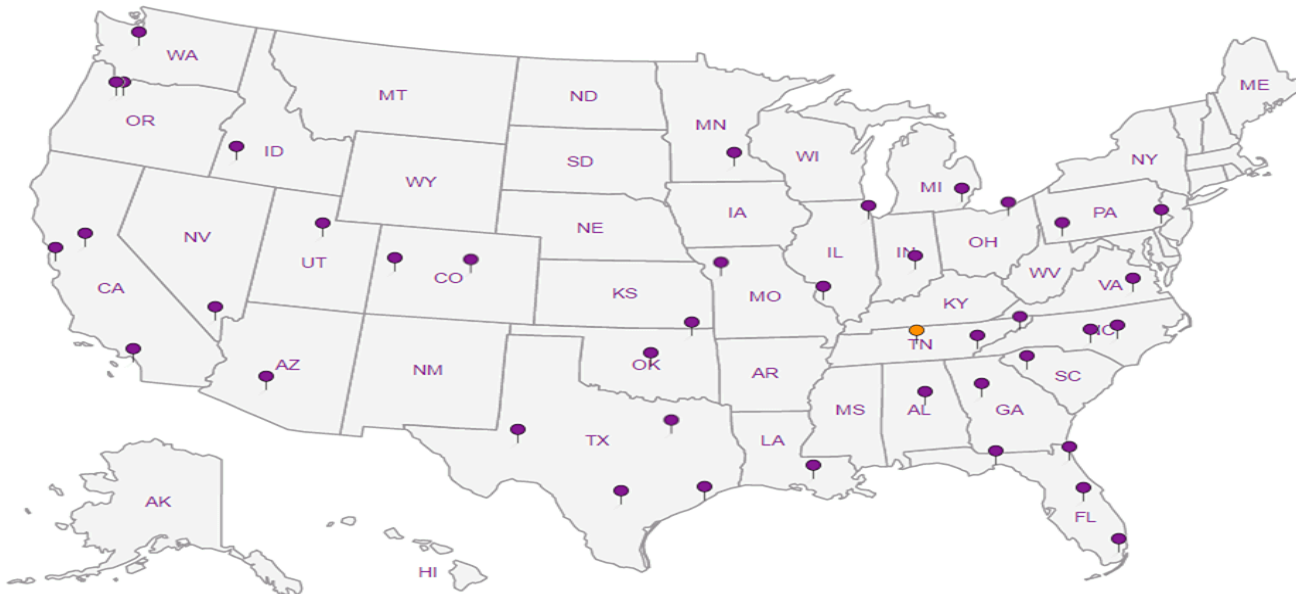
Third Party Federal Accreditations

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

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

Our Locations

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



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information:

Same as left

Pres
 Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___



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



L# **1223398**
 Ta **E115**
 Acctnum:
 Template:
 Prelogin:
 TSR:
 PB:
 Shipped Via:

Report to:
Blair Rollins

Email To:
brollins@caerusoilandgas.com

Project **LW USA #1**
 Description:

City/State
 Collected: **CO**

Phone: **(970) 640-6919**
 Fax:

Client Project #

Lab Project #

Collected by (print):
Blair K. Rollins

Site/Facility ID #

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)
 ___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day

Quote #
 Date Results Needed

No.
 of
 Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH (DRO and GRO)	BTEX	Table 910-1 metals in soil	Table 910-1 PAHs	EC, SAR, pH	Remarks	Sample # (lab only)
20200528-LW USA1 - SP1	Grab	SS	0-6"	05/28/20	0845	3	X	X	X	X	X		01
20200528-LW USA1 - SP2	Grab	SS	0-6"	05/28/20	0900	3	X	X	X	X	X		02
20200528-USA1-PDR(6)	Grab	SS	6'	05/28/20	1445	3	X	X	X	X	X		03

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

Remarks:
 pH _____ Temp _____
 Flow _____ Other _____
 Samples returned via:
 ___ UPS ___ FedEx ___ Courier _____
 Tracking # **167627507519**

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
RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature)
[Signature]
 Relinquished by: (Signature)
[Signature]
 Relinquished by: (Signature)
[Signature]

Date:
5/28/20
5/28/20
 Date:

Time:
1600
1706
 Time:
 Received by: (Signature)
[Signature]
 Received by: (Signature)
[Signature]
 Received for lab by: (Signature)
[Signature]

Trip Blank Received: Yes/No
 HCL/MeOH
 TBR
 Temp: **94.2** °C
94.3 = 63
 Bottles Received: **9**
 Date: **052920** Time: **0900**

If preservation required by Login: Date/Time
 Hold:
 Condition:
 NCF **X** OK