


March 26, 2019

Caerus Oil and Gas

Sample Delivery Group: L1079984
Samples Received: 03/19/2019
Project Number:
Description: NPR Water Samples

Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.

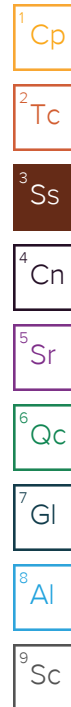


20190318-NRP-9MW L1079984-01 GW

Collected by
Collected date/time
Received date/time

03/18/19 12:10 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1253359	1	03/25/19 12:39	03/25/19 12:39	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:01	03/25/19 11:01	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:25	03/20/19 16:25	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	1	03/19/19 18:10	03/19/19 18:10	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	5	03/19/19 22:07	03/19/19 22:07	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:39	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:07	03/21/19 14:07	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253323	1	03/21/19 18:04	03/21/19 18:04	ACG	Mt. Juliet, TN



20190318-NRP-14ST L1079984-02 GW

Collected by
Collected date/time
Received date/time

03/18/19 12:00 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 16:43	03/25/19 16:43	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:04	03/25/19 11:04	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:25	03/20/19 16:25	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	1	03/19/19 18:54	03/19/19 18:54	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:41	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:10	03/21/19 14:10	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253323	1	03/21/19 18:23	03/21/19 18:23	ACG	Mt. Juliet, TN

20190318-NRP-11MW L1079984-03 GW

Collected by
Collected date/time
Received date/time

03/18/19 13:00 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 16:51	03/25/19 16:51	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:09	03/25/19 11:09	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:26	03/20/19 16:26	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	1	03/19/19 19:24	03/19/19 19:24	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	5	03/19/19 22:22	03/19/19 22:22	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:44	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:12	03/21/19 14:12	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253323	1	03/21/19 18:43	03/21/19 18:43	ACG	Mt. Juliet, TN

20190318-NRP-10MW L1079984-04 GW

Collected by
Collected date/time
Received date/time

03/18/19 13:20 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 16:59	03/25/19 16:59	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:10	03/25/19 11:10	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:28	03/20/19 16:28	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN

ACCOUNT:
Caerus Oil and Gas

PROJECT:

SDG:
L1079984

DATE/TIME:
03/26/19 14:58

PAGE:
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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20190318-NRP-10MW L1079984-04 GW

Collected by
Collected date/time
Received date/time

03/18/19 13:20 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251988	1	03/19/19 19:39	03/19/19 19:39	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	5	03/19/19 22:37	03/19/19 22:37	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:47	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:14	03/21/19 14:14	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253364	1	03/21/19 14:44	03/21/19 14:44	ACG	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

20190318-NRP-12ST L1079984-05 GW

Collected by
Collected date/time
Received date/time

03/18/19 13:50 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 17:05	03/25/19 17:05	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:12	03/25/19 11:12	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:28	03/20/19 16:28	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	1	03/19/19 19:54	03/19/19 19:54	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251988	5	03/19/19 22:52	03/19/19 22:52	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:50	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:16	03/21/19 14:16	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253364	1	03/21/19 15:05	03/21/19 15:05	ACG	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

20190318-NRP-5MW L1079984-06 GW

Collected by
Collected date/time
Received date/time

03/18/19 14:20 03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 17:23	03/25/19 17:23	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:18	03/25/19 11:18	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:28	03/20/19 16:28	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1252046	1	03/19/19 15:04	03/19/19 15:04	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1252046	5	03/19/19 21:25	03/19/19 21:25	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 18:52	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:18	03/21/19 14:18	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253364	1	03/21/19 15:25	03/21/19 15:25	ACG	Mt. Juliet, TN

Collected by
Collected date/time
Received date/time

03/18/19 14:40 03/19/19 08:30

20190318-NRP-14MW L1079984-07 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 17:32	03/25/19 17:32	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:20	03/25/19 11:20	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:29	03/20/19 16:29	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1252046	1	03/19/19 15:19	03/19/19 15:19	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1252046	5	03/19/19 21:41	03/19/19 21:41	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 19:01	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:25	03/21/19 14:25	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253364	1	03/21/19 15:45	03/21/19 15:45	ACG	Mt. Juliet, TN

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20190318-NRP-16MW L1079984-08 GW

Collected by

Collected date/time

Received date/time

03/18/19 14:50

03/19/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1254088	1	03/23/19 14:24	03/23/19 14:58	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1254877	1	03/25/19 17:38	03/25/19 17:38	MCG	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1253480	1	03/25/19 11:21	03/25/19 11:21	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1251596	1	03/20/19 16:30	03/20/19 16:30	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1252001	1	03/19/19 15:38	03/19/19 15:38	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1253115	1	03/21/19 09:31	03/21/19 09:31	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1252046	1	03/19/19 15:35	03/19/19 15:35	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1252606	1	03/20/19 13:58	03/21/19 19:03	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1252902	1	03/21/19 14:30	03/21/19 14:30	MEL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1253364	1	03/21/19 16:06	03/21/19 16:06	ACG	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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

Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	653		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	309		20.0	1	03/25/2019 12:39	WG1253359
Alkalinity,Bicarbonate	309		20.0	1	03/25/2019 12:39	WG1253359
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 12:39	WG1253359

Sample Narrative:

L1079984-01 WG1253359: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:01	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:25	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.67	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-01 WG1252001: 7.67 at 16C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	779		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 18:10	WG1251988
Chloride	10.5		1.00	1	03/19/2019 18:10	WG1251988
Fluoride	0.593		0.100	1	03/19/2019 18:10	WG1251988
Nitrate as (N)	1.52		0.100	1	03/19/2019 18:10	WG1251988
Nitrite as (N)	ND		0.100	1	03/19/2019 18:10	WG1251988
Sulfate	102		25.0	5	03/19/2019 22:07	WG1251988

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:39	WG1252606
Barium,Dissolved	0.0548		0.00500	1	03/21/2019 18:39	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:39	WG1252606
Calcium,Dissolved	63.4		1.00	1	03/21/2019 18:39	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:39	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:39	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:39	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:39	WG1252606
Magnesium,Dissolved	42.5		1.00	1	03/21/2019 18:39	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 18:39	WG1252606
Potassium,Dissolved	2.81	B	1.00	1	03/21/2019 18:39	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:39	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:39	WG1252606
Sodium,Dissolved	59.4		1.00	1	03/21/2019 18:39	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:07	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:07	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:07	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:07	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 18:04	WG1253323
Toluene	ND		0.00100	1	03/21/2019 18:04	WG1253323
Ethylbenzene	ND		0.00100	1	03/21/2019 18:04	WG1253323
Total Xylenes	ND		0.00300	1	03/21/2019 18:04	WG1253323
(S) Toluene-d8	104		80.0-120		03/21/2019 18:04	WG1253323
(S) a,a,a-Trifluorotoluene	110		80.0-120		03/21/2019 18:04	WG1253323
(S) 4-Bromofluorobenzene	104		77.0-126		03/21/2019 18:04	WG1253323
(S) 1,2-Dichloroethane-d4	104		70.0-130		03/21/2019 18:04	WG1253323



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	410		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	294		20.0	1	03/25/2019 16:43	WG1254877
Alkalinity,Bicarbonate	275		20.0	1	03/25/2019 16:43	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 16:43	WG1254877

Sample Narrative:

L1079984-02 WG1254877: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:04	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:25	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.14	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-02 WG1252001: 8.14 at 16.3C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	662		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 18:54	WG1251988
Chloride	10.7		1.00	1	03/19/2019 18:54	WG1251988
Fluoride	0.491		0.100	1	03/19/2019 18:54	WG1251988
Nitrate as (N)	0.536		0.100	1	03/19/2019 18:54	WG1251988
Nitrite as (N)	ND		0.100	1	03/19/2019 18:54	WG1251988
Sulfate	70.4		5.00	1	03/19/2019 18:54	WG1251988

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:41	WG1252606
Barium,Dissolved	0.0641		0.00500	1	03/21/2019 18:41	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:41	WG1252606
Calcium,Dissolved	60.7		1.00	1	03/21/2019 18:41	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:41	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:41	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:41	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:41	WG1252606
Magnesium,Dissolved	35.3		1.00	1	03/21/2019 18:41	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 18:41	WG1252606
Potassium,Dissolved	2.50	B	1.00	1	03/21/2019 18:41	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:41	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:41	WG1252606
Sodium,Dissolved	46.3		1.00	1	03/21/2019 18:41	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:10	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:10	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:10	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:10	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 18:23	WG1253323
Toluene	ND		0.00100	1	03/21/2019 18:23	WG1253323
Ethylbenzene	ND		0.00100	1	03/21/2019 18:23	WG1253323
Total Xylenes	ND		0.00300	1	03/21/2019 18:23	WG1253323
(S) Toluene-d8	106		80.0-120		03/21/2019 18:23	WG1253323
(S) a,a,a-Trifluorotoluene	111		80.0-120		03/21/2019 18:23	WG1253323
(S) 4-Bromofluorobenzene	103		77.0-126		03/21/2019 18:23	WG1253323
(S) 1,2-Dichloroethane-d4	106		70.0-130		03/21/2019 18:23	WG1253323



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	519		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	341		20.0	1	03/25/2019 16:51	WG1254877
Alkalinity,Bicarbonate	341		20.0	1	03/25/2019 16:51	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 16:51	WG1254877

Sample Narrative:

L1079984-03 WG1254877: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:09	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:26	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.43	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-03 WG1252001: 7.43 at 15C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	844		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 19:24	WG1251988
Chloride	11.7		1.00	1	03/19/2019 19:24	WG1251988
Fluoride	0.529		0.100	1	03/19/2019 19:24	WG1251988
Nitrate as (N)	1.93		0.100	1	03/19/2019 19:24	WG1251988
Nitrite as (N)	ND		0.100	1	03/19/2019 19:24	WG1251988
Sulfate	107		25.0	5	03/19/2019 22:22	WG1251988

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:44	WG1252606
Barium,Dissolved	0.105		0.00500	1	03/21/2019 18:44	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:44	WG1252606
Calcium,Dissolved	75.8		1.00	1	03/21/2019 18:44	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:44	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:44	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:44	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:44	WG1252606
Magnesium,Dissolved	45.7		1.00	1	03/21/2019 18:44	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 18:44	WG1252606
Potassium,Dissolved	2.92	B	1.00	1	03/21/2019 18:44	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:44	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:44	WG1252606
Sodium,Dissolved	58.4		1.00	1	03/21/2019 18:44	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:12	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:12	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:12	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:12	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 18:43	WG1253323
Toluene	ND		0.00100	1	03/21/2019 18:43	WG1253323
Ethylbenzene	ND		0.00100	1	03/21/2019 18:43	WG1253323
Total Xylenes	ND		0.00300	1	03/21/2019 18:43	WG1253323
(S) Toluene-d8	106		80.0-120		03/21/2019 18:43	WG1253323
(S) a,a,a-Trifluorotoluene	111		80.0-120		03/21/2019 18:43	WG1253323
(S) 4-Bromofluorobenzene	102		77.0-126		03/21/2019 18:43	WG1253323
(S) 1,2-Dichloroethane-d4	106		70.0-130		03/21/2019 18:43	WG1253323



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	644		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	366		20.0	1	03/25/2019 16:59	WG1254877
Alkalinity,Bicarbonate	366		20.0	1	03/25/2019 16:59	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 16:59	WG1254877

Sample Narrative:

L1079984-04 WG1254877: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.236		0.100	1	03/25/2019 11:10	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:28	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.39	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-04 WG1252001: 7.39 at 14.4C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	991		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 19:39	WG1251988
Chloride	15.1		1.00	1	03/19/2019 19:39	WG1251988
Fluoride	0.592		0.100	1	03/19/2019 19:39	WG1251988
Nitrate as (N)	2.59		0.100	1	03/19/2019 19:39	WG1251988
Nitrite as (N)	ND		0.100	1	03/19/2019 19:39	WG1251988
Sulfate	159		25.0	5	03/19/2019 22:37	WG1251988

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:47	WG1252606
Barium,Dissolved	0.102		0.00500	1	03/21/2019 18:47	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:47	WG1252606
Calcium,Dissolved	85.7		1.00	1	03/21/2019 18:47	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:47	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:47	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:47	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:47	WG1252606
Magnesium,Dissolved	56.1		1.00	1	03/21/2019 18:47	WG1252606
Manganese,Dissolved	0.0996		0.0100	1	03/21/2019 18:47	WG1252606
Potassium,Dissolved	3.54		1.00	1	03/21/2019 18:47	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:47	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:47	WG1252606
Sodium,Dissolved	75.8		1.00	1	03/21/2019 18:47	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:14	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:14	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:14	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:14	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 14:44	WG1253364
Toluene	ND		0.00100	1	03/21/2019 14:44	WG1253364
Ethylbenzene	ND		0.00100	1	03/21/2019 14:44	WG1253364
Total Xylenes	ND		0.00300	1	03/21/2019 14:44	WG1253364
(S) Toluene-d8	86.9		80.0-120		03/21/2019 14:44	WG1253364
(S) o,a,a-Trifluorotoluene	117		80.0-120		03/21/2019 14:44	WG1253364
(S) 4-Bromofluorobenzene	86.8		77.0-126		03/21/2019 14:44	WG1253364
(S) 1,2-Dichloroethane-d4	92.1		70.0-130		03/21/2019 14:44	WG1253364



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	549		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	301		20.0	1	03/25/2019 17:05	WG1254877
Alkalinity,Bicarbonate	283		20.0	1	03/25/2019 17:05	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 17:05	WG1254877

Sample Narrative:

L1079984-05 WG1254877: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:12	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:28	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.45	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-05 WG1252001: 8.45 at 15.1C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	867		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 19:54	WG1251988
Chloride	9.23		1.00	1	03/19/2019 19:54	WG1251988
Fluoride	0.580		0.100	1	03/19/2019 19:54	WG1251988
Nitrate as (N)	1.16		0.100	1	03/19/2019 19:54	WG1251988
Nitrite as (N)	ND		0.100	1	03/19/2019 19:54	WG1251988
Sulfate	168		25.0	5	03/19/2019 22:52	WG1251988

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:50	WG1252606
Barium,Dissolved	0.0665		0.00500	1	03/21/2019 18:50	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:50	WG1252606
Calcium,Dissolved	66.0		1.00	1	03/21/2019 18:50	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:50	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:50	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:50	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:50	WG1252606
Magnesium,Dissolved	52.1		1.00	1	03/21/2019 18:50	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 18:50	WG1252606
Potassium,Dissolved	3.68		1.00	1	03/21/2019 18:50	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:50	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:50	WG1252606
Sodium,Dissolved	66.7		1.00	1	03/21/2019 18:50	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:16	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:16	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:16	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:16	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 15:05	WG1253364
Toluene	ND		0.00100	1	03/21/2019 15:05	WG1253364
Ethylbenzene	ND		0.00100	1	03/21/2019 15:05	WG1253364
Total Xylenes	ND		0.00300	1	03/21/2019 15:05	WG1253364
(S) Toluene-d8	91.7		80.0-120		03/21/2019 15:05	WG1253364
(S) a,a,a-Trifluorotoluene	119		80.0-120		03/21/2019 15:05	WG1253364
(S) 4-Bromofluorobenzene	92.0		77.0-126		03/21/2019 15:05	WG1253364
(S) 1,2-Dichloroethane-d4	95.0		70.0-130		03/21/2019 15:05	WG1253364



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	710		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	369		20.0	1	03/25/2019 17:23	WG1254877
Alkalinity,Bicarbonate	369		20.0	1	03/25/2019 17:23	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 17:23	WG1254877

Sample Narrative:

L1079984-06 WG1254877: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:18	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:28	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.70	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-06 WG1252001: 7.7 at 15.1C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	979		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 15:04	WG1252046
Chloride	32.8		1.00	1	03/19/2019 15:04	WG1252046
Fluoride	0.745		0.100	1	03/19/2019 15:04	WG1252046
Nitrate as (N)	0.819		0.100	1	03/19/2019 15:04	WG1252046
Nitrite as (N)	ND		0.100	1	03/19/2019 15:04	WG1252046
Sulfate	137		25.0	5	03/19/2019 21:25	WG1252046

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 18:52	WG1252606
Barium,Dissolved	0.0613		0.00500	1	03/21/2019 18:52	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 18:52	WG1252606
Calcium,Dissolved	68.5		1.00	1	03/21/2019 18:52	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 18:52	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 18:52	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 18:52	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 18:52	WG1252606
Magnesium,Dissolved	51.0		1.00	1	03/21/2019 18:52	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 18:52	WG1252606
Potassium,Dissolved	3.27	<u>B</u>	1.00	1	03/21/2019 18:52	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 18:52	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 18:52	WG1252606
Sodium,Dissolved	93.2		1.00	1	03/21/2019 18:52	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.0158		0.0100	1	03/21/2019 14:18	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:18	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:18	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:18	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 15:25	WG1253364
Toluene	ND		0.00100	1	03/21/2019 15:25	WG1253364
Ethylbenzene	ND		0.00100	1	03/21/2019 15:25	WG1253364
Total Xylenes	ND		0.00300	1	03/21/2019 15:25	WG1253364
(S) Toluene-d8	90.5		80.0-120		03/21/2019 15:25	WG1253364
(S) a,a,a-Trifluorotoluene	123	<u>J1</u>	80.0-120		03/21/2019 15:25	WG1253364
(S) 4-Bromofluorobenzene	86.9		77.0-126		03/21/2019 15:25	WG1253364
(S) 1,2-Dichloroethane-d4	92.2		70.0-130		03/21/2019 15:25	WG1253364



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	829		13.3	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	426		20.0	1	03/25/2019 17:32	WG1254877
Alkalinity,Bicarbonate	426		20.0	1	03/25/2019 17:32	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 17:32	WG1254877

Sample Narrative:

L1079984-07 WG1254877: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.100	1	03/25/2019 11:20	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:29	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.41	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-07 WG1252001: 7.41 at 14.9C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1280		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 15:19	WG1252046
Chloride	22.7		1.00	1	03/19/2019 15:19	WG1252046
Fluoride	0.777		0.100	1	03/19/2019 15:19	WG1252046
Nitrate as (N)	4.14		0.100	1	03/19/2019 15:19	WG1252046
Nitrite as (N)	ND		0.100	1	03/19/2019 15:19	WG1252046
Sulfate	271		25.0	5	03/19/2019 21:41	WG1252046

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 19:01	WG1252606
Barium,Dissolved	0.0624		0.00500	1	03/21/2019 19:01	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 19:01	WG1252606
Calcium,Dissolved	96.0		1.00	1	03/21/2019 19:01	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 19:01	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 19:01	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 19:01	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 19:01	WG1252606
Magnesium,Dissolved	81.6		1.00	1	03/21/2019 19:01	WG1252606
Manganese,Dissolved	ND		0.0100	1	03/21/2019 19:01	WG1252606
Potassium,Dissolved	4.47		1.00	1	03/21/2019 19:01	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 19:01	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 19:01	WG1252606
Sodium,Dissolved	103		1.00	1	03/21/2019 19:01	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	03/21/2019 14:25	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:25	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:25	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:25	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 15:45	WG1253364
Toluene	ND		0.00100	1	03/21/2019 15:45	WG1253364
Ethylbenzene	ND		0.00100	1	03/21/2019 15:45	WG1253364
Total Xylenes	ND		0.00300	1	03/21/2019 15:45	WG1253364
(S) Toluene-d8	86.7		80.0-120		03/21/2019 15:45	WG1253364
(S) a,a,a-Trifluorotoluene	119		80.0-120		03/21/2019 15:45	WG1253364
(S) 4-Bromofluorobenzene	87.9		77.0-126		03/21/2019 15:45	WG1253364
(S) 1,2-Dichloroethane-d4	95.9		70.0-130		03/21/2019 15:45	WG1253364



Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	499		10.0	1	03/23/2019 14:58	WG1254088

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	297		20.0	1	03/25/2019 17:38	WG1254877
Alkalinity,Bicarbonate	297		20.0	1	03/25/2019 17:38	WG1254877
Alkalinity,Carbonate	ND		20.0	1	03/25/2019 17:38	WG1254877

Sample Narrative:

L1079984-08 WG1254877: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	0.137		0.100	1	03/25/2019 11:21	WG1253480

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		0.0500	1	03/20/2019 16:30	WG1251596

Wet Chemistry by Method 9040C

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.62	T8	1	03/19/2019 15:38	WG1252001

Sample Narrative:

L1079984-08 WG1252001: 7.62 at 15.2C

Wet Chemistry by Method 9050A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	684		10.0	1	03/21/2019 09:31	WG1253115

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	03/19/2019 15:35	WG1252046
Chloride	12.6		1.00	1	03/19/2019 15:35	WG1252046
Fluoride	0.566		0.100	1	03/19/2019 15:35	WG1252046
Nitrate as (N)	0.456		0.100	1	03/19/2019 15:35	WG1252046
Nitrite as (N)	ND		0.100	1	03/19/2019 15:35	WG1252046
Sulfate	77.6		5.00	1	03/19/2019 15:35	WG1252046

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	03/21/2019 19:03	WG1252606
Barium,Dissolved	0.0816		0.00500	1	03/21/2019 19:03	WG1252606
Cadmium,Dissolved	ND		0.00200	1	03/21/2019 19:03	WG1252606
Calcium,Dissolved	60.4		1.00	1	03/21/2019 19:03	WG1252606



Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Dissolved	ND		0.0100	1	03/21/2019 19:03	WG1252606
Copper,Dissolved	ND		0.0100	1	03/21/2019 19:03	WG1252606
Iron,Dissolved	ND		0.100	1	03/21/2019 19:03	WG1252606
Lead,Dissolved	ND		0.00500	1	03/21/2019 19:03	WG1252606
Magnesium,Dissolved	34.4		1.00	1	03/21/2019 19:03	WG1252606
Manganese,Dissolved	0.0466		0.0100	1	03/21/2019 19:03	WG1252606
Potassium,Dissolved	2.08	B	1.00	1	03/21/2019 19:03	WG1252606
Selenium,Dissolved	ND		0.0100	1	03/21/2019 19:03	WG1252606
Silver,Dissolved	ND		0.00500	1	03/21/2019 19:03	WG1252606
Sodium,Dissolved	49.1		1.00	1	03/21/2019 19:03	WG1252606

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	0.0387		0.0100	1	03/21/2019 14:30	WG1252902
Ethane	ND		0.0130	1	03/21/2019 14:30	WG1252902
Ethene	ND		0.0130	1	03/21/2019 14:30	WG1252902
Propane	ND		0.0190	1	03/21/2019 14:30	WG1252902

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	03/21/2019 16:06	WG1253364
Toluene	ND		0.00100	1	03/21/2019 16:06	WG1253364
Ethylbenzene	ND		0.00100	1	03/21/2019 16:06	WG1253364
Total Xylenes	ND		0.00300	1	03/21/2019 16:06	WG1253364
(S) Toluene-d8	87.2		80.0-120		03/21/2019 16:06	WG1253364
(S) a,a,a-Trifluorotoluene	119		80.0-120		03/21/2019 16:06	WG1253364
(S) 4-Bromofluorobenzene	87.4		77.0-126		03/21/2019 16:06	WG1253364
(S) 1,2-Dichloroethane-d4	98.1		70.0-130		03/21/2019 16:06	WG1253364

Method Blank (MB)

(MB) R3395183-1 03/23/19 14:58

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Dissolved Solids	U		2.82	10.0

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1079994-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-02 03/23/19 14:58 • (DUP) R3395183-3 03/23/19 14:58

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Dissolved Solids	752	796	1	5.68	J3	5

Laboratory Control Sample (LCS)

(LCS) R3395183-2 03/23/19 14:58

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/l	mg/l	%	%	
Dissolved Solids	8800	8400	95.5	85.0-115	

Method Blank (MB)

(MB) R3394860-1 03/25/19 08:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		2.71	20.0
Alkalinity,Bicarbonate	U		2.71	20.0
Alkalinity,Carbonate	U		2.71	20.0

Sample Narrative:
BLANK: Endpoint pH 4.5

L1079558-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1079558-18 03/25/19 08:48 • (DUP) R3394860-2 03/25/19 08:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	186	183	1	1.58		20
Alkalinity,Bicarbonate	178	178	1	0.358		20
Alkalinity,Carbonate	ND	5.82	1	0.000		20

Sample Narrative:
OS: Endpoint pH 4.5
DUP: Endpoint pH 4.5

L1080370-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080370-01 03/25/19 12:47 • (DUP) R3394860-4 03/25/19 12:55

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	282	282	1	0.169		20
Alkalinity,Bicarbonate	282	282	1	0.169		20
Alkalinity,Carbonate	U	0.000	1	0.000		20

Sample Narrative:
OS: Endpoint pH 4.5 Headspace
DUP: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS)

(LCS) R3394860-3 03/25/19 10:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	94.2	94.2	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3394915-1 03/25/19 14:04

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	3.34	U	2.71	20.0
Alkalinity,Bicarbonate	3.34	U	2.71	20.0
Alkalinity,Carbonate	U		2.71	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1079179-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1079179-07 03/25/19 14:27 • (DUP) R3394915-2 03/25/19 14:35

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	49.2	49.2	1	0.0384		20
Alkalinity,Bicarbonate	49.2	49.2	1	0.0384		20
Alkalinity,Carbonate	ND	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1079984-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1079984-08 03/25/19 17:38 • (DUP) R3394915-4 03/25/19 17:46

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	297	298	1	0.575		20
Alkalinity,Bicarbonate	297	298	1	0.575		20
Alkalinity,Carbonate	ND	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS)

(LCS) R3394915-3 03/25/19 15:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100	105	105	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3394846-1 03/25/19 10:58

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Ammonia Nitrogen	U		0.0317	0.100

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1079984-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079984-01 03/25/19 11:01 • (DUP) R3394846-3 03/25/19 11:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Ammonia Nitrogen	ND	0.0350	1	0.000		10

L1081782-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1081782-01 03/25/19 11:44 • (DUP) R3394846-6 03/25/19 11:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Ammonia Nitrogen	3.32	3.31	1	0.181		10

Laboratory Control Sample (LCS)

(LCS) R3394846-2 03/25/19 10:59

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Ammonia Nitrogen	7.50	7.65	102	90.0-110	

L1079984-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1079984-02 03/25/19 11:04 • (MS) R3394846-4 03/25/19 11:05 • (MSD) R3394846-5 03/25/19 11:07

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Ammonia Nitrogen	5.00	ND	5.26	5.19	105	104	1	90.0-110			1.45	10

L1081782-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1081782-02 03/25/19 11:47 • (MS) R3394846-7 03/25/19 11:48

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/l	mg/l	mg/l	%		%	
Ammonia Nitrogen	5.00	3.32	8.27	99.0	1	90.0-110	



Method Blank (MB)

(MB) R3393502-1 03/20/19 16:20

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Sulfide	U		0.00650	0.0500

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1079407-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079407-01 03/20/19 16:20 • (DUP) R3393502-3 03/20/19 16:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfide	ND	0.000	1	0.000		20

L1080034-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1080034-02 03/20/19 16:32 • (DUP) R3393502-6 03/20/19 16:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Sulfide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3393502-2 03/20/19 16:20

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/l	mg/l	%	%	
Sulfide	0.500	0.493	98.6	85.0-115	

L1079407-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1079407-02 03/20/19 16:22 • (MS) R3393502-4 03/20/19 16:22 • (MSD) R3393502-5 03/20/19 16:23

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Sulfide	1.00	ND	0.759	0.727	75.9	72.7	1	80.0-120	J6	J6	4.31	20

L1079878-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079878-01 03/19/19 15:38 • (DUP) R3393077-2 03/19/19 15:38

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.67	6.66	1	0.150		1

Sample Narrative:
OS: 6.67 at 9.9C
DUP: 6.66 at 9.9C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1080000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080000-01 03/19/19 15:38 • (DUP) R3393077-3 03/19/19 15:38

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.80	7.78	1	0.257		1

Sample Narrative:
OS: 7.8 at 10C
DUP: 7.78 at 10C

Laboratory Control Sample (LCS)

(LCS) R3393077-1 03/19/19 15:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:
LCS: 9.99 at 18.4C

Method Blank (MB)

(MB) R3393700-1 03/21/19 09:31

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	umhos/cm		umhos/cm	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

L1079984-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079984-01 03/21/19 09:31 • (DUP) R3393700-3 03/21/19 09:31

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	779	774	1	0.644		20

L1079984-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1079984-06 03/21/19 09:31 • (DUP) R3393700-4 03/21/19 09:31

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	umhos/cm	umhos/cm		%		%
Specific Conductance	979	988	1	0.915		20

Laboratory Control Sample (LCS)

(LCS) R3393700-2 03/21/19 09:31

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	umhos/cm	umhos/cm	%	%	
Specific Conductance	877	864	98.5	90.0-110	



Method Blank (MB)

(MB) R3393166-1 03/19/19 10:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Fluoride	U		0.00990	0.100
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

L1079904-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1079904-05 03/19/19 11:57 • (DUP) R3393166-2 03/19/19 12:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.662	1	0.000		15
Chloride	79.2	79.3	1	0.0816		15
Fluoride	0.201	0.202	1	0.695		15
Nitrate	7.62	7.63	1	0.0577		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	67.1	67.2	1	0.203		15

L1079912-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1079912-05 03/19/19 16:10 • (DUP) R3393166-6 03/19/19 16:25

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0.000		15
Chloride	13.3	13.4	1	0.185		15
Fluoride	ND	0.0690	1	0.578	U	15
Nitrate	ND	0.0704	1	0.142	U	15
Nitrite	ND	0.000	1	0.000		15
Sulfate	13.0	13.0	1	0.393		15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS)

(LCS) R3393166-5 03/19/19 13:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	39.0	97.6	80.0-120	
Chloride	40.0	39.8	99.4	80.0-120	
Fluoride	8.00	8.16	102	80.0-120	
Nitrate	8.00	8.54	107	80.0-120	
Nitrite	8.00	8.28	103	80.0-120	
Sulfate	40.0	40.3	101	80.0-120	

L1079904-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1079904-07 03/19/19 13:11 • (MS) R3393166-3 03/19/19 13:26 • (MSD) R3393166-4 03/19/19 13:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	46.9	47.2	92.5	93.0	1	80.0-120			0.541	15
Chloride	50.0	84.0	131	131	94.1	94.5	1	80.0-120	E	E	0.164	15
Fluoride	5.00	ND	4.84	4.90	95.7	96.9	1	80.0-120			1.21	15
Nitrate	5.00	8.93	14.3	14.3	108	108	1	80.0-120	E	E	0.276	15
Nitrite	5.00	ND	5.07	5.09	101	102	1	80.0-120			0.331	15
Sulfate	50.0	75.4	124	124	96.4	97.4	1	80.0-120	E	E	0.392	15

L1079984-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1079984-02 03/19/19 18:54 • (MS) R3393166-7 03/19/19 19:09

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	45.9	91.8	1	80.0-120	
Chloride	50.0	10.7	59.9	98.4	1	80.0-120	
Fluoride	5.00	0.491	5.14	93.0	1	80.0-120	
Nitrate	5.00	0.536	5.56	100	1	80.0-120	
Nitrite	5.00	ND	4.93	98.7	1	80.0-120	
Sulfate	50.0	70.4	118	95.5	1	80.0-120	E

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3393027-1 03/19/19 11:53

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Bromide	U		0.0790	1.00
Chloride	U		0.0519	1.00
Fluoride	U		0.00990	0.100
Nitrate	U		0.0227	0.100
Nitrite	U		0.0277	0.100
Sulfate	U		0.0774	5.00

L1077132-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1077132-01 03/19/19 12:41 • (DUP) R3393027-3 03/19/19 12:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0.000		15
Chloride	11.6	11.6	1	0.0372		15
Fluoride	0.544	0.543	1	0.0736		15
Nitrate	5.66	5.66	1	0.117		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	12.3	12.3	1	0.0481		15

L1079994-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1079994-01 03/19/19 15:51 • (DUP) R3393027-6 03/19/19 16:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	0.000	1	0.000		15
Chloride	34.3	34.1	1	0.336		15
Fluoride	0.564	0.563	1	0.124		15
Nitrate	ND	0.000	1	0.000		15
Nitrite	ND	0.000	1	0.000		15
Sulfate	25.3	25.3	1	0.0407		15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS)

(LCS) R3393027-2 03/19/19 12:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromide	40.0	41.2	103	80.0-120	
Chloride	40.0	41.0	102	80.0-120	
Fluoride	8.00	8.24	103	80.0-120	
Nitrate	8.00	8.40	105	80.0-120	
Nitrite	8.00	8.19	102	80.0-120	
Sulfate	40.0	41.5	104	80.0-120	

L1079983-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1079983-01 03/19/19 14:16 • (MS) R3393027-4 03/19/19 14:32 • (MSD) R3393027-5 03/19/19 14:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	47.9	48.2	95.9	96.4	1	80.0-120			0.594	15
Chloride	50.0	2.02	52.3	52.7	101	101	1	80.0-120			0.654	15
Fluoride	5.00	0.161	5.16	5.21	100	101	1	80.0-120			0.837	15
Nitrate	5.00	1.77	6.73	6.75	99.1	99.7	1	80.0-120			0.439	15
Nitrite	5.00	ND	5.08	5.11	102	102	1	80.0-120			0.734	15
Sulfate	50.0	ND	52.9	53.1	99.9	100	1	80.0-120			0.388	15

L1079994-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1079994-01 03/19/19 15:51 • (MS) R3393027-7 03/19/19 16:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	46.6	92.9	1	80.0-120	
Chloride	50.0	34.3	83.5	98.4	1	80.0-120	
Fluoride	5.00	0.564	5.53	99.3	1	80.0-120	
Nitrate	5.00	ND	4.86	97.1	1	80.0-120	
Nitrite	5.00	ND	5.09	102	1	80.0-120	
Sulfate	50.0	25.3	74.2	97.7	1	80.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3393814-6 03/21/19 12:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic,Dissolved	U		0.00650	0.0100
Barium,Dissolved	U		0.00170	0.00500
Cadmium,Dissolved	U		0.000700	0.00200
Calcium,Dissolved	U		0.0463	1.00
Chromium,Dissolved	U		0.00140	0.0100
Copper,Dissolved	U		0.00530	0.0100
Iron,Dissolved	U		0.0141	0.100
Lead,Dissolved	0.00254	U	0.00190	0.00500
Magnesium,Dissolved	0.0206	U	0.0111	1.00
Manganese,Dissolved	U		0.00120	0.0100
Potassium,Dissolved	0.350	U	0.102	1.00
Selenium,Dissolved	U		0.00740	0.0100
Silver,Dissolved	U		0.00280	0.00500
Sodium,Dissolved	0.430	U	0.0985	1.00

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3393814-1 03/21/19 11:34 • (LCSD) R3393814-2 03/21/19 11:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	0.939	0.925	93.9	92.5	80.0-120			1.54	20
Barium,Dissolved	1.00	1.00	0.987	100	98.7	80.0-120			1.27	20
Cadmium,Dissolved	1.00	0.947	0.936	94.7	93.6	80.0-120			1.17	20
Calcium,Dissolved	10.0	9.78	9.69	97.8	96.9	80.0-120			0.982	20
Chromium,Dissolved	1.00	0.976	0.963	97.6	96.3	80.0-120			1.31	20
Copper,Dissolved	1.00	0.980	0.972	98.0	97.2	80.0-120			0.819	20
Iron,Dissolved	10.0	9.73	9.68	97.3	96.8	80.0-120			0.501	20
Lead,Dissolved	1.00	0.961	0.954	96.1	95.4	80.0-120			0.810	20
Magnesium,Dissolved	10.0	9.60	9.57	96.0	95.7	80.0-120			0.272	20
Manganese,Dissolved	1.00	0.963	0.952	96.3	95.2	80.0-120			1.11	20
Potassium,Dissolved	10.0	9.65	9.57	96.5	95.7	80.0-120			0.795	20
Selenium,Dissolved	1.00	0.982	0.971	98.2	97.1	80.0-120			1.11	20
Silver,Dissolved	0.200	0.188	0.186	94.2	92.9	80.0-120			1.36	20
Sodium,Dissolved	10.0	10.3	10.1	103	101	80.0-120			1.61	20



L1079789-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1079789-07 03/21/19 11:40 • (MS) R3393814-4 03/21/19 11:45 • (MSD) R3393814-5 03/21/19 11:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	ND	0.967	0.969	96.7	96.9	1	75.0-125			0.272	20
Barium,Dissolved	1.00	0.201	1.16	1.16	95.5	96.2	1	75.0-125			0.590	20
Cadmium,Dissolved	1.00	ND	0.956	0.964	95.6	96.4	1	75.0-125			0.843	20
Calcium,Dissolved	10.0	39.8	48.5	48.7	86.3	88.2	1	75.0-125			0.385	20
Chromium,Dissolved	1.00	ND	0.949	0.961	94.9	96.1	1	75.0-125			1.27	20
Copper,Dissolved	1.00	ND	0.997	1.01	99.7	101	1	75.0-125			1.11	20
Iron,Dissolved	10.0	ND	9.46	9.55	94.6	95.5	1	75.0-125			0.962	20
Lead,Dissolved	1.00	ND	0.957	0.966	95.5	96.3	1	75.0-125			0.902	20
Magnesium,Dissolved	10.0	55.6	63.0	63.3	74.2	77.0	1	75.0-125	V		0.432	20
Manganese,Dissolved	1.00	0.135	1.06	1.07	92.5	93.3	1	75.0-125			0.778	20
Potassium,Dissolved	10.0	1.32	11.2	11.6	99.1	103	1	75.0-125			3.31	20
Selenium,Dissolved	1.00	ND	1.02	1.03	102	103	1	75.0-125			1.02	20
Silver,Dissolved	0.200	ND	0.192	0.195	96.2	97.5	1	75.0-125			1.36	20
Sodium,Dissolved	10.0	619	611	614	0.000	0.000	1	75.0-125	V	V	0.545	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3393878-1 03/21/19 13:53

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/l		mg/l	mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130
Propane	U		0.00548	0.0190

L1080363-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080363-01 03/21/19 13:56 • (DUP) R3393878-2 03/21/19 14:28

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Propane	ND	0.000	1	0.000		20

L1080362-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1080362-01 03/21/19 14:32 • (DUP) R3393878-3 03/21/19 14:55

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/l	mg/l		%		%
Methane	ND	0.000	1	0.000		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20
Propane	ND	0.000	1	0.000		20

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

(LCS) R3393878-4 03/21/19 15:01 • (LCSD) R3393878-5 03/21/19 15:03

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/l	mg/l	mg/l	%	%	%			%	%
Methane	0.0678	0.0741	0.0730	109	108	85.0-115			1.52	20
Ethane	0.129	0.116	0.115	90.3	89.5	85.0-115			0.947	20
Ethene	0.127	0.118	0.117	92.9	91.9	85.0-115			1.09	20
Propane	0.186	0.169	0.168	91.1	90.5	85.0-115			0.672	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Method Blank (MB)

(MB) R3393968-3 03/21/19 11:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000331	0.00100
Ethylbenzene	U		0.000384	0.00100
Toluene	U		0.000412	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	109			80.0-120
(S) a,a,a-Trifluorotoluene	112			80.0-120
(S) 4-Bromofluorobenzene	104			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

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) R3393968-1 03/21/19 10:49 • (LCSD) R3393968-2 03/21/19 11:09

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0245	0.0239	97.9	95.6	70.0-123			2.33	20
Ethylbenzene	0.0250	0.0263	0.0256	105	102	79.0-123			3.03	20
Toluene	0.0250	0.0245	0.0240	98.2	95.9	79.0-120			2.33	20
Xylenes, Total	0.0750	0.0820	0.0796	109	106	79.0-123			2.97	20
(S) Toluene-d8				102	101	80.0-120				
(S) a,a,a-Trifluorotoluene				106	107	80.0-120				
(S) 4-Bromofluorobenzene				106	106	77.0-126				
(S) 1,2-Dichloroethane-d4				103	103	70.0-130				



Method Blank (MB)

(MB) R3395238-3 03/21/19 13:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000331	0.00100
Ethylbenzene	U		0.000384	0.00100
Toluene	U		0.000412	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	90.6			80.0-120
(S) a,a,a-Trifluorotoluene	119			80.0-120
(S) 4-Bromofluorobenzene	86.9			77.0-126
(S) 1,2-Dichloroethane-d4	93.3			70.0-130

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

(LCS) R3395238-1 03/21/19 11:59 • (LCSD) R3395238-2 03/21/19 12:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0277	0.0293	111	117	70.0-123			5.47	20
Ethylbenzene	0.0250	0.0233	0.0240	93.3	96.1	79.0-123			2.99	20
Toluene	0.0250	0.0233	0.0230	93.1	92.0	79.0-120			1.28	20
Xylenes, Total	0.0750	0.0696	0.0685	92.8	91.3	79.0-123			1.59	20
(S) Toluene-d8				85.4	84.9	80.0-120				
(S) a,a,a-Trifluorotoluene				119	119	80.0-120				
(S) 4-Bromofluorobenzene				96.0	94.7	77.0-126				
(S) 1,2-Dichloroethane-d4				98.2	92.4	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
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.
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 GI

8 AI

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.





CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

L1079984

Page: 1 of 1

Section A
Required Client Information:
Company: Caerus Oil and Gas
Address: 143 Diamond Ave
Parachute, CO 81635
Email To: bmiddleton@caerusoilandgas.com
Phone: 970-987-4650
Requested Due Date/TAT: STAT

Section B
Required Project Information:
Report To: Brett Middleton
Copy To: Jake Janicek
Blair Rollins, Tyler Rust
Purchase Order No.:
Project Name: NPR Water Samples
Project Number:

Section C
Invoice Information:
Attention: Jake Janicek
Company Name: Caerus Oil and Gas
Address: jjanicek@caerusoilandgas.com
Pace Quote Reference: CAERUSPC0080318S
Pace Project Manager: Chris Ward
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER
Site Location: TN
STATE:

ITEM #	Section D Required Client Information SAMPLE ID (A-Z, 0-9 / . -) Sample IDs MUST BE UNIQUE	Valid Matrix Codes		MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↓ Analysis Test ↓	ALK/ALKBI/ALKCA Br, Cl, F, S04, N02, N03 Dissolved Metals (common) Ammonia RSK 175 Sulfide BTEX pH, SPCON, TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.											
		MATRIX	CODE			COMPOSITE START		COMPOSITE END/GRAB				Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other																	
		DRINKING WATER	DW			WT	WT	WASTE WATER	WW											PRODUCT	P					SOIL/SOLID	SL	OIL	OL	WIPE	WP	AIR	AR	OTHER	OT	TISSUE
1	20190318 -NPR-9 MW	WT	G			3/18/19	1210																													-01
2	20190318 -NPR-14 ST	WT	G			3/18/19	1200																													-02
3	20190318 -NPR-11 MW	WT	G			3/18/19	1300																													-03
4	20190318 -NPR-10 MW	WT	G			3/18/19	1320																													-04
5	20190318 -NPR-12 ST	WT	G			3/18/19	1350																													-05
6	20190318 -NPR-5 MW	WT	G			3/18/19	1420																													-06
7	20190318 -NPR-14 MW	WT	G			3/18/19	1440																													-07
8	20190318 -NPR-16 MW	WT	G			3/18/19	1450																													-08
9	20190318 -NPR	WT	G			3/18/19																														
10	20190318 -NPR	WT	G			3/18/19																														
11	20190318 -NPR	WT	G			3/18/19																														
12	20190318 -NPR	WT	G			3/18/19																														
ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION				DATE		TIME		ACCEPTED BY / AFFILIATION				DATE		TIME		SAMPLE CONDITIONS																		
As, Ba, Cd, Cr, Cu, Pb, Ag, Ca, Fe, K, Mg, Mn, Na, Se		Brett Middleton				3/18/19		1522		Kwillis				3/19/19		830																				
										B191																										

4510 1463 2996 / 3000
RAD SCREEN: <0.5 mR/hr

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Brett Middleton
SIGNATURE of SAMPLER: [Signature]
DATE Signed (MM/DD/YY): 3/18/19

Temp in °C
Received on Ice (Y/N)
Custody Sealed Cooler (Y/N)
Samples Intact (Y/N)

Pace Analytical National Center for Testing & Innovation

Cooler Receipt Form

Client: CAERUSPCO	SDG#:	L1079984	
Cooler Received/Opened On: 3/19 / 19	Temperature:	0.2	
Received By: Kristin Willis			
Signature: <i>K Willis</i>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			✓
COC Signed / Accurate?			✓
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable		✓	
VOA Zero headspace?		✓	
Preservation Correct / Checked?		✓	