

October 19, 2021

Mr. Jake Janicek
EHS Specialist
Caerus Oil and Gas, LLC
143 Diamond Ave.
Parachute, CO 81635



REPORT OF WORK COMPLETED

Project Name: PB15 Well Pad Historical Spill Assessment
COGCC Location Name (ID No.): Clem Jr.-67S95W/15NWNE (334653)
Legal Description: NWNE Sec. 15, T7S-R95W Garfield County, CO
Lat/Long: 39.442670 / -107.982400

On behalf of Caerus Oil and Gas, LLC (Caerus), Campos EPC (CEPC) has prepared this Report of Work Completed (ROWC) to document recent assessment activities at the PB15 Well Pad (Site). This ROWC provides background and purpose of the assessment, methodology, summarized results, and recommendations for additional action. Attachments to this ROWC include field notes, Site exhibit with sample locations, analytical data table and laboratory report.

BACKGROUND

The Site is approximately 3.6 miles east-southeast of Parachute, CO within the Battlement Mesa Unit. Land use includes high mountain desert rangeland, rural residences, and oil and gas operations. Lithology consists of silty gravel with basalt deposits and other coarse-grained soils. Surrounding topography is moderately sloped to the north at 5-10% grades. The nearest watercourse is Battlement Creek approximately 0.3 miles west, which is a tributary to the Colorado River -ultimate receiving waters- approximately 2.0 miles north of the Site. Depth to groundwater is known to be 80-100 feet (ft) in the vicinity of the Site as referenced by local well construction data from the Division of Water Resources (DWR). Domestic wells are located approximately 235 ft east and 515 ft north.

To the purpose of assessing two historical spills, initially reported to the Colorado Oil and Gas Conservation Commission (COGCC) in Form 19 document numbers 2607378 and 2314733, Caerus is following the proposed sampling plan as approved by the COGCC in Form 27 document number 402736947 (Remediation Project No. 19614). Areas of concern are within the well pad working surface and approximate locations are depicted on the attached Site exhibit.

METHODOLOGY

On September 1, 2021, CEPC personnel conducted the assessment in accordance with the proposed sampling plan. Investigation points selected to characterize the approximate spill areas were visually inspected and field screened using a Photo Ionization Detector (PID) at intervals of 12 inches below ground surface (bgs) and 24 inches bgs. Hand tools with strict decontamination practices were used to collect soil samples at each interval of the investigation points. All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical. Pursuant to Rule 915.f, as approved by the COGCC, all samples were analyzed for constituents in accordance with the COGCC Table 910-1 list. Investigation points were surveyed using a Trimble RTX Data Collector with sub-inch accuracy.

On September 2, 2021, due to poor weather conditions the previous day, CEPC personnel returned to conduct an aerial survey to gather updated imagery of the Site with an Autel Evo II drone. An additional sample was collected in the native area approximately 150 ft east of the Site for comparison to background soil conditions (see Site exhibit for all sample locations).

RESULTS

During the assessment, visual inspection of the Site indicated no staining or odors throughout all investigation points. Results of field screening via PID were less than 1.0 parts per million (ppm) at each interval within the investigation points.

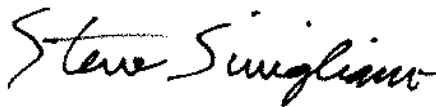
Laboratory results for all samples collected at 12 inches bgs indicate compliance with COGCC Table 910-1 Residential Soil Screening Concentration Levels for organic compounds and soil suitability parameters. Additionally, for all samples collected at 12 inches bgs, laboratory results indicate compliance for inorganic compounds with exception to Arsenic. Exceedances for Arsenic ranged from 3.06 milligrams per kilogram (mg/kg) at sample location 20210901-PB15(PH03)@1' to 4.95 mg/kg at sample point 20210901-PB15(PH04)@1'. Background sample analysis indicates a naturally occurring elevated Arsenic concentration level of 3.04 mg/kg at sample location 20210901-PJ16(BG).

For additional background comparison, historical data from samples collected in similar soil types at nearby facilities (Location ID# 334751 and 334656) indicate Arsenic concentrations of 5.1 mg/kg and 6.7 mg/kg adjacent to the PI15 and PJ16 well pads, respectively. The PI15 well pad is located 0.45 miles southeast and the PJ16 is located 1.1 miles southwest of the Site. See attachments for a summarized soil analytical data table, laboratory report, and historical background data.

CONCLUSION

Based on laboratory results, and considering an elevated background concentration of Arsenic, no apparent impacts from the historic spills remain at the Site. CEPC recommends no further remedial action and believes a Final Closure Request via supplemental Form 27 is fair and reasonable.

Thank you for the opportunity to support you on this project. Please reach out anytime with questions regarding this report and associated field work.



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Attachments

- Site Exhibit with sample locations
- Soil Analytical Table
- Laboratory Report
- Field Notes



CAERUS
OPERATING, LLC

PB15
CLEM JR.-67S95W / 15NWNE
COGCC LOCATION ID: 334653
GARFIELD COUNTY, CO
NWNE SEC. 15 T7S-R95W

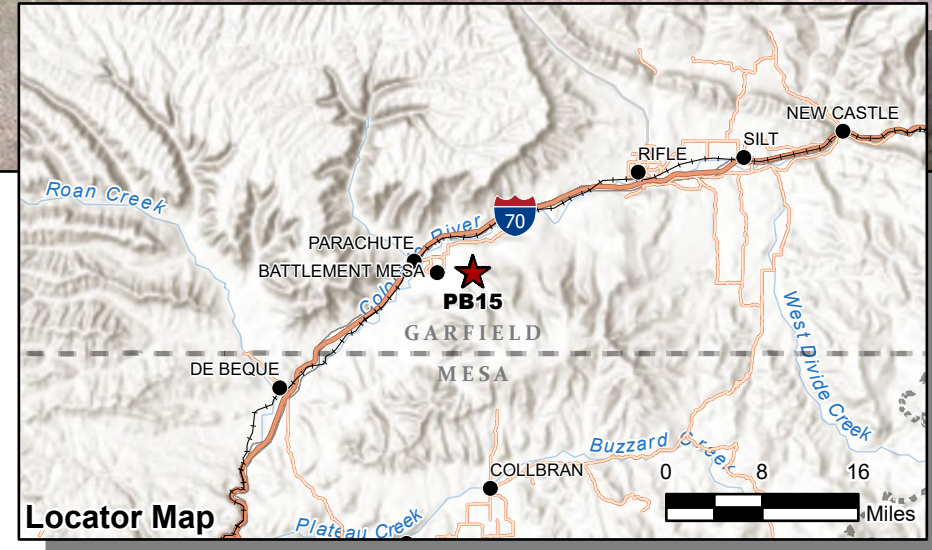
DRAFTER: RAB DATE: 9/7/2021

Legend

- Soil Sample Location
- Area of Concern

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

SAMPLE NAME	LATITUDE NAD83	LONGITUDE NAD83
20210901-PB15 (PH01)	39.442822	-107.982142
20210901-PB15 (PH02)	39.442872	-107.982252
20210901-PB15 (PH03)	39.442912	-107.982375
20210901-PB15 (PH04)	39.442776	-107.982652
20210901-PB15 (PH05)	39.442852	-107.982595
20210901-PB15 (PH06)	39.442808	-107.982758
20210901-PB15 (PH07)	39.442757	-107.982904
20210902-PB15 (BG)	39.442276	-107.981649



**TABLE 1 - SOIL ANALYTICAL RESULTS
PB15**



Sample Name	ORGANIC COMPOUNDS in mg/kg							SOIL SUITABILITY			METALS in mg/kg												
	TPH-GRO	TPH-DRO	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Electrical Conductivity (mmhos/cm)	Sodium Adsorption Ratio	pH (su)	Arsenic	Barium	Hot Water Sol. Boron	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
20210901-PB15(PH01)@1'	<0.1	16.3	16.3	<0.001	<0.005	<0.0025	<0.0065	0.578	0.982	7.87	4.37	257	na	0.346	19.1	<1	15.7	9.53	<0.04	20.4	<2	<1	51.5
20210901-PB15(PH02)@1'	<0.1	68.5	68.5	<0.001	<0.005	<0.0025	<0.0065	0.418	2.53	8.37	3.57	557	na	0.169	12.2	<1	12.1	5.98	<0.04	12.5	<2	<1	32.8
20210901-PB15(PH03)@1'	<0.1	38.7	38.7	<0.001	<0.005	<0.0025	<0.0065	0.232	1.21	8.53	3.06	324	na	0.175	10.2	<1	9.58	5.60	<0.04	11.6	<2	<1	29.9
20210901-PB15(PH04)@1'	<0.1	43.4	43.4	<0.001	<0.005	<0.0025	<0.0065	0.812	2.4	8.14	4.95	455	na	0.276	16.0	<1	17.3	7.76	<0.04	24.0	<2	<1	38.3
20210901-PB15(PH05)@1'	<0.1	69.1	69.1	<0.001	<0.005	<0.0025	<0.0065	0.508	2.59	8.21	4.16	688	na	0.176	15.8	<1	17.2	7.64	<0.04	20.0	<2	<1	38.5
20210901-PB15(PH06)@1'	<0.1	83.1	83.1	<0.001	<0.005	<0.0025	<0.0065	0.719	2.81	8.32	4.85	465	na	0.158	7.08	<1	8.43	5.5	<0.04	8.8	<2	<1	33.9
20210901-PB15(PH07)@1'	<0.1	64.2	64.2	<0.001	<0.005	<0.0025	<0.0065	0.802	2.45	8.38	4.26	471	na	0.241	13.5	<1	14.2	6.95	<0.04	18.7	<2	<1	35.5
20210901-PB15(BG)	na	na	na	na	na	na	na	1.85	6.62	7.94	3.04	na	0.332	na	<1	na	na	na	na	na	na	na	na
COGCC TABLE 910-1 RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	500 mg/kg			0.17 mg/kg	85 mg/kg	100 mg/kg	175 mg/kg	<4.0 mmhos/cm	<12 unitless	6 - 9 su	0.39 mg/kg	15000 mg/kg	2 mg/l	70 mg/kg	120000 mg/kg	23 mg/kg	3100 mg/kg	400 mg/kg	23 mg/kg	1600 mg/kg	390 mg/kg	390 mg/kg	23000 mg/kg

Notes:
Bold w/ yellow highlight - exceeds COGCC 910-1 residential soil screening level concentration

- < - less than laboratory reporting detection limit (RDL)
- COGCC - Colorado Oil and Gas Conservation Commission
- TPH-GRO - Total Petroleum Hydrocarbon-Gasoline Range Organics
- TPH-DRO - Total Petroleum Hydrocarbon-Diesel Range Organics
- mg/kg - milligrams per kilogram
- mg/L - milligrams per Liter
- mmhos/cm - millimhos per centimeter
- su - standard unit
- na - not analyzed

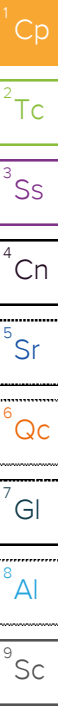
**TABLE 1 (continued) - SOIL ANALYTICAL RESULTS
PB15**



Sample Name	ORGANIC COMPOUNDS mg/kg (continued)												
	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1, 2, 3-cd)pyrene	Naphthalene	Pyrene
20210901-PB15(PH01)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH02)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH03)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH04)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH05)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH06)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(PH07)@1'	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.006
20210901-PB15(BG)	na	na	na	na	na	na	na	na	na	na	na	na	na
COGCC TABLE 910-1 RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	1000 mg/kg	1000 mg/kg	0.22 mg/kg	0.22 mg/kg	2.2 mg/kg	0.022 mg/kg	22 mg/kg	0.022 mg/kg	1000 mg/kg	1000 mg/kg	0.22 mg/kg	23 mg/kg	1000 mg/kg

Notes:
Bold w/ yellow highlight - exceeds COGCC 910-1 residential soil screening level concentration

- < - less than laboratory reporting detection limit (RDL)
- COGCC - Colorado Oil and Gas Conservation Commission
- TPH-GRO - Total Petroleum Hydrocarbon-Gasoline Range Organics
- TPH-DRO - Total Petroleum Hydrocarbon-Diesel Range Organics
- mg/kg - milligrams per kilogram
- mg/L - milligrams per Liter
- mmhos/cm - millimhos per centimeter
- su - standard unit
- na - not analyzed



Caerus Oil and Gas

Sample Delivery Group: L1399146
Samples Received: 09/03/2021
Project Number: PB15
Description: PB15

Report To: Steve Sivigliano
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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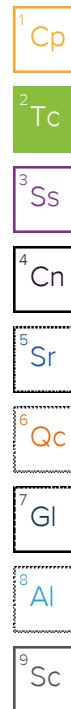


Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

PB15(PH01)@1' L1399146-01 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 11:30 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:03	09/10/21 18:03	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 13:58	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 13:58	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 08:47	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:04	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 20:08	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 05:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/12/21 01:21	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/09/21 23:30	AAT	Mt. Juliet, TN



PB15(PH02)@1' L1399146-03 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 12:00 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:06	09/10/21 18:06	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:04	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:04	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 08:50	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:42	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:07	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 20:30	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 06:08	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/12/21 02:13	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/09/21 21:29	AAT	Mt. Juliet, TN

PB15(PH03)@1' L1399146-05 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 12:30 Received date/time 09/03/21 09:30

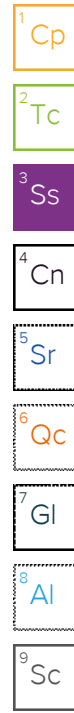
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:08	09/10/21 18:08	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:19	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:19	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 08:52	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:45	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:11	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 20:52	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 06:27	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/13/21 01:06	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/09/21 23:48	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

PB15(PH04)@1' L1399146-07 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 13:00 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:11	09/10/21 18:11	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:24	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:24	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 08:55	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:48	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:14	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 21:14	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 06:46	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/12/21 02:39	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/10/21 00:05	AAT	Mt. Juliet, TN



PB15(PH05)@1' L1399146-09 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 13:30 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:14	09/10/21 18:14	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:35	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:35	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 08:57	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:17	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 21:36	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 07:05	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/12/21 02:52	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/10/21 00:22	AAT	Mt. Juliet, TN

PB15(PH06)@1' L1399146-11 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 11:30 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:16	09/10/21 18:16	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:40	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:40	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 09:00	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:54	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:20	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 21:58	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 07:24	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737242	1	09/11/21 12:02	09/12/21 03:31	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/10/21 00:40	AAT	Mt. Juliet, TN

SAMPLE SUMMARY

PB15(PH07)@1 L1399146-13 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 12:00 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:19	09/10/21 18:19	KMG	Mt. Juliet, TN
Calculated Results	WG1735037	1	09/04/21 10:42	09/13/21 14:45	GB	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1737658	1	09/09/21 18:00	09/13/21 14:45	GB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1737446	1	09/09/21 21:00	09/09/21 22:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Mercury by Method 7471A	WG1736699	1	09/08/21 10:25	09/09/21 09:02	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1735037	1	09/04/21 10:42	09/09/21 07:57	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735038	5	09/04/21 10:44	09/05/21 23:24	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1737356	1	09/04/21 20:54	09/10/21 22:20	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1735697	1	09/04/21 20:54	09/07/21 07:44	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1737243	1	09/09/21 07:46	09/10/21 18:14	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1737585	1	09/09/21 14:52	09/10/21 00:57	AAT	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

PB15(BG) L1399146-15 Solid

Collected by Steve Sivigliano Collected date/time 09/01/21 13:00 Received date/time 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1735055	1	09/10/21 18:22	09/10/21 18:22	KMG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1738083	1	09/10/21 09:00	09/10/21 11:00	SAC	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1737152	1	09/09/21 11:00	09/09/21 15:00	BMD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1735052	1	09/07/21 15:03	09/10/21 10:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1735048	5	09/04/21 10:31	09/07/21 15:32	LAT	Mt. Juliet, TN

CASE NARRATIVE

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	0.982		1	09/10/2021 18:03	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	18.7		0.133	1.00	1	09/13/2021 13:58	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.423	<u>BJ</u>	0.255	1.00	1	09/13/2021 13:58	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.87	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-01 WG1737446: 7.87 at 23.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	578		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-01 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 08:47	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	257		0.0852	0.500	1	09/09/2021 07:33	WG1735037
Cadmium	0.346	<u>J</u>	0.0471	0.500	1	09/09/2021 07:33	WG1735037
Chromium	19.1		0.133	1.00	1	09/09/2021 07:33	WG1735037
Copper	15.7		0.400	2.00	1	09/09/2021 07:33	WG1735037
Lead	9.53		0.208	0.500	1	09/09/2021 07:33	WG1735037
Nickel	20.4		0.132	2.00	1	09/09/2021 07:33	WG1735037
Selenium	U		0.764	2.00	1	09/09/2021 07:33	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:33	WG1735037
Zinc	51.5		0.832	5.00	1	09/09/2021 07:33	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.37		0.100	1.00	5	09/05/2021 23:04	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0534	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 20:08	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.5			77.0-120		09/10/2021 20:08	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 05:49	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 05:49	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 05:49	WG1735697
Total Xylenes	U		0.000880	0.00650	1	09/07/2021 05:49	WG1735697
(S) Toluene-d8	103			75.0-131		09/07/2021 05:49	WG1735697
(S) 4-Bromofluorobenzene	85.9			67.0-138		09/07/2021 05:49	WG1735697
(S) 1,2-Dichloroethane-d4	107			70.0-130		09/07/2021 05:49	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	16.3		0.769	4.00	1	09/12/2021 01:21	WG1737242
(S) <i>o</i> -Terphenyl	72.9			18.0-148		09/12/2021 01:21	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/09/2021 23:30	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/09/2021 23:30	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/09/2021 23:30	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/09/2021 23:30	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/09/2021 23:30	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/09/2021 23:30	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/09/2021 23:30	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/09/2021 23:30	WG1737585
Chrysene	U		0.00232	0.00600	1	09/09/2021 23:30	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/09/2021 23:30	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/09/2021 23:30	WG1737585
Fluorene	U		0.00205	0.00600	1	09/09/2021 23:30	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/09/2021 23:30	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/09/2021 23:30	WG1737585
Phenanthrene	U		0.00231	0.00600	1	09/09/2021 23:30	WG1737585
Pyrene	U		0.00200	0.00600	1	09/09/2021 23:30	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 23:30	WG1737585
2-Methylnaphthalene	0.00823	<u>J</u>	0.00427	0.0200	1	09/09/2021 23:30	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/09/2021 23:30	WG1737585
(S) <i>p</i> -Terphenyl-d14	56.8			23.0-120		09/09/2021 23:30	WG1737585
(S) Nitrobenzene-d5	65.2			14.0-149		09/09/2021 23:30	WG1737585
(S) 2-Fluorobiphenyl	52.8			34.0-125		09/09/2021 23:30	WG1737585

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.53		1	09/10/2021 18:06	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	12.2		0.133	1.00	1	09/13/2021 14:04	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/13/2021 14:04	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.37	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-03 WG1737446: 8.37 at 23.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	418		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-03 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 08:50	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	557		0.0852	0.500	1	09/09/2021 07:42	WG1735037
Cadmium	0.169	<u>J</u>	0.0471	0.500	1	09/09/2021 07:42	WG1735037
Chromium	12.2		0.133	1.00	1	09/09/2021 07:42	WG1735037
Copper	12.1		0.400	2.00	1	09/09/2021 07:42	WG1735037
Lead	5.98		0.208	0.500	1	09/09/2021 07:42	WG1735037
Nickel	12.5		0.132	2.00	1	09/09/2021 07:42	WG1735037
Selenium	1.01	<u>J</u>	0.764	2.00	1	09/09/2021 07:42	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:42	WG1735037
Zinc	32.8		0.832	5.00	1	09/09/2021 07:42	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.57		0.100	1.00	5	09/05/2021 23:07	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0894	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 20:30	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.3			77.0-120		09/10/2021 20:30	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 06:08	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 06:08	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 06:08	WG1735697
Total Xylenes	0.000965	<u>J</u>	0.000880	0.00650	1	09/07/2021 06:08	WG1735697
(S) Toluene-d8	108			75.0-131		09/07/2021 06:08	WG1735697
(S) 4-Bromofluorobenzene	82.8			67.0-138		09/07/2021 06:08	WG1735697
(S) 1,2-Dichloroethane-d4	106			70.0-130		09/07/2021 06:08	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	68.5		0.769	4.00	1	09/12/2021 02:13	WG1737242
(S) <i>o</i> -Terphenyl	82.3			18.0-148		09/12/2021 02:13	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/09/2021 21:29	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/09/2021 21:29	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/09/2021 21:29	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/09/2021 21:29	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/09/2021 21:29	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/09/2021 21:29	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/09/2021 21:29	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/09/2021 21:29	WG1737585
Chrysene	U		0.00232	0.00600	1	09/09/2021 21:29	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/09/2021 21:29	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/09/2021 21:29	WG1737585
Fluorene	U		0.00205	0.00600	1	09/09/2021 21:29	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/09/2021 21:29	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/09/2021 21:29	WG1737585
Phenanthrene	0.00257	<u>J</u>	0.00231	0.00600	1	09/09/2021 21:29	WG1737585
Pyrene	0.00235	<u>J</u>	0.00200	0.00600	1	09/09/2021 21:29	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 21:29	WG1737585
2-Methylnaphthalene	0.0139	<u>J</u>	0.00427	0.0200	1	09/09/2021 21:29	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/09/2021 21:29	WG1737585
(S) <i>p</i> -Terphenyl-d14	94.5			23.0-120		09/09/2021 21:29	WG1737585
(S) Nitrobenzene-d5	91.7			14.0-149		09/09/2021 21:29	WG1737585
(S) 2-Fluorobiphenyl	78.1			34.0-125		09/09/2021 21:29	WG1737585

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	1.21		1	09/10/2021 18:08	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	10.2		0.133	1.00	1	09/13/2021 14:19	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/13/2021 14:19	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-05 WG1737446: 8.53 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	232		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-05 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 08:52	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	324		0.0852	0.500	1	09/09/2021 07:45	WG1735037
Cadmium	0.175	<u>J</u>	0.0471	0.500	1	09/09/2021 07:45	WG1735037
Chromium	10.2		0.133	1.00	1	09/09/2021 07:45	WG1735037
Copper	9.58		0.400	2.00	1	09/09/2021 07:45	WG1735037
Lead	5.60		0.208	0.500	1	09/09/2021 07:45	WG1735037
Nickel	11.6		0.132	2.00	1	09/09/2021 07:45	WG1735037
Selenium	U		0.764	2.00	1	09/09/2021 07:45	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:45	WG1735037
Zinc	29.9		0.832	5.00	1	09/09/2021 07:45	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.06		0.100	1.00	5	09/05/2021 23:11	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0763	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 20:52	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.5			77.0-120		09/10/2021 20:52	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 06:27	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 06:27	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 06:27	WG1735697
Total Xylenes	U		0.000880	0.00650	1	09/07/2021 06:27	WG1735697
(S) Toluene-d8	103			75.0-131		09/07/2021 06:27	WG1735697
(S) 4-Bromofluorobenzene	85.6			67.0-138		09/07/2021 06:27	WG1735697
(S) 1,2-Dichloroethane-d4	100			70.0-130		09/07/2021 06:27	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	38.7		0.769	4.00	1	09/13/2021 01:06	WG1737242
(S) <i>o</i> -Terphenyl	64.2			18.0-148		09/13/2021 01:06	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/09/2021 23:48	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/09/2021 23:48	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/09/2021 23:48	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/09/2021 23:48	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/09/2021 23:48	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/09/2021 23:48	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/09/2021 23:48	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/09/2021 23:48	WG1737585
Chrysene	U		0.00232	0.00600	1	09/09/2021 23:48	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/09/2021 23:48	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/09/2021 23:48	WG1737585
Fluorene	U		0.00205	0.00600	1	09/09/2021 23:48	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/09/2021 23:48	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/09/2021 23:48	WG1737585
Phenanthrene	U		0.00231	0.00600	1	09/09/2021 23:48	WG1737585
Pyrene	U		0.00200	0.00600	1	09/09/2021 23:48	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/09/2021 23:48	WG1737585
2-Methylnaphthalene	U		0.00427	0.0200	1	09/09/2021 23:48	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/09/2021 23:48	WG1737585
(S) <i>p</i> -Terphenyl-d14	91.9			23.0-120		09/09/2021 23:48	WG1737585
(S) Nitrobenzene-d5	88.1			14.0-149		09/09/2021 23:48	WG1737585
(S) 2-Fluorobiphenyl	77.9			34.0-125		09/09/2021 23:48	WG1737585

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.40		1	09/10/2021 18:11	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	16.0		0.133	1.00	1	09/13/2021 14:24	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.350	<u>BJ</u>	0.255	1.00	1	09/13/2021 14:24	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.14	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-07 WG1737446: 8.14 at 23C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	812		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-07 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 08:55	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	455		0.0852	0.500	1	09/09/2021 07:48	WG1735037
Cadmium	0.276	<u>J</u>	0.0471	0.500	1	09/09/2021 07:48	WG1735037
Chromium	16.4		0.133	1.00	1	09/09/2021 07:48	WG1735037
Copper	17.3		0.400	2.00	1	09/09/2021 07:48	WG1735037
Lead	7.76		0.208	0.500	1	09/09/2021 07:48	WG1735037
Nickel	24.0		0.132	2.00	1	09/09/2021 07:48	WG1735037
Selenium	0.830	<u>J</u>	0.764	2.00	1	09/09/2021 07:48	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:48	WG1735037
Zinc	38.3		0.832	5.00	1	09/09/2021 07:48	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.95		0.100	1.00	5	09/05/2021 23:14	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0759	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 21:14	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.8			77.0-120		09/10/2021 21:14	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 06:46	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 06:46	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 06:46	WG1735697
Total Xylenes	U		0.000880	0.00650	1	09/07/2021 06:46	WG1735697
(S) Toluene-d8	103			75.0-131		09/07/2021 06:46	WG1735697
(S) 4-Bromofluorobenzene	84.1			67.0-138		09/07/2021 06:46	WG1735697
(S) 1,2-Dichloroethane-d4	95.3			70.0-130		09/07/2021 06:46	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	43.4		0.769	4.00	1	09/12/2021 02:39	WG1737242
(S) <i>o</i> -Terphenyl	65.9			18.0-148		09/12/2021 02:39	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/10/2021 00:05	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/10/2021 00:05	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/10/2021 00:05	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/10/2021 00:05	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/10/2021 00:05	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/10/2021 00:05	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/10/2021 00:05	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/10/2021 00:05	WG1737585
Chrysene	U		0.00232	0.00600	1	09/10/2021 00:05	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/10/2021 00:05	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/10/2021 00:05	WG1737585
Fluorene	U		0.00205	0.00600	1	09/10/2021 00:05	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/10/2021 00:05	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/10/2021 00:05	WG1737585
Phenanthrene	U		0.00231	0.00600	1	09/10/2021 00:05	WG1737585
Pyrene	U		0.00200	0.00600	1	09/10/2021 00:05	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 00:05	WG1737585
2-Methylnaphthalene	0.00801	<u>J</u>	0.00427	0.0200	1	09/10/2021 00:05	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/10/2021 00:05	WG1737585
(S) <i>p</i> -Terphenyl-d14	98.1			23.0-120		09/10/2021 00:05	WG1737585
(S) Nitrobenzene-d5	94.1			14.0-149		09/10/2021 00:05	WG1737585
(S) 2-Fluorobiphenyl	81.3			34.0-125		09/10/2021 00:05	WG1737585

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.59		1	09/10/2021 18:14	WG1735055

Calculated Results

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	15.8		0.133	1.00	1	09/13/2021 14:35	WG1735037

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.320	<u>BJ</u>	0.255	1.00	1	09/13/2021 14:35	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.21	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-09 WG1737446: 8.21 at 22.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	508		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-09 WG1737152: at 25C

Mercury by Method 7471A

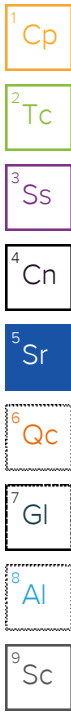
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 08:57	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	688		0.0852	0.500	1	09/09/2021 07:51	WG1735037
Cadmium	0.176	<u>J</u>	0.0471	0.500	1	09/09/2021 07:51	WG1735037
Chromium	16.1		0.133	1.00	1	09/09/2021 07:51	WG1735037
Copper	17.2		0.400	2.00	1	09/09/2021 07:51	WG1735037
Lead	7.64		0.208	0.500	1	09/09/2021 07:51	WG1735037
Nickel	20.0		0.132	2.00	1	09/09/2021 07:51	WG1735037
Selenium	U		0.764	2.00	1	09/09/2021 07:51	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:51	WG1735037
Zinc	38.5		0.832	5.00	1	09/09/2021 07:51	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.16		0.100	1.00	5	09/05/2021 23:17	WG1735038



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0826	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 21:36	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		09/10/2021 21:36	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 07:05	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 07:05	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 07:05	WG1735697
Total Xylenes	U		0.000880	0.00650	1	09/07/2021 07:05	WG1735697
(S) Toluene-d8	105			75.0-131		09/07/2021 07:05	WG1735697
(S) 4-Bromofluorobenzene	87.3			67.0-138		09/07/2021 07:05	WG1735697
(S) 1,2-Dichloroethane-d4	105			70.0-130		09/07/2021 07:05	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	69.1		0.769	4.00	1	09/12/2021 02:52	WG1737242
(S) <i>o</i> -Terphenyl	87.1			18.0-148		09/12/2021 02:52	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/10/2021 00:22	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/10/2021 00:22	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/10/2021 00:22	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/10/2021 00:22	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/10/2021 00:22	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/10/2021 00:22	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/10/2021 00:22	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/10/2021 00:22	WG1737585
Chrysene	U		0.00232	0.00600	1	09/10/2021 00:22	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/10/2021 00:22	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/10/2021 00:22	WG1737585
Fluorene	U		0.00205	0.00600	1	09/10/2021 00:22	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/10/2021 00:22	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/10/2021 00:22	WG1737585
Phenanthrene	0.00289	<u>J</u>	0.00231	0.00600	1	09/10/2021 00:22	WG1737585
Pyrene	U		0.00200	0.00600	1	09/10/2021 00:22	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 00:22	WG1737585
2-Methylnaphthalene	0.00712	<u>J</u>	0.00427	0.0200	1	09/10/2021 00:22	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/10/2021 00:22	WG1737585
(S) <i>p</i> -Terphenyl-d14	97.8			23.0-120		09/10/2021 00:22	WG1737585
(S) Nitrobenzene-d5	94.3			14.0-149		09/10/2021 00:22	WG1737585
(S) 2-Fluorobiphenyl	78.0			34.0-125		09/10/2021 00:22	WG1737585

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.81		1	09/10/2021 18:16	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	7.08		0.133	1.00	1	09/13/2021 14:40	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/13/2021 14:40	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-11 WG1737446: 8.32 at 22.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	719		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-11 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 09:00	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	465		0.0852	0.500	1	09/09/2021 07:54	WG1735037
Cadmium	0.158	<u>J</u>	0.0471	0.500	1	09/09/2021 07:54	WG1735037
Chromium	7.08		0.133	1.00	1	09/09/2021 07:54	WG1735037
Copper	8.43		0.400	2.00	1	09/09/2021 07:54	WG1735037
Lead	5.50		0.208	0.500	1	09/09/2021 07:54	WG1735037
Nickel	8.84		0.132	2.00	1	09/09/2021 07:54	WG1735037
Selenium	U		0.764	2.00	1	09/09/2021 07:54	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:54	WG1735037
Zinc	33.9		0.832	5.00	1	09/09/2021 07:54	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.85		0.100	1.00	5	09/05/2021 23:20	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0863	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 21:58	WG1737356
(S) a,a,a-Trifluorotoluene(FID)	94.3			77.0-120		09/10/2021 21:58	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 07:24	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 07:24	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 07:24	WG1735697
Total Xylenes	U		0.000880	0.00650	1	09/07/2021 07:24	WG1735697
(S) Toluene-d8	105			75.0-131		09/07/2021 07:24	WG1735697
(S) 4-Bromofluorobenzene	86.1			67.0-138		09/07/2021 07:24	WG1735697
(S) 1,2-Dichloroethane-d4	95.5			70.0-130		09/07/2021 07:24	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	83.1		0.769	4.00	1	09/12/2021 03:31	WG1737242
(S) o-Terphenyl	87.8			18.0-148		09/12/2021 03:31	WG1737242

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/10/2021 00:40	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/10/2021 00:40	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/10/2021 00:40	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/10/2021 00:40	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/10/2021 00:40	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/10/2021 00:40	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/10/2021 00:40	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/10/2021 00:40	WG1737585
Chrysene	U		0.00232	0.00600	1	09/10/2021 00:40	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/10/2021 00:40	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/10/2021 00:40	WG1737585
Fluorene	U		0.00205	0.00600	1	09/10/2021 00:40	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/10/2021 00:40	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/10/2021 00:40	WG1737585
Phenanthrene	U		0.00231	0.00600	1	09/10/2021 00:40	WG1737585
Pyrene	U		0.00200	0.00600	1	09/10/2021 00:40	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 00:40	WG1737585
2-Methylnaphthalene	0.00466	<u>J</u>	0.00427	0.0200	1	09/10/2021 00:40	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/10/2021 00:40	WG1737585
(S) p-Terphenyl-d14	101			23.0-120		09/10/2021 00:40	WG1737585
(S) Nitrobenzene-d5	97.4			14.0-149		09/10/2021 00:40	WG1737585
(S) 2-Fluorobiphenyl	81.5			34.0-125		09/10/2021 00:40	WG1737585

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.45		1	09/10/2021 18:19	WG1735055

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Chromium, Trivalent	13.5		0.133	1.00	1	09/13/2021 14:45	WG1735037

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.351	<u>BJ</u>	0.255	1.00	1	09/13/2021 14:45	WG1737658

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.38	<u>T8</u>	1	09/09/2021 22:20	WG1737446

Sample Narrative:

L1399146-13 WG1737446: 8.38 at 22.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	802		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-13 WG1737152: at 25C

Mercury by Method 7471A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Mercury	U		0.0180	0.0400	1	09/09/2021 09:02	WG1736699

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Barium	471		0.0852	0.500	1	09/09/2021 07:57	WG1735037
Cadmium	0.241	<u>J</u>	0.0471	0.500	1	09/09/2021 07:57	WG1735037
Chromium	13.9		0.133	1.00	1	09/09/2021 07:57	WG1735037
Copper	14.2		0.400	2.00	1	09/09/2021 07:57	WG1735037
Lead	6.95		0.208	0.500	1	09/09/2021 07:57	WG1735037
Nickel	18.7		0.132	2.00	1	09/09/2021 07:57	WG1735037
Selenium	U		0.764	2.00	1	09/09/2021 07:57	WG1735037
Silver	U		0.127	1.00	1	09/09/2021 07:57	WG1735037
Zinc	35.5		0.832	5.00	1	09/09/2021 07:57	WG1735037

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.26		0.100	1.00	5	09/05/2021 23:24	WG1735038

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0923	<u>B</u> <u>J</u>	0.0217	0.100	1	09/10/2021 22:20	WG1737356
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		09/10/2021 22:20	WG1737356

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/07/2021 07:44	WG1735697
Toluene	U		0.00130	0.00500	1	09/07/2021 07:44	WG1735697
Ethylbenzene	U		0.000737	0.00250	1	09/07/2021 07:44	WG1735697
Total Xylenes	0.00103	<u>J</u>	0.000880	0.00650	1	09/07/2021 07:44	WG1735697
(S) Toluene-d8	104			75.0-131		09/07/2021 07:44	WG1735697
(S) 4-Bromofluorobenzene	88.5			67.0-138		09/07/2021 07:44	WG1735697
(S) 1,2-Dichloroethane-d4	101			70.0-130		09/07/2021 07:44	WG1735697

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	64.2		0.769	4.00	1	09/10/2021 18:14	WG1737243
(S) <i>o</i> -Terphenyl	50.3			18.0-148		09/10/2021 18:14	WG1737243

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	09/10/2021 00:57	WG1737585
Acenaphthene	U		0.00209	0.00600	1	09/10/2021 00:57	WG1737585
Acenaphthylene	U		0.00216	0.00600	1	09/10/2021 00:57	WG1737585
Benzo(a)anthracene	U		0.00173	0.00600	1	09/10/2021 00:57	WG1737585
Benzo(a)pyrene	U		0.00179	0.00600	1	09/10/2021 00:57	WG1737585
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/10/2021 00:57	WG1737585
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	09/10/2021 00:57	WG1737585
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/10/2021 00:57	WG1737585
Chrysene	U		0.00232	0.00600	1	09/10/2021 00:57	WG1737585
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/10/2021 00:57	WG1737585
Fluoranthene	U		0.00227	0.00600	1	09/10/2021 00:57	WG1737585
Fluorene	U		0.00205	0.00600	1	09/10/2021 00:57	WG1737585
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/10/2021 00:57	WG1737585
Naphthalene	U		0.00408	0.0200	1	09/10/2021 00:57	WG1737585
Phenanthrene	U		0.00231	0.00600	1	09/10/2021 00:57	WG1737585
Pyrene	0.00284	<u>J</u>	0.00200	0.00600	1	09/10/2021 00:57	WG1737585
1-Methylnaphthalene	U		0.00449	0.0200	1	09/10/2021 00:57	WG1737585
2-Methylnaphthalene	U		0.00427	0.0200	1	09/10/2021 00:57	WG1737585
2-Chloronaphthalene	U		0.00466	0.0200	1	09/10/2021 00:57	WG1737585
(S) <i>p</i> -Terphenyl-d14	86.3			23.0-120		09/10/2021 00:57	WG1737585
(S) Nitrobenzene-d5	83.1			14.0-149		09/10/2021 00:57	WG1737585
(S) 2-Fluorobiphenyl	69.7			34.0-125		09/10/2021 00:57	WG1737585

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	6.62		1	09/10/2021 18:22	WG1735055

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.94	T8	1	09/10/2021 11:00	WG1738083

Sample Narrative:

L1399146-15 WG1738083: 7.94 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1850		10.0	1	09/09/2021 15:00	WG1737152

Sample Narrative:

L1399146-15 WG1737152: at 25C

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.332		0.0167	0.200	1	09/10/2021 10:36	WG1735052

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.04		0.100	1.00	5	09/07/2021 15:32	WG1735048

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3703748-1 09/13/21 13:17

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	0.280	↓	0.255	1.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1399131-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1399131-03 09/13/21 13:38 • (DUP) R3703748-3 09/13/21 13:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	U	U	1	0.000		20

L1399146-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1399146-07 09/13/21 14:24 • (DUP) R3703748-4 09/13/21 14:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	0.350	0.329	1	6.29	↓	20

Laboratory Control Sample (LCS)

(LCS) R3703748-2 09/13/21 13:22

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.93	99.3	80.0-120	

L1400190-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1400190-01 09/13/21 15:11 • (MS) R3703748-5 09/13/21 15:16 • (MSD) R3703748-6 09/13/21 15:21

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	1.20	20.7	20.7	97.4	97.6	1	75.0-125			0.284	20

L1400190-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1400190-01 09/13/21 15:11 • (MS) R3703748-7 09/13/21 15:27

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	661	1.20	638	96.6	50	75.0-125	

L1398626-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398626-01 09/09/21 22:20 • (DUP) R3702573-2 09/09/21 22:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	8.97	8.99	1	0.223		1

Sample Narrative:

OS: 8.97 at 23.2C
 DUP: 8.99 at 22.8C

L1400665-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400665-01 09/09/21 22:20 • (DUP) R3702573-3 09/09/21 22:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	6.25	6.29	1	0.638		1

Sample Narrative:

OS: 6.25 at 22.3C
 DUP: 6.29 at 21.9C

Laboratory Control Sample (LCS)

(LCS) R3702573-1 09/09/21 22:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
su	su		%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.03 at 21.2C



L1399690-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399690-01 09/10/21 11:00 • (DUP) R3702878-3 09/10/21 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.14	8.19	1	0.612		1

Sample Narrative:

OS: 8.14 at 20C

DUP: 8.19 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3702878-1 09/10/21 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.03 at 20.3C



Method Blank (MB)

(MB) R3702339-1 09/09/21 15:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1399080-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1399080-02 09/09/21 15:00 • (DUP) R3702339-3 09/09/21 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	1530	1530	1	0.327		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1399146-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1399146-07 09/09/21 15:00 • (DUP) R3702339-4 09/09/21 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	812	813	1	0.123		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3702339-2 09/09/21 15:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	899	891	99.1	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3702146-1 09/09/21 08:14

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3702146-2 09/09/21 08:16

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	0.500	0.536	107	80.0-120	

4 Cn

5 Sr

L1399626-25 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399626-25 09/09/21 08:19 • (MS) R3702146-3 09/09/21 08:21 • (MSD) R3702146-4 09/09/21 08:24

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	U	0.461	0.488	92.2	97.6	1	75.0-125			5.68	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3702241-1 09/09/21 06:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Chromium	U		0.133	1.00
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3702241-2 09/09/21 06:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	105	105	80.0-120	
Cadmium	100	99.7	99.7	80.0-120	
Chromium	100	102	102	80.0-120	
Copper	100	102	102	80.0-120	
Lead	100	102	102	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	98.7	98.7	80.0-120	
Silver	20.0	18.0	89.8	80.0-120	
Zinc	100	102	102	80.0-120	

⁷Gl

⁸Al

⁹Sc

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

(OS) • (MS) R3702241-5 09/09/21 06:43 • (MSD) R3702241-6 09/09/21 06:46

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 %
Barium	100		547	400	136	0.000	1	75.0-125	V	J3 V	31.1	20
Cadmium	100		101	101	101	101	1	75.0-125			0.432	20
Chromium	100		110	112	95.4	96.9	1	75.0-125			1.35	20
Copper	100		113	115	101	103	1	75.0-125			1.15	20
Lead	100		113	113	104	105	1	75.0-125			0.762	20
Nickel	100		122	123	106	107	1	75.0-125			0.813	20
Selenium	100		100	101	100	101	1	75.0-125			0.891	20
Silver	20.0		19.0	19.0	94.9	95.2	1	75.0-125			0.358	20
Zinc	100		119	125	85.9	91.0	1	75.0-125			4.21	20

Method Blank (MB)

(MB) R3702812-1 09/10/21 10:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3702812-2 09/10/21 10:06 • (LCSD) R3702812-3 09/10/21 10:09

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 %
Hot Water Sol. Boron	1.00	1.00	1.01	100	101	80.0-120			0.774	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3700641-1 09/05/21 21:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3700641-2 09/05/21 21:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	92.0	92.0	80.0-120	

⁴Cn

⁵Sr

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

(OS) • (MS) R3700641-5 09/05/21 21:52 • (MSD) R3700641-6 09/05/21 21:55

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		97.2	97.0	90.9	90.7	5	75.0-125			0.170	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3701263-1 09/07/21 13:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3701263-2 09/07/21 13:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.3	97.3	80.0-120	

4 Cn

5 Sr

L1399171-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399171-01 09/07/21 13:43 • (MS) R3701263-5 09/07/21 13:53 • (MSD) R3701263-6 09/07/21 13:56

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	2.23	95.5	98.2	93.3	95.9	5	75.0-125			2.76	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3703146-2 09/10/21 16:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0273	↓	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3703146-1 09/10/21 15:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.28	96.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			104	77.0-120	

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

(OS) • (MS) R3703146-3 09/11/21 00:32 • (MSD) R3703146-4 09/11/21 00:54

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 %
TPH (GC/FID) Low Fraction	5.50		5.07	3.91	81.6	60.5	1	10.0-151			25.8	28
(S) a,a,a-Trifluorotoluene(FID)					112	113		77.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3703219-3 09/07/21 03:37

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
(S) Toluene-d8	95.3			75.0-131
(S) 4-Bromofluorobenzene	87.1			67.0-138
(S) 1,2-Dichloroethane-d4	97.5			70.0-130

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

(LCS) R3703219-1 09/07/21 02:21 • (LCSD) R3703219-2 09/07/21 02:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.122	0.123	97.6	98.4	70.0-123			0.816	20
Ethylbenzene	0.125	0.118	0.118	94.4	94.4	74.0-126			0.000	20
Toluene	0.125	0.121	0.123	96.8	98.4	75.0-121			1.64	20
Xylenes, Total	0.375	0.339	0.338	90.4	90.1	72.0-127			0.295	20
(S) Toluene-d8				99.7	101	75.0-131				
(S) 4-Bromofluorobenzene				94.9	95.1	67.0-138				
(S) 1,2-Dichloroethane-d4				95.8	98.0	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) R3703278-1 09/11/21 23:35

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>	82.9			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3703278-2 09/11/21 23:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	45.9	91.8	50.0-150	
<i>(S) o-Terphenyl</i>			85.0	18.0-148	

L1399146-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399146-09 09/12/21 02:52 • (MS) R3703278-3 09/12/21 03:05 • (MSD) R3703278-4 09/12/21 03:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	49.7	69.1	111	97.1	84.3	56.3	1	50.0-150			13.4	20
<i>(S) o-Terphenyl</i>					88.7	87.8		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) R3702795-3 09/10/21 10:53

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>	64.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3702795-4 09/10/21 11:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	39.5	79.0	50.0-150	
<i>(S) o-Terphenyl</i>			62.8	18.0-148	

L1399177-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399177-01 09/10/21 07:14 • (MS) R3702795-1 09/10/21 07:28 • (MSD) R3702795-2 09/10/21 07:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	50.0	3.24	37.6	33.5	68.7	60.5	1	50.0-150			11.5	20
<i>(S) o-Terphenyl</i>					54.7	48.6		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) R3702861-2 09/09/21 21:12

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	94.5			14.0-149
(S) 2-Fluorobiphenyl	86.1			34.0-125
(S) p-Terphenyl-d14	110			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) R3702861-1 09/09/21 20:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0720	90.0	50.0-126	
Acenaphthene	0.0800	0.0698	87.3	50.0-120	
Acenaphthylene	0.0800	0.0746	93.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0707	88.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0625	78.1	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0676	84.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0641	80.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0681	85.1	49.0-125	
Chrysene	0.0800	0.0698	87.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0649	81.1	47.0-125	
Fluoranthene	0.0800	0.0677	84.6	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3702861-1 09/09/21 20:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0671	83.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0655	81.9	46.0-125	
Naphthalene	0.0800	0.0681	85.1	50.0-120	
Phenanthrene	0.0800	0.0701	87.6	47.0-120	
Pyrene	0.0800	0.0740	92.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0649	81.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0631	78.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0670	83.8	50.0-120	
<i>(S) Nitrobenzene-d5</i>			100	14.0-149	
<i>(S) 2-Fluorobiphenyl</i>			87.2	34.0-125	
<i>(S) p-Terphenyl-d14</i>			109	23.0-120	

L1399146-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1399146-03 09/09/21 21:29 • (MS) R3702861-3 09/09/21 21:46 • (MSD) R3702861-4 09/09/21 22:04

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	0.0796	U	0.0707	0.0643	88.8	80.8	1	10.0-145			9.48	30
Acenaphthene	0.0796	U	0.0659	0.0625	82.8	78.5	1	14.0-127			5.30	27
Acenaphthylene	0.0796	U	0.0714	0.0687	89.7	86.3	1	21.0-124			3.85	25
Benzo(a)anthracene	0.0796	U	0.0720	0.0645	90.5	81.0	1	10.0-139			11.0	30
Benzo(a)pyrene	0.0796	U	0.0687	0.0622	86.3	78.1	1	10.0-141			9.93	31
Benzo(b)fluoranthene	0.0796	U	0.0620	0.0558	77.9	70.1	1	10.0-140			10.5	36
Benzo(g,h,i)perylene	0.0796	U	0.0594	0.0547	74.6	68.7	1	10.0-140			8.24	33
Benzo(k)fluoranthene	0.0796	U	0.0596	0.0555	74.9	69.7	1	10.0-137			7.12	31
Chrysene	0.0796	U	0.0682	0.0618	85.7	77.6	1	10.0-145			9.85	30
Dibenz(a,h)anthracene	0.0796	U	0.0596	0.0555	74.9	69.7	1	10.0-132			7.12	31
Fluoranthene	0.0796	U	0.0704	0.0595	88.4	74.7	1	10.0-153			16.8	33
Fluorene	0.0796	U	0.0638	0.0611	80.2	76.8	1	11.0-130			4.32	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0625	0.0573	78.5	72.0	1	10.0-137			8.68	32
Naphthalene	0.0796	U	0.0645	0.0627	81.0	78.8	1	10.0-135			2.83	27
Phenanthrene	0.0796	0.00257	0.0750	0.0615	91.0	74.0	1	10.0-144			19.8	31
Pyrene	0.0796	0.00235	0.0724	0.0634	88.0	76.7	1	10.0-148			13.3	35
1-Methylnaphthalene	0.0796	U	0.0642	0.0603	80.7	75.8	1	10.0-142			6.27	28
2-Methylnaphthalene	0.0796	0.0139	0.0638	0.0597	62.7	57.5	1	10.0-137			6.64	28
2-Chloronaphthalene	0.0796	U	0.0620	0.0599	77.9	75.3	1	29.0-120			3.45	24
<i>(S) Nitrobenzene-d5</i>					98.7	89.3		14.0-149				
<i>(S) 2-Fluorobiphenyl</i>					81.1	75.9		34.0-125				
<i>(S) p-Terphenyl-d14</i>					98.1	91.3		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

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.
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.
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.
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

ACCREDITATIONS & LOCATIONS

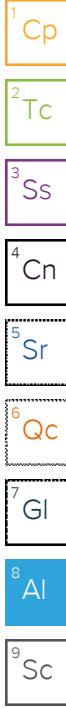
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
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}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.





CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or
MTJL Log-in Number Here

C106

ALL SHADED AREAS are for LAB USE ONLY

Company: **Campos EPC** Billing information: **Caerus Operating LLC**
 Address: **1401 Blake St. Denver, CO 80202** Account: **CAERUSPCO**
 Report To: **Steve Sivigliano** Email To: **steve.sivigliano@camposepc.com**
 Copy To: **Evan Mason - evan.mason@camposepc.com** Site Collection Info/Address:

Container Preservative Type ** Lab Project Manager:
 ** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number: **PB15** State: **CO** County/City: **/Garfield** Time Zone Collected: **[] PT [x] MT [] CT [] ET**
 Phone: **970-619-0602** Site/Facility ID #: **PB15** Compliance Monitoring? **[] Yes [] No**
 Email: **steve.sivigliano@camposepc.com** Purchase Order #: **Quote #:** DW PWS ID #: **DW Location Code:**
 Collected By (print): **Steve Sivigliano** Turnaround Date Required: **Standard** Immediately Packed on Ice: **[x] Yes [] No**
 Collected By (signature): *Steve Sivigliano* Rush: **[] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [x] 5 Day** Field Filtered (if applicable): **[] Yes [] No**
 Sample Disposal: **[x] Dispose as appropriate [] Return [] Archive [] Hold** (Expedite Charges Apply) Analysis:

Analyses Lab Profile/Line:
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N NA
 Custody Signatures Present Y N NA
 Collector Signature Present Y N NA
 Bottles Intact Y N NA
 Correct Boxes Y N NA
 Sufficient Volume Y N NA
 Samples Received on Ice Y N NA
 IGA - Headspace Acceptable Y N NA
 USDA Regulated Soils Y N NA
 Samples in Holding Time Y N NA
 Residual Chlorine Present Y N NA
 Cl Strips: Y N NA
 Sample pH Acceptable Y N NA
 pH Strips: Y N NA
 Sulfide Present Y N NA
 Lead Acetate Strips: Y N NA

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20210901-PB15(PH01)@1'	SL	G	9/1/21	1130				3
20210901-PB15(PH01)@2'	SL	G	9/1/21	1145				3
20210901-PB15(PH02)@1'	SL	G	9/1/21	1200				3
20210901-PB15(PH02)@2'	SL	G	9/1/21	1215				3
20210901-PB15(PH03)@1'	SL	G	9/1/21	1230				3
20210901-PB15(PH03)@2'	SL	G	9/1/21	1245				3
20210901-PB15(PH04)@1'	SL	G	9/1/21	1300				3
20210901-PB15(PH04)@2'	SL	G	9/1/21	1315				3
20210901-PB15(PH05)@1'	SL	G	9/1/21	1330				3
20210901-PB15(PH05)@2'	SL	G	9/1/21	1345				3

LAB USE ONLY:
 Lab Sample # / Comments: **L13M146**

Hold	-01
Hold	-02
Hold	-03
Hold	-04
Hold	-05
Hold	-06
Hold	-07
Hold	-08
Hold	-09
Hold	-10

Customer Remarks / Special Conditions / Possible Hazards: Type of Ice Used: **Wet** Blue Dry None
 Packing Material Used: Radchem sample(s) screened (<500 cpm): **Y N NA**

SHORT HOLDS PRESENT (<72 hours): **Y N NA**
 Lab Tracking #: **5016 1232 3021/3000**
 Samples received via: **FEDEx UPS Client Courier Pace Courier**

Relinquished by/Company: (Signature) *Steve Sivigliano* Date/Time: **9/2/21**
 Relinquished by/Company: (Signature) *[Signature]* Date/Time: **9/2/21 1506**
 Relinquished by/Company: (Signature) *[Signature]* Date/Time: **9/3/21 9:30 PM**

Lab Sample Temperature Info:
 Temp Blank Received: **Y N NA**
 Therm ID#: **AGA**
 Cooler 1 Temp Upon Receipt: **21.9°C**
 Cooler 1 Therm Corr. Factor: **0.0**
 Cooler 1 Corrected Temp: **21.9°C**
 Comments: **0.11.12.2**
 Trip Blank Received: **Y N NA**
 HCL MeOH TSP Other
 Non-Conformance(s): Page: **1 of 2**



CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTL Log-In Number Here

Company: Campos EPC

Billing Information: Caerus Operating LLC Account: CAERUSPCO

Address: 1401 Blake St. Denver, CO 80202

Report To: Steve Sivigliano

Email To: steve.sivigliano@camposepc.com

Copy To: Evan Mason - evan.mason@camposepc.com

Site Collection Info/Address:

Customer Project Name/Number: PB15

State: CO /Garfield County/City: Time Zone Collected: [] PT [x] MT [] CT [] ET

Phone: 570-619-0500 Email: steve.sivigliano@camposepc.com

Site/Facility ID #: PB15

Compliance Monitoring? [] Yes [] No

Collected By (print): Steve Sivigliano

Purchase Order #: Quote #:

DW PWS ID #: DW Location Code:

Collected By (signature): [Signature]

Turnaround Date Required: Standard

Immediately Packed on Ice: [x] Yes [] No

Sample Disposal: [x] Dispose as appropriate [] Return [] Archive [] Hold

Rush: [] Same Day [] Next Day [] 2 Day [] 3 Day [] 4 Day [x] 5 Day

Field Filtered (if applicable): [] Yes [] No Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Table with columns: Customer Sample ID, Matrix, Comp / Grab, Collected (or Composite Start) Date/Time, Composite End Date/Time, Res Cl, # of Ctns. Contains 5 rows of sample data.

COGCC TABLE 315.1 (Full line)

EC, SAR, pH, Arsenic, Boron (not water soluble)

Container Preservative Type **

Lab Project Manager:

Analyses

Lab Profile/Line:

- Lab Sample Receipt Checklist: Custody Seals Present/Intact, Custody Signatures Present, Collector Signatures Present, Bottles Intact, Correct Bottles, Sufficient Volume, Samples Received on Ice, VOA - Headspace Acceptable, USDA Regulated Soils, Samples in Holding Time, Residual Chlorine Present, Cl Strips, Sample pH Acceptable, pH Strips, Sulfide Present, Lead Acetate Strips.

LAB USE ONLY: Lab Sample # / Comments:

Handwritten notes: U399146, -11, -12, -13, -14, -15

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: [x] Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y [] N [x] N/A

Lab Sample Temperature Info:

Packing Material Used:

Lab Tracking #:

Temp Blank Received: Y [] N [x] NA

Radchem sample(s) screened (<500 cpm): Y [] N [x] NA

Samples received via: FEDEX UPS Client Courier Pace Courier

Cooler 1 Temp Upon Receipt: 26.9C

Relinquished by/Company: (Signature) [Signature]

Date/Time: 9/2/21 1:00

Received by/Company: (Signature) [Signature]

Date/Time: 9-2-21 1:30

MTL LAB USE ONLY Table #:

Comments: 11/1-12

Relinquished by/Company: (Signature) [Signature]

Date/Time: 9/2/21 1:50

Received by/Company: (Signature) [Signature]

Date/Time:

Template: Prelogin:

Trip Blank Received: Y [] N [x] NA

Relinquished by/Company: (Signature) [Signature]

Date/Time:

Received by/Company: (Signature) [Signature]

Date/Time: 9/3/21 9:30

PM: PB:

Non Conformance(s): YES [] NO [x] Page: 2 of 2



**ENVIRONMENTAL COMPLIANCE GROUP
- FIELD SAMPLING DATA FORM -**

Document No:
Revised By - Date:
C. Hines - 06/25/2010
Reviewed By - Date:
Approved By - Date:

General Information

Document purpose: this form is intended to document multiple samples collected from different media, at one facility location in support of the Site Clearance Program.

Naming convention: is important to support the identification of the location, sampling area and media at the location, and date it was sampled (Location - Cardinal Direction and Media Type - Date). Include cardinal direction if multiple samples are collected from the same sampling media wherever possible (i.e. "N9W - NW Background - 022610" vs. "N9W - SW Background - 022610").

Sampler: Blair Rollins		Location: PE 15		Date of Sample: 07/01/10			
Sample ID:	PE 15 - SW Back - 070110	Time of Sample:	1420	Lat (WGS 84):	Long (WGS 84):	No. of containers:	1
	PE 15 - NW Back - 070110		1430				3
	PE 15 - Cuttings - 070110		1515				3

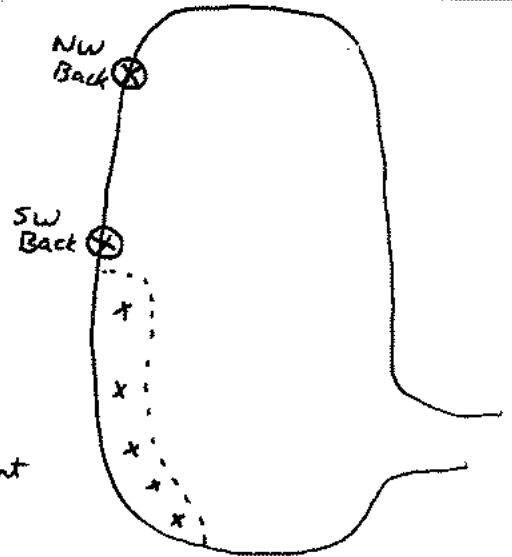
Procedural Directions:

1. Take photos of location and sampled media.
2. Take GPS point(s) of sample locations, including composite points.
3. Prepare site sketch below (Include sample locations, media dimensions, other waste not previously identified, estimated volumes of all waste on location, and color and texture of all waste on location).

Site Sketch:

⊗ Background samples taken from west cut slope comprised of native cobbly material.
 - NW Back from 8-12" deep, light brown
 - SW Back from 6-10" deep, light brown

X Composite cuttings sample collected from cuttings pile. Cuttings were light brown/grey (dry) and brown when damp. Most of cuttings were dried and very compacted. Cuttings comprised of small amount of wood chips, cobbles, and boulders present.



Waypoints taken on GPS to be downloaded
 Photos taken, put on server under file structure

Follow Up Procedures

1. Create "FieldData" folder within appropriate Site folder in the Site Clearance directory in ECG group folder (i.e. Location - FieldData).
2. Scan document to PDF and save in sampling field notes folder.
3. Create photos folder within FieldData folder and insert all photos taken during sampling event.
4. Provide GPS unit to Chris Hines or Blair Rollins for data download.



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Est. 1970

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Report Summary

Wednesday July 14, 2010

Report Number: L467261

Samples Received: 07/02/10

Client Project:

Description: PI15 Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

July 14, 2010

Chris Hines
EnCana Oil & Gas Inc. - CO
2717 County Road 215, Suite 100
Parachute, CO 81635

Date Received : July 02, 2010
Description : PI15 Cuttings
Sample ID : PI15-SW BACK 070110
Collected By : Blair Rollins
Collection Date : 07/01/10 14:20

ESC Sample # : L467261-01

Site ID : RANGELY

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.5	1.0	mg/kg	6010B	07/12/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/14/10 12:05 Printed: 07/14/10 12:06



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REPORT OF ANALYSIS

July 14, 2010

Chris Hines
 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

ESC Sample # : L467261-02

Date Received : July 02, 2010
 Description : PI15 Cuttings

Site ID : RANGELY

Sample ID : PI15-NW BACK 070110

Project # :

Collected By : Blair Rollins
 Collection Date : 07/01/10 14:30

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/07/10	1
Chromium,Trivalent	25.	0.50	mg/kg	Calc.	07/13/10	1
ORP	120		mV	2580	07/13/10	1
pH	8.8		su	9045D	07/07/10	1
Sodium Adsorption Ratio	1.1			Calc.	07/07/10	1
Specific Conductance	150		umhos/cm	9050AMod	07/13/10	1
Mercury	0.061	0.020	mg/kg	7471	07/05/10	1
Arsenic	4.9	1.0	mg/kg	6010B	07/13/10	1
Barium	240	0.25	mg/kg	6010B	07/13/10	1
Cadmium	BDL	0.25	mg/kg	6010B	07/13/10	1
Chromium	25.	0.50	mg/kg	6010B	07/13/10	1
Copper	23.	1.0	mg/kg	6010B	07/13/10	1
Lead	10.	0.25	mg/kg	6010B	07/13/10	1
Nickel	38.	1.0	mg/kg	6010B	07/13/10	1
Selenium	10.	1.0	mg/kg	6010B	07/13/10	1
Silver	BDL	0.50	mg/kg	6010B	07/13/10	1
Zinc	44.	1.5	mg/kg	6010B	07/13/10	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/07/10	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/07/10	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/07/10	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/07/10	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/07/10	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	99.1		% Rec.	8021/8015	07/07/10	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	07/07/10	5
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	3546/DRO	07/06/10	1
Surrogate recovery(%)						
o-Terphenyl	78.2		% Rec.	3546/DRO	07/06/10	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 L467261-02 (PH) - 8.8@23.2c



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REPORT OF ANALYSIS

July 14, 2010

Chris Hines
 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

Date Received : July 02, 2010
 Description : PI15 Cuttings
 Sample ID : PI15-NW BACK 070110
 Collected By : Blair Rollins
 Collection Date : 07/01/10 14:30

ESC Sample # : L467261-02
 Site ID : RANGELY
 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Naphthalene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Phenanthrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
1-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
2-Methylnaphthalene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Surrogate Recovery						
Nitrobenzene-d5	61.6		% Rec.	8270C-SIM	07/09/10	1
2-Fluorobiphenyl	60.5		% Rec.	8270C-SIM	07/09/10	1
p-Terphenyl-d14	72.7		% Rec.	8270C-SIM	07/09/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/14/10 12:05 Printed: 07/14/10 12:06
 L467261-02 (PH) - 8.8@23.2c



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REPORT OF ANALYSIS

July 14, 2010

Chris Hines
 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

ESC Sample # : L467261-03

Date Received : July 02, 2010
 Description : PI15 Cuttings

Site ID : RANGELY

Sample ID : PI15-CUTTINGS 070110

Project # :

Collected By : Blair Rollins
 Collection Date : 07/01/10 15:15

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium,Hexavalent	BDL	2.0	mg/kg	3060A/7196A	07/07/10	1
Chromium,Trivalent	29.	0.50	mg/kg	Calc.	07/13/10	1
ORP	110		mV	2580	07/13/10	1
pH	8.6		su	9045D	07/07/10	1
Sodium Adsorption Ratio	12.			Calc.	07/07/10	1
Specific Conductance	1300		umhos/cm	9050AMod	07/13/10	1
Mercury	0.051	0.020	mg/kg	7471	07/05/10	1
Arsenic	2.8	1.0	mg/kg	6010B	07/13/10	1
Barium	3200	0.25	mg/kg	6010B	07/13/10	1
Cadmium	BDL	0.25	mg/kg	6010B	07/13/10	1
Chromium	29.	0.50	mg/kg	6010B	07/13/10	1
Copper	23.	1.0	mg/kg	6010B	07/13/10	1
Lead	15.	0.25	mg/kg	6010B	07/13/10	1
Nickel	30.	1.0	mg/kg	6010B	07/13/10	1
Selenium	9.8	1.0	mg/kg	6010B	07/13/10	1
Silver	BDL	0.50	mg/kg	6010B	07/13/10	1
Zinc	52.	1.5	mg/kg	6010B	07/13/10	1
Benzene	BDL	0.0025	mg/kg	8021/8015	07/07/10	5
Toluene	BDL	0.025	mg/kg	8021/8015	07/07/10	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	07/07/10	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	07/07/10	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	07/07/10	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.3		% Rec.	8021/8015	07/07/10	5
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	07/07/10	5
TPH (GC/FID) High Fraction	100	4.0	mg/kg	3546/DRO	07/06/10	1
Surrogate recovery(%)						
o-Terphenyl	62.5		% Rec.	3546/DRO	07/06/10	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.029	0.0060	mg/kg	8270C-SIM	07/09/10	1
Acenaphthene	0.0097	0.0060	mg/kg	8270C-SIM	07/09/10	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(a)anthracene	0.0066	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1

BDL - Below Detection Limit
 Det. Limit - Practical Quantitation Limit(PQL)
 L467261-03 (PH) - 8.6@23.4c



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REPORT OF ANALYSIS

July 14, 2010

Chris Hines
 EnCana Oil & Gas Inc. - CO
 2717 County Road 215, Suite 100
 Parachute, CO 81635

Date Received : July 02, 2010
 Description : PI15 Cuttings
 Sample ID : PI15-CUTTINGS 070110
 Collected By : Blair Rollins
 Collection Date : 07/01/10 15:15

ESC Sample # : L467261-03
 Site ID : RANGELY
 Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Chrysene	0.0099	0.0060	mg/kg	8270C-SIM	07/09/10	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Fluoranthene	0.0061	0.0060	mg/kg	8270C-SIM	07/09/10	1
Fluorene	0.036	0.0060	mg/kg	8270C-SIM	07/09/10	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Naphthalene	0.071	0.0060	mg/kg	8270C-SIM	07/09/10	1
Phenanthrene	0.057	0.0060	mg/kg	8270C-SIM	07/09/10	1
Pyrene	0.013	0.0060	mg/kg	8270C-SIM	07/09/10	1
1-Methylnaphthalene	0.055	0.0060	mg/kg	8270C-SIM	07/09/10	1
2-Methylnaphthalene	0.19	0.0060	mg/kg	8270C-SIM	07/09/10	1
2-Chloronaphthalene	BDL	0.0060	mg/kg	8270C-SIM	07/09/10	1
Surrogate Recovery						
Nitrobenzene-d5	113.		% Rec.	8270C-SIM	07/09/10	1
2-Fluorobiphenyl	73.0		% Rec.	8270C-SIM	07/09/10	1
p-Terphenyl-d14	79.1		% Rec.	8270C-SIM	07/09/10	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 07/14/10 12:05 Printed: 07/14/10 12:06
 L467261-03 (PH) - 8.6@23.4c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L467261-02	WG486918	SAMP	Naphthalene	R1281308	J3
	WG486918	SAMP	1-Methylnaphthalene	R1281308	J3
	WG486918	SAMP	2-Methylnaphthalene	R1281308	J5J3

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
07/14/10 at 12:06:20

TSR Signing Reports: 358

Sample: L467261-01 Account: ENCANACO Received: 07/02/10 09:00 Due Date: 07/12/10 00:00 RPT Date: 07/14/10 12:05

Sample: L467261-02 Account: ENCANACO Received: 07/02/10 09:00 Due Date: 07/12/10 00:00 RPT Date: 07/14/10 12:05

Sample: L467261-03 Account: ENCANACO Received: 07/02/10 09:00 Due Date: 07/12/10 00:00 RPT Date: 07/14/10 12:05



YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
 Chris Hines
 2717 County Road 215, Suite 100
 Parachute, CO 81635

Quality Assurance Report
 Level II

L467261

12065 Lebanon Rd.
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 (615) 758-5858
 1-800-767-5859
 Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 14, 2010

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG486803	07/03/10 20:56
TPH (GC/FID) High Fraction	< 4	ppm			WG486860	07/06/10 00:16
o-Terphenyl		% Rec.	91.62	50-150	WG486860	07/06/10 00:16
Chromium, Hexavalent	< 2	mg/kg			WG486722	07/07/10 17:01
pH	5.30	su			WG486856	07/07/10 14:03
1-Methylnaphthalene	< .006	mg/kg			WG486918	07/09/10 10:52
2-Chloronaphthalene	< .006	mg/kg			WG486918	07/09/10 10:52
2-Methylnaphthalene	< .006	mg/kg			WG486918	07/09/10 10:52
Acenaphthene	< .006	mg/kg			WG486918	07/09/10 10:52
Acenaphthylene	< .006	mg/kg			WG486918	07/09/10 10:52
Anthracene	< .006	mg/kg			WG486918	07/09/10 10:52
Benzo(a)anthracene	< .006	mg/kg			WG486918	07/09/10 10:52
Benzo(a)pyrene	< .006	mg/kg			WG486918	07/09/10 10:52
Benzo(b)fluoranthene	< .006	mg/kg			WG486918	07/09/10 10:52
Benzo(g,h,i)perylene	< .006	mg/kg			WG486918	07/09/10 10:52
Benzo(k)fluoranthene	< .006	mg/kg			WG486918	07/09/10 10:52
Chrysene	< .006	mg/kg			WG486918	07/09/10 10:52
Dibenz(a,h)anthracene	< .006	mg/kg			WG486918	07/09/10 10:52
Fluoranthene	< .006	mg/kg			WG486918	07/09/10 10:52
Fluorene	< .006	mg/kg			WG486918	07/09/10 10:52
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG486918	07/09/10 10:52
Naphthalene	< .006	mg/kg			WG486918	07/09/10 10:52
Phenanthrene	< .006	mg/kg			WG486918	07/09/10 10:52
Pyrene	< .006	mg/kg			WG486918	07/09/10 10:52
2-Fluorobiphenyl		% Rec.	89.12	21-120	WG486918	07/09/10 10:52
Nitrobenzene-d5		% Rec.	90.37	33-114	WG486918	07/09/10 10:52
p-Terphenyl-d14		% Rec.	112.2	18-142	WG486918	07/09/10 10:52
Benzene	< .0005	mg/kg			WG487271	07/07/10 18:54
Ethylbenzene	< .0005	mg/kg			WG487271	07/07/10 18:54
Toluene	< .005	mg/kg			WG487271	07/07/10 18:54
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG487271	07/07/10 18:54
Total Xylene	< .0015	mg/kg			WG487271	07/07/10 18:54
a,a,a-Trifluorotoluene(FID)		% Rec.	99.22	59-128	WG487271	07/07/10 18:54
a,a,a-Trifluorotoluene(PID)		% Rec.	102.7	54-144	WG487271	07/07/10 18:54
Arsenic	< 1	mg/kg			WG487234	07/12/10 22:06
Barium	< .25	mg/kg			WG487234	07/12/10 22:06
Cadmium	< .25	mg/kg			WG487234	07/12/10 22:06
Chromium	< .5	mg/kg			WG487234	07/12/10 22:06
Copper	< 1	mg/kg			WG487234	07/12/10 22:06
Lead	< .25	mg/kg			WG487234	07/12/10 22:06
Nickel	< 1	mg/kg			WG487234	07/12/10 22:06
Selenium	< 1	mg/kg			WG487234	07/12/10 22:06
Silver	< .5	mg/kg			WG487234	07/12/10 22:06
Specific Conductance	1.10	umhos/cm			WG487763	07/13/10 08:40

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Tax I.D. 62-0814289

Est. 1970

July 14, 2010

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Zinc	< 1.5	mg/kg			WG487234	07/13/10 22:00

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Mercury	mg/kg	0	0	0	20	L467379-01	WG486803
Chromium, Hexavalent	mg/kg	0	0	0	20	L467207-11	WG486722
Chromium, Hexavalent	mg/kg	0	0	0	20	L467207-01	WG486722
pH	su	9.90	9.90	0	1	L467244-01	WG486856
pH	su	5.80	5.80	0	1	L467393-01	WG486856
Arsenic	mg/kg	4.20	4.50	7.85	20	L467261-01	WG487234
Barium	mg/kg	320.	334.	3.35	20	L467261-01	WG487234
Cadmium	mg/kg	0	0.173	NA	20	L467261-01	WG487234
Chromium	mg/kg	24.0	25.0	2.84	20	L467261-01	WG487234
Copper	mg/kg	22.0	22.2	0.451	20	L467261-01	WG487234
Lead	mg/kg	12.0	12.2	0.823	20	L467261-01	WG487234
Nickel	mg/kg	32.0	31.0	3.17	20	L467261-01	WG487234
Selenium	mg/kg	9.00	8.73	3.49	20	L467261-01	WG487234
Silver	mg/kg	0	0	0	20	L467261-01	WG487234
Specific Conductance	umhos/cm	220.	220.	0.456	20	L467873-02	WG487763
Specific Conductance	umhos/cm	3300	3300	0	20	L468098-01	WG487763
ORP	mV	110.	110.	0	20	L467261-03	WG487357
ORP	mV	140.	140.	2.82	20	L467169-07	WG487184
ORP	mV	120.	110.	11.2	20	L467207-06	WG487184

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	8.77	9.57	109.	71.6-127.7	WG486803
TPH (GC/FID) High Fraction o-Terphenyl	ppm	60	42.6	71.1 88.99	50-150 50-150	WG486860 WG486860
Chromium, Hexavalent	mg/kg	100	93.7	93.7	50-143	WG486722
pH	su	9.36	9.40	100.	98.9-102.0	WG486856
1-Methylnaphthalene	mg/kg	.033	0.0260	78.9	41-110	WG486918
2-Chloronaphthalene	mg/kg	.033	0.0281	85.3	43-109	WG486918
2-Methylnaphthalene	mg/kg	.033	0.0262	79.5	38-104	WG486918
Acenaphthene	mg/kg	.033	0.0273	82.7	48-103	WG486918
Acenaphthylene	mg/kg	.033	0.0264	79.9	43-106	WG486918

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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Anthracene	mg/kg	.033	0.0284	85.9	51-110	WG486918
Benzo(a)anthracene	mg/kg	.033	0.0288	87.2	38-126	WG486918
Benzo(a)pyrene	mg/kg	.033	0.0283	85.9	47-118	WG486918
Benzo(b)fluoranthene	mg/kg	.033	0.0314	95.2	47-118	WG486918
Benzo(g,h,i)perylene	mg/kg	.033	0.0281	85.3	40-125	WG486918
Benzo(k)fluoranthene	mg/kg	.033	0.0285	86.3	45-121	WG486918
Chrysene	mg/kg	.033	0.0288	87.4	35-135	WG486918
Dibenz(a,h)anthracene	mg/kg	.033	0.0290	87.9	41-124	WG486918
Fluoranthene	mg/kg	.033	0.0317	96.0	50-114	WG486918
Fluorene	mg/kg	.033	0.0300	90.8	49-109	WG486918
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0290	88.0	40-126	WG486918
Naphthalene	mg/kg	.033	0.0240	72.7	36-100	WG486918
Phenanthrene	mg/kg	.033	0.0271	82.2	46-108	WG486918
Pyrene	mg/kg	.033	0.0319	96.6	30-136	WG486918
2-Fluorobiphenyl				86.35	21-120	WG486918
Nitrobenzene-d5				81.78	33-114	WG486918
p-Terphenyl-d14				117.0	18-142	WG486918
Benzene	mg/kg	.05	0.0459	91.8	76-113	WG487271
Ethylbenzene	mg/kg	.05	0.0497	99.4	78-115	WG487271
Toluene	mg/kg	.05	0.0501	100.	76-114	WG487271
Total Xylene	mg/kg	.15	0.155	103.	81-118	WG487271
a,a,a-Trifluorotoluene(FID)				98.37	59-128	WG487271
a,a,a-Trifluorotoluene(PID)				100.3	54-144	WG487271
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.69	103.	67-135	WG487271
a,a,a-Trifluorotoluene(FID)				94.69	59-128	WG487271
a,a,a-Trifluorotoluene(PID)				104.2	54-144	WG487271
Arsenic	mg/kg	192	180.	93.8	78.6-120.8	WG487234
Barium	mg/kg	420	407.	96.9	78.8-121.4	WG487234
Cadmium	mg/kg	70.1	63.9	91.2	78.5-121.5	WG487234
Chromium	mg/kg	168	172.	102.	80.4-120.2	WG487234
Copper	mg/kg	122	121.	99.2	81.6-119.7	WG487234
Lead	mg/kg	113	112.	99.1	77.3-122.1	WG487234
Nickel	mg/kg	74.1	73.5	99.2	78.8-121.2	WG487234
Selenium	mg/kg	176	182.	103.	75.6-125.0	WG487234
Silver	mg/kg	115	105.	91.3	66-133.9	WG487234
Specific Conductance	umhos/cm	406	410.	101.	85-115	WG487763
ORP	mV	229	220.	96.1	95.6-104.37	WG487357
ORP	mV	229	220.	96.1	95.6-104.37	WG487184
Zinc	mg/kg	437	417.	95.4	78.5-121.7	WG487234

Analyte	Units	Laboratory Control Sample Duplicate		Limit	RPD	Limit	Batch
		Result	Ref				
TPH (GC/FID) High Fraction	ppm	43.8	42.6	73.0	50-150	25	WG486860
o-Terphenyl				85.86	50-150		WG486860

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chromium, Hexavalent	mg/kg	94.6	93.7	95.0	50-143	0.956	20	WG486722
pH	su	9.40	9.40	100.	98.9-102.0	0	20	WG486856
1-Methylnaphthalene	mg/kg	0.0277	0.0260	84.0	41-110	6.03	24	WG486918
2-Chloronaphthalene	mg/kg	0.0300	0.0281	91.0	43-109	6.35	21	WG486918
2-Methylnaphthalene	mg/kg	0.0277	0.0262	84.0	38-104	5.48	24	WG486918
Acenaphthene	mg/kg	0.0270	0.0273	82.0	48-103	1.05	20	WG486918
Acenaphthylene	mg/kg	0.0267	0.0264	81.0	43-106	1.14	20	WG486918
Anthracene	mg/kg	0.0282	0.0284	85.0	51-110	0.554	22	WG486918
Benzo(a)anthracene	mg/kg	0.0266	0.0288	81.0	38-126	7.66	20	WG486918
Benzo(a)pyrene	mg/kg	0.0289	0.0283	87.0	47-118	1.79	20	WG486918
Benzo(b)fluoranthene	mg/kg	0.0286	0.0314	87.0	47-118	9.35	29	WG486918
Benzo(g,h,i)perylene	mg/kg	0.0294	0.0281	89.0	40-125	4.30	20	WG486918
Benzo(k)fluoranthene	mg/kg	0.0310	0.0285	94.0	45-121	8.61	31	WG486918
Chrysene	mg/kg	0.0308	0.0288	93.0	35-135	6.52	20	WG486918
Dibenz(a,h)anthracene	mg/kg	0.0302	0.0290	91.0	41-124	4.02	20	WG486918
Fluoranthene	mg/kg	0.0291	0.0317	88.0	50-114	8.58	20	WG486918
Fluorene	mg/kg	0.0280	0.0300	85.0	49-109	6.81	19	WG486918
Indeno(1,2,3-cd)pyrene	mg/kg	0.0303	0.0290	92.0	40-126	4.36	20	WG486918
Naphthalene	mg/kg	0.0272	0.0240	82.0	36-100	12.6	24	WG486918
Phenanthrene	mg/kg	0.0289	0.0271	87.0	46-108	6.21	21	WG486918
Pyrene	mg/kg	0.0301	0.0319	91.0	30-136	5.88	20	WG486918
2-Fluorobiphenyl				88.12	21-120			WG486918
Nitrobenzene-d5				88.85	33-114			WG486918
p-Terphenyl-d14				107.5	18-142			WG486918
Benzene	mg/kg	0.0470	0.0459	94.0	76-113	2.37	20	WG487271
Ethylbenzene	mg/kg	0.0507	0.0497	101.	78-115	2.07	20	WG487271
Toluene	mg/kg	0.0500	0.0501	100.	76-114	0.320	20	WG487271
Total Xylene	mg/kg	0.157	0.155	104.	81-118	1.21	20	WG487271
a,a,a-Trifluorotoluene(FID)				98.31	59-128			WG487271
a,a,a-Trifluorotoluene(PID)				100.3	54-144			WG487271
TPH (GC/FID) Low Fraction	mg/kg	5.81	5.69	106.	67-135	2.09	20	WG487271
a,a,a-Trifluorotoluene(FID)				93.55	59-128			WG487271
a,a,a-Trifluorotoluene(PID)				104.6	54-144			WG487271
Specific Conductance	umhos/	410.	410.	101.	85-115	0	20	WG487763
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG487357
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG487184

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Mercury	mg/kg	0.287	0	.25	115.	70-130	L467379-01	WG486803
TPH (GC/FID) High Fraction	ppm	44.6	0	60	74.4	50-150	L467261-02	WG486860
o-Terphenyl					89.82	50-150		WG486860

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Chromium,Hexavalent	mg/kg	15.1	0	20	75.5	50-150	L467207-02	WG486722
1-Methylnaphthalene	mg/kg	0.0223	0	.033	67.6	19-131	L467261-02	WG486918
2-Chloronaphthalene	mg/kg	0.0229	0	.033	69.5	38-117	L467261-02	WG486918
2-Methylnaphthalene	mg/kg	0.0240	0	.033	72.8	18-125	L467261-02	WG486918
Acenaphthene	mg/kg	0.0229	0	.033	69.4	31-120	L467261-02	WG486918
Acenaphthylene	mg/kg	0.0233	0	.033	70.5	34-116	L467261-02	WG486918
Anthracene	mg/kg	0.0239	0	.033	72.6	32-131	L467261-02	WG486918
Benzo(a)anthracene	mg/kg	0.0279	0	.033	84.5	32-131	L467261-02	WG486918
Benzo(a)pyrene	mg/kg	0.0253	0	.033	76.7	28-130	L467261-02	WG486918
Benzo(b)fluoranthene	mg/kg	0.0274	0	.033	83.0	37-130	L467261-02	WG486918
Benzo(g,h,i)perylene	mg/kg	0.0235	0	.033	71.3	10-134	L467261-02	WG486918
Benzo(k)fluoranthene	mg/kg	0.0247	0	.033	74.7	31-129	L467261-02	WG486918
Chrysene	mg/kg	0.0250	0	.033	75.8	25-137	L467261-02	WG486918
Dibenz(a,h)anthracene	mg/kg	0.0241	0	.033	72.9	20-134	L467261-02	WG486918
Fluoranthene	mg/kg	0.0248	0	.033	75.2	27-138	L467261-02	WG486918
Fluorene	mg/kg	0.0244	0	.033	74.1	26-136	L467261-02	WG486918
Indeno(1,2,3-cd)pyrene	mg/kg	0.0236	0	.033	71.5	16-135	L467261-02	WG486918
Naphthalene	mg/kg	0.0224	0	.033	68.0	22-121	L467261-02	WG486918
Phenanthrene	mg/kg	0.0242	0	.033	73.2	27-133	L467261-02	WG486918
Pyrene	mg/kg	0.0255	0	.033	77.1	22-133	L467261-02	WG486918
2-Fluorobiphenyl					75.74	21-120		WG486918
Nitrobenzene-d5					82.07	33-114		WG486918
p-Terphenyl-d14					92.22	18-142		WG486918
TPH (GC/FID) Low Fraction	mg/kg	21.6	3.10	5.5	67.2	55-109	L466772-01	WG487271
a,a,a-Trifluorotoluene(FID)					94.23	59-128		WG487271
a,a,a-Trifluorotoluene(PID)					102.1	54-144		WG487271
Benzene	mg/kg	0.239	0	.05	95.6	32-137	L466772-01	WG487271
Ethylbenzene	mg/kg	0.242	0.0290	.05	85.2	10-150	L466772-01	WG487271
Toluene	mg/kg	0.240	0	.05	96.1	20-142	L466772-01	WG487271
Total Xylene	mg/kg	0.671	0.0240	.15	86.3	16-141	L466772-01	WG487271
Arsenic	mg/kg	48.3	4.50	50	87.6	75-125	L467261-01	WG487234
Barium	mg/kg	335.	334.	50	2.00*	75-125	L467261-01	WG487234
Cadmium	mg/kg	43.9	0.173	50	87.4	75-125	L467261-01	WG487234
Chromium	mg/kg	75.6	25.0	50	101.	75-125	L467261-01	WG487234
Copper	mg/kg	73.8	22.2	50	103.	75-125	L467261-01	WG487234
Lead	mg/kg	57.7	12.2	50	91.0	75-125	L467261-01	WG487234
Nickel	mg/kg	76.0	31.0	50	90.0	75-125	L467261-01	WG487234
Selenium	mg/kg	51.8	8.73	50	86.1	75-125	L467261-01	WG487234
Silver	mg/kg	46.5	0	50	93.0	75-125	L467261-01	WG487234
Zinc	mg/kg	96.0	0	50	192.*	75-125	L467261-01	WG487234

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.307	0.287	123.	70-130	6.73	20	L467379-01	WG486803
TPH (GC/FID) High Fraction	ppm	42.5	44.6	70.9	50-150	4.81	25	L467261-02	WG486860
o-Terphenyl				82.26	50-150				WG486860

Chromium,Hexavalent mg/kg 15.4 15.1 77.0 50-150 1.97 20 L467207-02 WG486722
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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
1-Methylnaphthalene	mg/kg	0.0440	0.0223	133.*	19-131	65.4*	30	L467261-02	WG486918
2-Chloronaphthalene	mg/kg	0.0241	0.0229	73.2	38-117	5.13	26	L467261-02	WG486918
2-Methylnaphthalene	mg/kg	0.0825	0.0240	250.*	18-125	110.*	29	L467261-02	WG486918
Acenaphthene	mg/kg	0.0264	0.0229	79.9	31-120	14.1	30	L467261-02	WG486918
Acenaphthylene	mg/kg	0.0237	0.0233	71.8	34-116	1.76	29	L467261-02	WG486918
Anthracene	mg/kg	0.0241	0.0239	73.1	32-131	0.718	26	L467261-02	WG486918
Benzo(a)anthracene	mg/kg	0.0284	0.0279	85.9	32-131	1.70	31	L467261-02	WG486918
Benzo(a)pyrene	mg/kg	0.0250	0.0253	75.9	28-130	1.09	28	L467261-02	WG486918
Benzo(b)fluoranthene	mg/kg	0.0261	0.0274	79.1	37-130	4.76	41	L467261-02	WG486918
Benzo(g,h,i)perylene	mg/kg	0.0237	0.0235	71.7	10-134	0.522	26	L467261-02	WG486918
Benzo(k)fluoranthene	mg/kg	0.0250	0.0247	75.8	31-129	1.44	42	L467261-02	WG486918
Chrysene	mg/kg	0.0250	0.0250	75.8	25-137	0.0151	22	L467261-02	WG486918
Dibenz(a,h)anthracene	mg/kg	0.0237	0.0241	71.7	20-134	1.71	25	L467261-02	WG486918
Fluoranthene	mg/kg	0.0239	0.0248	72.5	27-138	3.76	35	L467261-02	WG486918
Fluorene	mg/kg	0.0283	0.0244	85.8	26-136	14.6	30	L467261-02	WG486918
Indeno(1,2,3-cd)pyrene	mg/kg	0.0234	0.0236	71.0	16-135	0.673	26	L467261-02	WG486918
Naphthalene	mg/kg	0.0366	0.0224	111.	22-121	47.9*	30	L467261-02	WG486918
Phenanthrene	mg/kg	0.0265	0.0242	80.4	27-133	9.30	36	L467261-02	WG486918
Pyrene	mg/kg	0.0255	0.0255	77.2	22-133	0.0504	33	L467261-02	WG486918
2-Fluorobiphenyl				76.88	21-120				WG486918
Nitrobenzene-d5				85.53	33-114				WG486918
p-Terphenyl-d14				89.08	18-142				WG486918
TPH (GC/FID) Low Fraction	mg/kg	23.1	21.6	72.6	55-109	6.67	20	L466772-01	WG487271
a,a,a-Trifluorotoluene(FID)				93.32	59-128				WG487271
a,a,a-Trifluorotoluene(PID)				102.6	54-144				WG487271
Benzene	mg/kg	0.233	0.239	93.4	32-137	2.41	39	L466772-01	WG487271
Ethylbenzene	mg/kg	0.226	0.242	78.9	10-150	6.68	44	L466772-01	WG487271
Toluene	mg/kg	0.224	0.240	89.5	20-142	7.04	42	L466772-01	WG487271
Total Xylene	mg/kg	0.612	0.671	78.4	16-141	9.20	46	L466772-01	WG487271
Arsenic	mg/kg	51.7	48.3	94.4	75-125	6.80	20	L467261-01	WG487234
Barium	mg/kg	347.	335.	26.0*	75-125	3.52	20	L467261-01	WG487234
Cadmium	mg/kg	45.3	43.9	90.2	75-125	3.14	20	L467261-01	WG487234
Chromium	mg/kg	72.9	75.6	95.8	75-125	3.64	20	L467261-01	WG487234
Copper	mg/kg	72.0	73.8	99.6	75-125	2.47	20	L467261-01	WG487234
Lead	mg/kg	60.4	57.7	96.4	75-125	4.57	20	L467261-01	WG487234
Nickel	mg/kg	75.2	76.0	88.4	75-125	1.06	20	L467261-01	WG487234
Selenium	mg/kg	54.6	51.8	91.7	75-125	5.26	20	L467261-01	WG487234
Silver	mg/kg	48.0	46.5	96.0	75-125	3.17	20	L467261-01	WG487234
Zinc	mg/kg	88.4	96.0	177.*	75-125	8.24	20	L467261-01	WG487234

Batch number /Run number / Sample number cross reference

WG486803: R1276090: L467261-02 03
 WG486860: R1277131: L467261-02 03
 WG486722: R1278597: L467261-02 03
 WG486856: R1278968: L467261-02 03
 WG487013: R1279388: L467261-02 03
 WG486918: R1281308: L467261-02 03
 WG487271: R1282251: L467261-02 03
 WG487234: R1283808: L467261-01 02 03
 WG487763: R1284188: L467261-02 03
 WG487357: R1284529: L467261-03
 WG487184: R1284872: L467261-02

* * Calculations are performed prior to rounding of reported values .
 * Performance of this Analyte is outside of established criteria.
 For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

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Est. 1970

July 14, 2010

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.



Technical Report for

ENCANA

EnCana Oil & Gas (USA) Inc.

ENCANA PL15 BACKGROUND

Accutest Job Number: T41707

Sampling Date: 11/05/09

Report to:

EnCana
2717 Co. Rd. 215
Parachute, CO 81635
brett.middleton@encana.com; christopher.hines@encana.com

ATTN: Chris Hines

Total number of pages in report: 63



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.



Paul Canevaro
Laboratory Director

Client Service contact: Sylvia Garza 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004)
OK (9103) UT(7132714700)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.



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Sample Summary

ENCANA

Job No: T41707

EnCana Oil & Gas (USA) Inc.
 Project No: ENCANA PL15 BACKGROUND

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
T41707-1	11/05/09	13:45	11/07/09	SO	Soil	ENCANA_PL15_BACKGROUND_110509
T41707-1A	11/05/09	13:45	11/07/09	SO	Soil	ENCANA_PL15_BACKGROUND_110509
T41707-1B	11/05/09	13:45	11/07/09	SO	Soil	ENCANA_PL15_BACKGROUND_110509
T41707-1C	11/05/09	13:45	11/07/09	SO	Soil	ENCANA_PL15_BACKGROUND_110509

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: ENCANA

Job No T41707

Site: EnCana Oil & Gas (USA) Inc.

Report Date 11/18/2009 10:53:51 A

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/05/2009 and were received at Accutest on 11/07/2009 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of T41707. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: VM890
------------------	------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T41657-2MS, T41657-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Benzene, Ethylbenzene, Xylene (total) are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Benzene, Ethylbenzene, Xylene (total) are outside control limits. Probable cause due to matrix interference.
- Sample(s) T41657-2MS, T41657-2MSD have surrogates outside control limits. Probable cause due to matrix interference.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP13432
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) T41708-1MS, T41708-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- T41707-1: Internal standards are not within the advisory limits due to a matrix interference. Confirmed by reanalysis.

Volatiles by GC By Method SW846 8015

Matrix SO	Batch ID: GEE2499
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) T41710-1MS, T41710-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846 8015 M

Matrix SO	Batch ID: OP13458
------------------	--------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41656-1MSD, T41656-1MS, T41656-1MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Sample(s) OP13458-MS, OP13458-MSD have surrogates outside control limits. Probable cause due to matrix interference.
- OP13458-MSD for o-Terphenyl: Outside control limits due to dilution.
- OP13458-MS for o-Terphenyl: Outside control limits due to dilution.

Metals By Method SW846 6010B

Matrix AQ	Batch ID: MP10639
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41707-1ADUP, T41707-1AMS, T41707-1AMSD, T41707-1ASDL were used as the QC samples for metals.

Matrix AQ	Batch ID: MP10654
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T39947-4CDUP were used as the QC samples for metals.

Matrix SO	Batch ID: MP10638
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T37853-1BDUP, T37853-1BMSD, T37853-1BSDL were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Serial Dilution for Barium are outside control limits for sample MP10638-SD1. Probable cause due to sample homogeneity.
- MP10638-SD1 for Barium: Serial dilution indicates possible matrix interference.

Matrix SO	Batch ID: MP10642
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T39947-4DUP, T39947-4MS, T39947-4MSD, T39947-4SDL, T39947-4DUP were used as the QC samples for metals.
- Matrix Spike Recovery(s) for Silver are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Silver are outside control limits. Probable cause due to matrix interference.
- RPD(s) for Duplicate for Copper, Nickel are outside control limits for sample MP10642-D1. High RPD due to possible sample nonhomogeneity.
- RPD(s) for Serial Dilution for Arsenic, Cadmium, Silver, Lead, Nickel, Zinc are outside control limits for sample MP10642-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7471A

Matrix SO	Batch ID: MP10636
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T39947-4DUP, T39947-4MS, T39947-4MSD were used as the QC samples for metals.

Wet Chemistry By Method EPA 120.1

Matrix AQ	Batch ID: GN18728
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41657-1DUP were used as the QC samples for Specific Conductivity.

Wet Chemistry By Method LADNR29B

Matrix SO	Batch ID: MP10654
------------------	--------------------------

- T41707-1C for Sodium Adsorption Ratio: Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

Wet Chemistry By Method SM 2540 G

Matrix SO	Batch ID: GN18730
------------------	--------------------------

- Sample(s) T42037-1DUP were used as the QC samples for Solids, Percent.

Wet Chemistry By Method SW846 3060/7196A

Matrix SO	Batch ID: GN18693
------------------	--------------------------

- All method blanks for this batch meet method specific criteria.
- Sample(s) T41657-1DUP, T41657-1MS were used as the QC samples for Chromium, Hexavalent.

Wet Chemistry By Method SW846 6010/7196A M

Matrix SO	Batch ID: R19670
------------------	-------------------------

- T41707-1 for Chromium, Trivalent: Calculated as: $(\text{Chromium}) - (\text{Chromium, Hexavalent})$

Wet Chemistry By Method SW846 9045C

Matrix SO	Batch ID: GN18673
------------------	--------------------------

- Sample(s) T41707-1DUP were used as the QC samples for pH.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used



Sample Results

Report of Analysis

Report of Analysis

3.1
3

Client Sample ID: ENCANA_PL15_BACKGROUND_110509	
Lab Sample ID: T41707-1	Date Sampled: 11/05/09
Matrix: SO - Soil	Date Received: 11/07/09
Method: SW846 8260B	Percent Solids: 81.8
Project: EnCana Oil & Gas (USA) Inc.	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M0022079.D	1	11/11/09	AH	n/a	n/a	VM890
Run #2							

	Initial Weight	Final Volume
Run #1	5.22 g	5.0 ml
Run #2		

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.9	0.82	ug/kg	
108-88-3	Toluene	ND	5.9	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	18	2.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-121%
2037-26-5	Toluene-D8	124%		76-132%
460-00-4	4-Bromofluorobenzene	138%		73-165%
17060-07-0	1,2-Dichloroethane-D4	82%		57-122%

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ENCANA_PL15_BACKGROUND_110509		
Lab Sample ID:	T41707-1	Date Sampled:	11/05/09
Matrix:	SO - Soil	Date Received:	11/07/09
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	81.8
Project:	EnCana Oil & Gas (USA) Inc.		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	H35979.D	1	11/11/09	SC	11/09/09	OP13432	EH1935
Run #2 ^a	H35983.D	1	11/11/09	SC	11/09/09	OP13432	EH1935

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.1	1.4	ug/kg	
208-96-8	Acenaphthylene	ND	8.1	2.9	ug/kg	
120-12-7	Anthracene	ND	8.1	1.6	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.1	1.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.1	4.4	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.1	4.3	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	8.1	8.1	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.1	5.3	ug/kg	
218-01-9	Chrysene	ND	8.1	2.0	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.1	7.9	ug/kg	
206-44-0	Fluoranthene	ND	8.1	1.8	ug/kg	
86-73-7	Fluorene	ND	8.1	2.9	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.1	6.1	ug/kg	
90-12-0	1-Methylnaphthalene	ND	8.1	1.5	ug/kg	
91-57-6	2-Methylnaphthalene	ND	8.1	1.4	ug/kg	
91-20-3	Naphthalene	ND	8.1	1.2	ug/kg	
85-01-8	Phenanthrene	ND	8.1	1.1	ug/kg	
129-00-0	Pyrene	ND	8.1	2.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	67%	64%	10-127%
321-60-8	2-Fluorobiphenyl	54%	51%	11-133%
1718-51-0	Terphenyl-d14	75%	76%	15-187%

(a) Internal standards are not within the advisory limits due to a matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

3.1
3

Client Sample ID: ENCANA_PL15_BACKGROUND_110509	Date Sampled: 11/05/09
Lab Sample ID: T41707-1	Date Received: 11/07/09
Matrix: SO - Soil	Percent Solids: 81.8
Method: SW846 8015	
Project: EnCana Oil & Gas (USA) Inc.	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE049389.D	1	11/13/09	FI	n/a	n/a	GEE2499
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.59 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	6.6	0.39	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	4-Bromofluorobenzene	99%		46-127%		
98-08-8	aaa-Trifluorotoluene	106%		44-120%		

ND = Not detected	MDL - Method Detection Limit	J = Indicates an estimated value
RL = Reporting Limit		B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range		N = Indicates presumptive evidence of a compound

Report of Analysis

3.1
3

Client Sample ID: ENCANA_PL15_BACKGROUND_110509	Date Sampled: 11/05/09
Lab Sample ID: T41707-1	Date Received: 11/07/09
Matrix: SO - Soil	Percent Solids: 81.8
Method: SW846 8015 M SW846 3550B	
Project: EnCana Oil & Gas (USA) Inc.	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CC216464.D	1	11/13/09	SS	11/11/09	OP13458	GCC1005
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	10	3.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	48%		33-115%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

31
3

Client Sample ID: ENCANA_PL15_BACKGROUND_110509	Date Sampled: 11/05/09
Lab Sample ID: T41707-1	Date Received: 11/07/09
Matrix: SO - Soil	Percent Solids: 81.8
Project: EnCana Oil & Gas (USA) Inc.	

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.1	0.68	0.14	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Cadmium	0.31 B	0.34	0.068	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Chromium	19.0	0.68	0.047	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Copper	17.6	1.7	0.088	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Lead	11.7	0.68	0.27	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Mercury	0.0090 B	0.019	0.00075	mg/kg	1	11/12/09	11/12/09 TW	SW846 7471A ¹	SW846 7471A ³
Nickel	24.6	2.7	0.088	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Selenium	0.16 U	0.68	0.16	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Silver	0.16 B	0.68	0.054	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴
Zinc	54.2	1.4	0.27	mg/kg	1	11/12/09	11/14/09 NS	SW846 6010B ²	SW846 3050B ⁴

- (1) Instrument QC Batch: MA4391
- (2) Instrument QC Batch: MA4396
- (3) Prep QC Batch: MP10636
- (4) Prep QC Batch: MP10642

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	ENCANA_PL15_BACKGROUND_110509	Date Sampled:	11/05/09
Lab Sample ID:	T41707-1	Date Received:	11/07/09
Matrix:	SO - Soil	Percent Solids:	81.8
Project:	EnCana Oil & Gas (USA) Inc.		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	1.1 B	2.0	mg/kg	1	11/13/09 09:00	KD	SW846 3060/7196A
Chromium, Trivalent ^a	17.9	2.7	mg/kg	1	11/14/09 17:08	NS	SW846 6010/7196A M
Solids, Percent	81.8		%	1	11/13/09	AA	SM 2540 G
Specific Conductivity	129	1.0	umhos/cm	1	11/13/09 12:00	KD	EPA 120.1
pH	7.7		su	1	11/11/09 10:00	EV	SW846 9045C

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

32
3

Client Sample ID: ENCANA_PL15_BACKGROUND_110509	Date Sampled: 11/05/09
Lab Sample ID: T41707-1A	Date Received: 11/07/09
Matrix: SO - Soil	Percent Solids: 81.8
Project: EnCana Oil & Gas (USA) Inc.	

Hot Water Soluble Boron Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Boron	0.779	0.20	0.0041	mg/l	1	11/12/09	11/12/09 NS	SW846 6010B ¹	LADNR 29B ²

(1) Instrument QC Batch: MA4392

(2) Prep QC Batch: MP10639

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis



Client Sample ID: ENCANA_PL15_BACKGROUND_110509	Date Sampled: 11/05/09
Lab Sample ID: T41707-1B	Date Received: 11/07/09
Matrix: SO - Soil	Percent Solids: 81.8
Project: EnCana Oil & Gas (USA) Inc.	

Total True Barium Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	306	12	0.037	mg/kg	1	11/12/09	11/12/09 NS	SW846 6010B ¹	LADNR 29B ²

(1) Instrument QC Batch: MA4392
 (2) Prep QC Batch: MP10638

RL = Reporting Limit
 MDL = Method Detection Limit

U = Indicates a result < MDL
 B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	ENCANA_PL15_BACKGROUND_110509	Date Sampled:	11/05/09
Lab Sample ID:	T41707-1C	Date Received:	11/07/09
Matrix:	SO - Soil	Percent Solids:	81.8
Project:	EnCana Oil & Gas (USA) Inc.		

SAR Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	135	25	0.18	mg/l	5	11/15/09	11/16/09 NS	SW846 6010B ¹	LADNR 29B ²
Magnesium	21.2 B	25	0.039	mg/l	5	11/15/09	11/16/09 NS	SW846 6010B ¹	LADNR 29B ²
Sodium	5.33 B	25	0.67	mg/l	5	11/15/09	11/16/09 NS	SW846 6010B ¹	LADNR 29B ²

(1) Instrument QC Batch: MA4397

(2) Prep QC Batch: MP10654

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	ENCANA_PL15_BACKGROUND_110509	Date Sampled:	11/05/09
Lab Sample ID:	T41707-1C	Date Received:	11/07/09
Matrix:	SO - Soil	Percent Solids:	81.8
Project:	EnCana Oil & Gas (USA) Inc.		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	0.112		ratio	1	11/16/09 12:52	NS	LADNR29B

(a) Calculated as: $(Na \text{ meq/L}) / \sqrt{[(Ca \text{ meq/L}) + (Mg \text{ meq/L})/2]}$

RL = Reporting Limit



Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

2335 Route 130, Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

Client / Reporting Information Company Name: EnCano Oil & Gas Address: 2717 County Road 216 City: State: Zip: City: State: Parcel: CD 87625 Project Contact: Chris Hines chris@bar.hines@encan.com Phone #: 679-285-2738 Sampler's Name: Kris Rowa		Project Information Project Name: ENCANA P116 BACKGROUND Street: City: State: Project #: Fax #: Client Purchase Order #:		FED-EX Tracking # Accutest Quote # Bottle Order Control # Accutest Job #: T-41707	
Requested Analysis <input type="checkbox"/> DW- Drinking Water <input type="checkbox"/> GW- Ground Water <input type="checkbox"/> WW- Water <input type="checkbox"/> SW- Surface Water <input type="checkbox"/> SD- Soil <input type="checkbox"/> SL- Sludge <input type="checkbox"/> CI- Oil <input type="checkbox"/> LQ- Other Liquid <input type="checkbox"/> AIR- Air <input type="checkbox"/> SOL- Other Solid <input type="checkbox"/> WP- Waste LAB USE ONLY		Matrix Codes <input type="checkbox"/> 2050 <input type="checkbox"/> 624 <input type="checkbox"/> 8021 <input type="checkbox"/> 8022 <input type="checkbox"/> 8023 <input type="checkbox"/> 8024 <input type="checkbox"/> 8025 <input type="checkbox"/> 8026 <input type="checkbox"/> 8027 <input type="checkbox"/> 8028 <input type="checkbox"/> 8029 <input type="checkbox"/> 8030 <input type="checkbox"/> 8031 <input type="checkbox"/> 8032 <input type="checkbox"/> 8033 <input type="checkbox"/> 8034 <input type="checkbox"/> 8035 <input type="checkbox"/> 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SAMPLE INSPECTION FORM

Accutest Job Number: T41707 Client: En. Cona Oil & Gas Date/Time Received: 8/22/09 11:15
of Coolers Received: 1 Thermometer #: 12-1 Temperature Adjustment Factor: +0.0
Cooler Temps: #1: 2.8 #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____
Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other
Airbill Numbers: _____

COOLER INFORMATION

- Custody seal missing or not intact
- Temperature criteria not met
- Wet ice received in cooler

CHAIN OF CUSTODY

- Chain of Custody not received
- Sample D/T unclear or missing
- Analyses unclear or missing
- COC not properly executed

SAMPLE INFORMATION

- Sample containers received broken
- VOC vials have headspace
- Sample labels missing or illegible
- ID on COC does not match label(s)
- D/T on COC does not match label(s)
- Sample/Bottles rec'd but no analysis on COC
- Sample listed on COC, but not received
- Bottles missing for requested analysis
- Insufficient volume for analysis
- Sample received improperly preserved

TRIP BLANK INFORMATION

- Trip Blank on COC but not received
- Trip Blank received but not on COC
- Trip Blank not intact
- Received Water Trip Blank
- Received Soil TB

Number of Excuses? _____
Number of SO35 kits? _____
Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: [Signature] 8/22/09
INFORMATION AND SAMPLE LABELING VERIFIED BY: [Signature]

CORRECTIVE ACTIONS

Client Representative Notified: _____ Date: _____

By Accutest Representative: _____ Via: Phone Email

Client Instructions:

T41707: Chain of Custody

Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: T41707 DATE/TIME RECEIVED: 11/07/09 11:5

CLIENT: En Corp Oil & Gas INITIALS: FE

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1	1	PT 15	11/5/09	S	DT	1	2 GC	2 3 4 5 6 7 8	<2 >12
"	"	"	"	"	16oz	2	VR	2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12
								1 2 3 4 5 6 7 8	<2 >12

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NaOH 6: D 7: MeOH 8: Other
 LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer
 Rev 8/13/01 gwp



4.1
4



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM890-MB	M0022072.D 1		11/11/09	AH	n/a	n/a	VM890

The QC reported here applies to the following samples:

Method: SW846 8260B

T41707-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	5.0	0.70	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	0.90	ug/kg	
108-88-3	Toluene	ND	5.0	0.95	ug/kg	
1330-20-7	Xylene (total)	ND	15	2.1	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
1868-53-7	Dibromofluoromethane	92%	70-121%
2037-26-5	Toluene-D8	115%	76-132%
460-00-4	4-Bromofluorobenzene	114%	73-165%
17060-07-0	1,2-Dichloroethane-D4	86%	57-122%

Blank Spike Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VM890-BS	M0022070.D 1		11/11/09	AH	n/a	n/a	VM890

The QC reported here applies to the following samples:

Method: SW846 8260B

T41707-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	42.0	84	70-114
100-41-4	Ethylbenzene	50	48.5	97	60-119
108-88-3	Toluene	50	49.1	98	68-115
1330-20-7	Xylene (total)	150	147	98	61-115

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	88%	70-121%
2037-26-5	Toluene-D8	114%	76-132%
460-00-4	4-Bromofluorobenzene	111%	73-165%
17060-07-0	1,2-Dichloroethane-D4	83%	57-122%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T41657-2MS	M0022074.D 1		11/11/09	AH	n/a	n/a	VM890
T41657-2MSD	M0022075.D 1		11/11/09	AH	n/a	n/a	VM890
T41657-2	M0022073.D 1		11/11/09	AH	n/a	n/a	VM890

The QC reported here applies to the following samples:

Method: SW846 8260B

T41707-1

CAS No.	Compound	T41657-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	4.2	J	51.6	35.1	60*	32.6	54*	7	70-114/38
100-41-4	Ethylbenzene	1.5	J	51.6	26.3	48*	22.3	40*	16	60-119/40
108-88-3	Toluene	19.3		51.6	64.6	88	58.2	74	10	68-115/38
1330-20-7	Xylene (total)	7.5	J	155	79.3	46*	68.4	39*	15	61-115/39

CAS No.	Surrogate Recoveries	MS	MSD	T41657-2	Limits
1868-53-7	Dibromofluoromethane	96%	98%	101%	70-121%
2037-26-5	Toluene-D8	199% * a	199% * a	191% * a	76-132%
460-00-4	4-Bromofluorobenzene	185% * a	183% * a	167% * a	73-165%
17060-07-0	1,2-Dichloroethane-D4	86%	88%	87%	57-122%

(a) Outside control limits due to matrix interference. Confirmed by MS/MSD.

5.3.1
5



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13432-MB	P07156.D	1	11/10/09	GJ	11/09/09	OP13432	EP344

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T41707-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	1.1	ug/kg	
208-96-8	Acenaphthylene	ND	6.7	2.3	ug/kg	
120-12-7	Anthracene	ND	6.7	1.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	6.7	1.1	ug/kg	
50-32-8	Benzo(a)pyrene	ND	6.7	3.6	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	6.7	3.5	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	6.7	6.7	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	6.7	4.3	ug/kg	
218-01-9	Chrysene	ND	6.7	1.6	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	6.7	6.4	ug/kg	
206-44-0	Fluoranthene	ND	6.7	1.5	ug/kg	
86-73-7	Fluorene	ND	6.7	2.4	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	6.7	5.0	ug/kg	
90-12-0	1-Methylnaphthalene	ND	6.7	1.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	6.7	1.2	ug/kg	
91-20-3	Naphthalene	ND	6.7	1.0	ug/kg	
85-01-8	Phenanthrene	ND	6.7	0.93	ug/kg	
129-00-0	Pyrene	ND	6.7	2.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
4165-60-0	Nitrobenzene-d5	58%	10-127%
321-60-8	2-Fluorobiphenyl	36%	11-133%
1718-51-0	Terphenyl-d14	32%	15-187%

Blank Spike Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13432-BS	P07157.D	1	11/10/09	GJ	11/09/09	OP13432	EP344

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T41707-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	167	104	62	18-118
208-96-8	Acenaphthylene	167	118	71	35-125
120-12-7	Anthracene	167	146	88	24-116
56-55-3	Benzo(a)anthracene	167	150	90	32-132
50-32-8	Benzo(a)pyrene	167	131	79	36-130
205-99-2	Benzo(b)fluoranthene	167	140	84	35-134
191-24-2	Benzo(g,h,i)perylene	167	171	103	18-149
207-08-9	Benzo(k)fluoranthene	167	170	102	30-131
218-01-9	Chrysene	167	157	94	37-124
53-70-3	Dibenzo(a,h)anthracene	167	158	95	23-150
206-44-0	Fluoranthene	167	156	94	28-118
86-73-7	Fluorene	167	120	72	32-106
193-39-5	Indeno(1,2,3-cd)pyrene	167	159	95	18-150
90-12-0	1-Methylnaphthalene	167	105	63	10-128
91-57-6	2-Methylnaphthalene	167	122	73	28-113
91-20-3	Naphthalene	167	116	70	31-106
85-01-8	Phenanthrene	167	146	88	37-112
129-00-0	Pyrene	167	156	94	24-132

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	90%	10-127%
321-60-8	2-Fluorobiphenyl	105%	11-133%
1718-51-0	Terphenyl-d14	104%	15-187%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13432-MS	P07162.D	1	11/10/09	GJ	11/09/09	OP13432	EP344
OP13432-MSD	P07163.D	1	11/10/09	GJ	11/09/09	OP13432	EP344
T41708-1	P07161.D	1	11/10/09	GJ	11/09/09	OP13432	EP344

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

T41707-1

CAS No.	Compound	T41708-1 ug/kg	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	195	75.7	39	80.5	41	6	10-153/80
208-96-8	Acenaphthylene	ND	195	75.8	39	79.1	40	4	10-144/71
120-12-7	Anthracene	ND	195	136	70	156	80	14	10-176/57
56-55-3	Benzo(a)anthracene	ND	195	143	73	177	90	21	10-174/73
50-32-8	Benzo(a)pyrene	ND	195	123	63	154	79	22	10-182/74
205-99-2	Benzo(b)fluoranthene	ND	195	148	76	190	97	25	10-188/86
191-24-2	Benzo(g,h,i)perylene	ND	195	141	72	165	84	16	10-150/62
207-08-9	Benzo(k)fluoranthene	ND	195	141	72	176	90	22	10-170/94
218-01-9	Chrysene	ND	195	144	74	179	91	22	10-165/73
53-70-3	Dibenzo(a,h)anthracene	ND	195	145	74	171	87	16	10-192/74
206-44-0	Fluoranthene	ND	195	138	71	180	92	26	10-141/73
86-73-7	Fluorene	ND	195	85.4	44	92.2	47	8	10-164/72
193-39-5	Indeno(1,2,3-cd)pyrene	ND	195	142	73	168	86	17	10-150/73
90-12-0	1-Methylnaphthalene	ND	195	68.2	35	71.7	37	5	10-154/82
91-57-6	2-Methylnaphthalene	10.3	195	102	47	102	47	0	10-171/75
91-20-3	Naphthalene	ND	195	84.6	43	94.1	48	11	10-138/82
85-01-8	Phenanthrene	1.4	J 195	134	68	158	80	16	10-191/77
129-00-0	Pyrene	ND	195	178	91	224	114	23	10-150/66

CAS No.	Surrogate Recoveries	MS	MSD	T41708-1	Limits
4165-60-0	Nitrobenzene-d5	56%	53%	77%	10-127%
321-60-8	2-Fluorobiphenyl	56%	58%	59%	11-133%
1718-51-0	Terphenyl-d14	85%	122%	115%	15-187%



GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2499-MB	EE049386.D	1	11/13/09	FI	n/a	n/a	GEE2499

The QC reported here applies to the following samples:

Method: SW846 8015

T41707-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	5.0	0.30	mg/kg	

CAS No.	Surrogate Recoveries	Limits	
460-00-4	4-Bromofluorobenzene	96%	46-127%
98-08-8	aaa-Trifluorotoluene	106%	44-120%

Blank Spike Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEE2499-BS	EE049382.D	1	11/12/09	FI	n/a	n/a	GEE2499

The QC reported here applies to the following samples:

Method: SW846 8015

T41707-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	0.4	0.355	89	78-115

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	99%	46-127%
98-08-8	aaa-Trifluorotoluene	110%	44-120%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T41710-1MS	EE049392.D	1	11/13/09	FI	n/a	n/a	GEE2499
T41710-1MSD	EE049393.D	1	11/13/09	FI	n/a	n/a	GEE2499
T41710-1	EE049391.D	1	11/13/09	FI	n/a	n/a	GEE2499

The QC reported here applies to the following samples:

Method: SW846 8015

T41707-1

CAS No.	Compound	T41710-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	23.7	22.9	96	21.6	91	6	78-115/14

CAS No.	Surrogate Recoveries	MS	MSD	T41710-1	Limits
460-00-4	4-Bromofluorobenzene	104%	107%	95%	46-127%
98-08-8	aaa-Trifluorotoluene	103%	110%	106%	44-120%

7.3.1

7



GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13458-MB	CC216441.D 1		11/12/09	SS	11/11/09	OP13458	GCC1004

The QC reported here applies to the following samples:

Method: SW846 8015 M

T41707-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C10-C28)	ND	8.2	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	40% 33-115%

Blank Spike Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13458-BS	CC216442.D 1		11/12/09	SS	11/11/09	OP13458	GCC1004

The QC reported here applies to the following samples:

Method: SW846 8015 M

T41707-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH (C10-C28)	32.4	21.4	66	45-107

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	43%	33-115%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41707
Account: ENCACOP ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP13458-MS	CC216443.D	10	11/12/09	SS	11/11/09	OP13458	GCC1004
OP13458-MSD	CC216444.D	10	11/12/09	SS	11/11/09	OP13458	GCC1004
T41656-1	CC216445.D	10	11/12/09	SS	11/11/09	OP13458	GCC1004

The QC reported here applies to the following samples:

Method: SW846 8015 M

T41707-1

CAS No.	Compound	T41656-1 mg/kg	Spike Q	mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH (C10-C28)	381	40.1	505	309* a	485	262* a	4	45-107/34	

CAS No.	Surrogate Recoveries	MS	MSD	T41656-1	Limits
84-15-1	o-Terphenyl	0%* b	0%* b	0%* b	33-115%

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Outside control limits due to dilution.

8.3.1
8



Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10636
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/12/09

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.017	.0041	.00066	-0.0023	<0.017

Associated samples MP10636: T41707-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10636
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/12/09 11/12/09

Metal	T39947-4 Original	DUP	RPD	QC Limits	T39947-4 Original MS	Spikelot HGTXWS1	% Rec	QC Limits	
Mercury	0.023	0.025	8.3	0-20	0.023	0.38	0.326	109.4	75-125

Associated samples MP10636: T41707-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10636
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/12/09

Metal	T39947-4 Original MSD	Spikelot HGTXWS1	% Rec	MSD RPD	QC Limit
Mercury	0.023	0.39	0.34	107.9	2.6

Associated samples MP10636: T41707-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10636
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/12/09

Metal	LCS Result	Spikelot HGLCD054 % Rec	QC Limits
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Mercury 8.5 7.34 115.8 72-128

Associated samples MP10636: T41707-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10638
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/12/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1		
Barium	10	.007	.03	0.44	<10
Beryllium	0.25	.0055	.01		
Boron	5.0	.054	.11		
Cadmium	0.25	.013	.05		
Calcium	250	.27	.86		
Chromium	0.50	.055	.035		
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065		
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2		
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065		
Potassium	250	2.7	16		
Selenium	0.50	.16	.12		
Silver	0.50	.043	.04		
Sodium	250	6.5	13		
Strontium	1.0	.0085	.025		
Thallium	0.50	.16	.25		
Tin	1.0	.09	.12		
Titanium	1.0	.015	.045		
Vanadium	2.5	.03	.06		
Zinc	1.0	.025	.2		

Associated samples MP10638: T41707-1B

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

9.2.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10638
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09 11/12/09

Metal	T37853-1B Original	DUP	RPD	QC Limits	T37853-1B Original MS	Spikelot MPTW4	% Rec	QC Limits
Aluminum								
Antimony								
Arsenic								
Barium	19400	20400	5.0	0-20	19400	21000	22.7	7059.7(a) 80-120
Beryllium								
Boron								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Molybdenum								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Strontium								
Thallium								
Tin								
Titanium								
Vanadium								
Zinc								

Associated samples MP10638: T41707-1B

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

9.2.2
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10638
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09

Metal	T37853-1B Original MSD	SpikeLot MPTW4	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic						
Barium	19400	21000	22.6	7073.8(a)	0.0	20
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10638: T41707-1B

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

9.2.2
9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10638
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	20.4	20	102.0	80-120
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10638: T41707-1B

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

9.2.3
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10638
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09

Metal	T37853-1B	QC
	Original SDL 25:125%DIF	Limits

Aluminum				
Antimony				
Arsenic				
Barium	350000	388000	10.9*(a)	0-10
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10638: T41707-1B

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested
 (a) Serial dilution indicates possible matrix interference.

9.2.4
 9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10639
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 11/12/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	400	33	34		
Antimony	10	4.5	6		
Arsenic	10	3.5	4		
Barium	400	.28	5.4		
Beryllium	10	.22	.4		
Boron	200	2.2	4.2	-20	<200
Cadmium	8.0	.5	.6		
Calcium	10000	11	70		
Chromium	20	2.2	3.8		
Cobalt	100	1	1.6		
Copper	50	1.2	12		
Iron	200	26	26		
Lead	6.0	3.2	3.4		
Magnesium	10000	13	16		
Manganese	30	.4	15		
Molybdenum	20	1.9	2.6		
Nickel	80	1.9	6.4		
Potassium	10000	110	110		
Selenium	10	6.5	6.4		
Silver	20	1.7	1.6		
Sodium	10000	260	270		
Strontium	40	.34	.8		
Thallium	20	6.5	5.2		
Tin	40	3.6	5.8		
Titanium	40	.6	.6		
Vanadium	100	1.2	1.2		
Zinc	40	.98	8.2		

Associated samples MP10639: T41707-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

9.3.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10639
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09 11/12/09

Metal	T41707-1A Original	DUP	RPD	QC Limits	T41707-1A Original MS	Spikelot MPTW4	% Rec	QC Limits	
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Boron	779	740	5.1	0-20	779	2810	1000	105.8	80-120
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP10639: T41707-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.3.2
 9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10639
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09

Metal	T41707-1A Original MSD	Spikelot MPTW4	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	779	2800	1000	102.5	0.4	20
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10639: T41707-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.3.2
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10639
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09

Metal	BSP Result	Spikelot MPTW4	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1880	1000	94.1	80-120
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10639: T41707-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

9.3.3
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10639
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09

Metal	T41707-1A Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	399	400	0.2	0-10
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10639: T41707-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

9.3.4
 9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10642
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/12/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.82	2.2		
Antimony	0.50	.11	.14		
Arsenic	0.50	.089	.1	0.069	<0.50
Barium	10	.007	.03		
Beryllium	0.25	.0055	.01		
Boron	5.0	.054	.11		
Cadmium	0.25	.013	.05	0.0020	<0.25
Calcium	250	.27	.86		
Chromium	0.50	.055	.035	-0.017	<0.50
Cobalt	2.5	.025	.09		
Copper	1.3	.029	.065	-0.036	<1.3
Iron	5.0	.65	1.1		
Lead	0.50	.079	.2	0.054	<0.50
Magnesium	250	.34	.58		
Manganese	0.75	.01	.035		
Molybdenum	0.50	.048	.075		
Nickel	2.0	.048	.065	0.20	<2.0
Potassium	250	2.7	16		
Selenium	0.50	.16	.12	0.066	<0.50
Silver	0.50	.043	.04	-0.012	<0.50
Sodium	250	6.5	13		
Strontium	1.0	.0085	.025		
Thallium	0.50	.16	.25		
Tin	1.0	.09	.12		
Titanium	1.0	.015	.045		
Vanadium	2.5	.03	.06		
Zinc	1.0	.025	.2	-0.0080	<1.0

Associated samples MP10642: T41707-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10642
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09 11/12/09

Metal	T39947-4 Original	DUP	RPD	QC Limits	T39947-4 Original MS	Spikelot MPTW4	% Rec	QC Limits	
Aluminum									
Antimony									
Arsenic	4.3	4.7	8.9	0-20	4.3	35.7	33.3	94.2	80-120
Barium	anr								
Beryllium									
Boron									
Cadmium	0.10	0.093	7.3	0-20	0.10	30.6	33.3	91.5	80-120
Calcium									
Chromium	13.2	15.7	17.3	0-20	13.2	42.9	33.3	89.1	80-120
Cobalt									
Copper	11.8	16.7	34.4*(a)	0-20	11.8	44.0	33.3	96.6	80-120
Iron									
Lead	8.7	9.3	6.7	0-20	8.7	41.7	33.3	99.0	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel	7.9	11.2	34.6*(a)	0-20	7.9	37.9	33.3	90.0	80-120
Potassium									
Selenium	0.0	0.0	NC	0-20	0.0	31.2	33.3	93.6	80-120
Silver	0.16	0.15	6.5	0-20	0.16	25.4	33.3	75.7N	80-120
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	28.3	28.5	0.7	0-20	28.3	60.7	33.3	97.2	80-120

Associated samples MP10642: T41707-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10642
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09

Metal	T39947-4 Original	MSD	Spike/lot MPTW4	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.3	36.0	33.6	94.2	0.8	20
Barium	anr					
Beryllium						
Boron						
Cadmium	0.10	31.2	33.6	92.5	1.9	20
Calcium						
Chromium	13.2	42.4	33.6	86.8	1.2	20
Cobalt						
Copper	11.8	43.4	33.6	93.9	1.4	20
Iron						
Lead	8.7	42.3	33.6	99.9	1.4	20
Magnesium						
Manganese						
Molybdenum						
Nickel	7.9	38.1	33.6	89.8	0.5	20
Potassium						
Selenium	0.0	31.1	33.6	92.5	0.3	20
Silver	0.16	25.7	33.6	75.9N	1.2	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	28.3	61.6	33.6	99.0	1.5	20

Associated samples MP10642: T41707-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.4.2
 9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10642
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/12/09

Metal	LCS Result	Spikelot MPLCD054	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	147	158	93.0	82-118
Barium	anr			
Beryllium				
Boron				
Cadmium	161	187	86.1	82-118
Calcium				
Chromium	78.8	89.5	88.0	79-121
Cobalt				
Copper	122	129	94.6	84-117
Iron				
Lead	155	172	90.1	79-120
Magnesium				
Manganese				
Molybdenum				
Nickel	88.3	99	89.2	81-119
Potassium				
Selenium	134	148	90.5	78-121
Silver	60.6	66	91.8	66-134
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	345	394	87.6	80-119

Associated samples MP10642: T41707-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

9.4.3
 9

SERIAL DILUTION RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10642
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/12/09

Metal	T39947-4 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	58.9	67.2	14.1 (a)	0-10
Barium	anr			
Beryllium				
Boron				
Cadmium	1.37	1.78	29.9 (a)	0-10
Calcium				
Chromium	179	189	5.5	0-10
Cobalt				
Copper	161	163	1.2	0-10
Iron				
Lead	119	131	10.2*(b)	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	108	134	24.4*(b)	0-10
Potassium				
Selenium	0.00	0.00	NC	0-10
Silver	2.22	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	386	430	11.5*(b)	0-10

Associated samples MP10642: T41707-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

(b) Serial dilution indicates possible matrix interference.

9.4.4
 9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10654
Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B
Units: ug/l

Prep Date: 11/15/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	16	17		
Antimony	5.0	2.3	3		
Arsenic	5.0	1.8	2		
Barium	200	.14	2.7		
Beryllium	5.0	.11	.2		
Boron	100	1.1	2.1		
Cadmium	4.0	.25	.3		
Calcium	5000	5.4	35	92.0	<5000
Chromium	10	1.1	1.9		
Cobalt	50	.5	.8		
Copper	25	.58	5.9		
Iron	100	13	13		
Lead	3.0	1.6	1.7		
Magnesium	5000	6.7	7.8	9.4	<5000
Manganese	15	.2	7.6		
Molybdenum	10	.96	1.3		
Nickel	40	.95	3.2		
Potassium	5000	53	53		
Selenium	5.0	3.2	3.2		
Silver	10	.85	.8		
Sodium	5000	130	130	79.6	<5000
Strontium	20	.17	.4		
Thallium	10	3.2	2.6		
Tin	20	1.8	2.9		
Titanium	20	.3	.3		
Vanadium	50	.6	.6		
Zinc	20	.49	4.1		

Associated samples MP10654: T41707-1C

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

9.5.1
9

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: T41707
 Account: ENCACOP - ENCANA
 Project: EnCana Oil & Gas (USA) Inc.

QC Batch ID: MP10654
 Matrix Type: AQUEOUS

Methods: LADNR29B, SW846 6010B
 Units: ug/l

Prep Date: 11/15/09

Metal	T39947-4C Original DUP		RPD	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	234000	208000	11.8	0-20
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium	5050	4460	12.4	0-20
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	1650000	1520000	12.9	0-20
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10654: T41707-1C

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

9.5.2
 9



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN18693	2.0	<2.0	mg/kg	40	38.1	95.3	80-120%
Specific Conductivity	GN18728	1.0	<1.0	umhos/cm				

Associated Samples:
Batch GN18693: T41707-1
Batch GN18728: T41707-1
(*) Outside of QC limits

10.1
10

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GN18693	T41657-1	mg/kg	0.47 B	<2.0	2.1	0-20%
Solids, Percent	GN18730	T42037-1	%	84.8	84.1	0.8	0-5%
Specific Conductivity	GN18728	T41657-1	umhos/cm	2270	2270	0.0	0-20%
pH	GN18673	T41707-1	su	7.7	7.7	0.0	0-20%

Associated Samples:

Batch GN18673: T41707-1
Batch GN18693: T41707-1
Batch GN18728: T41707-1
Batch GN18730: T41707-1
Batch MP10654: T41707-1C
(*) Outside of QC limits

10.2
10

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: T41707
Account: ENCACOP - ENCANA
Project: EnCana Oil & Gas (USA) Inc.

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GN18693	T41657-1	mg/kg	0.47 B	40	41.2	101.7	75-125%

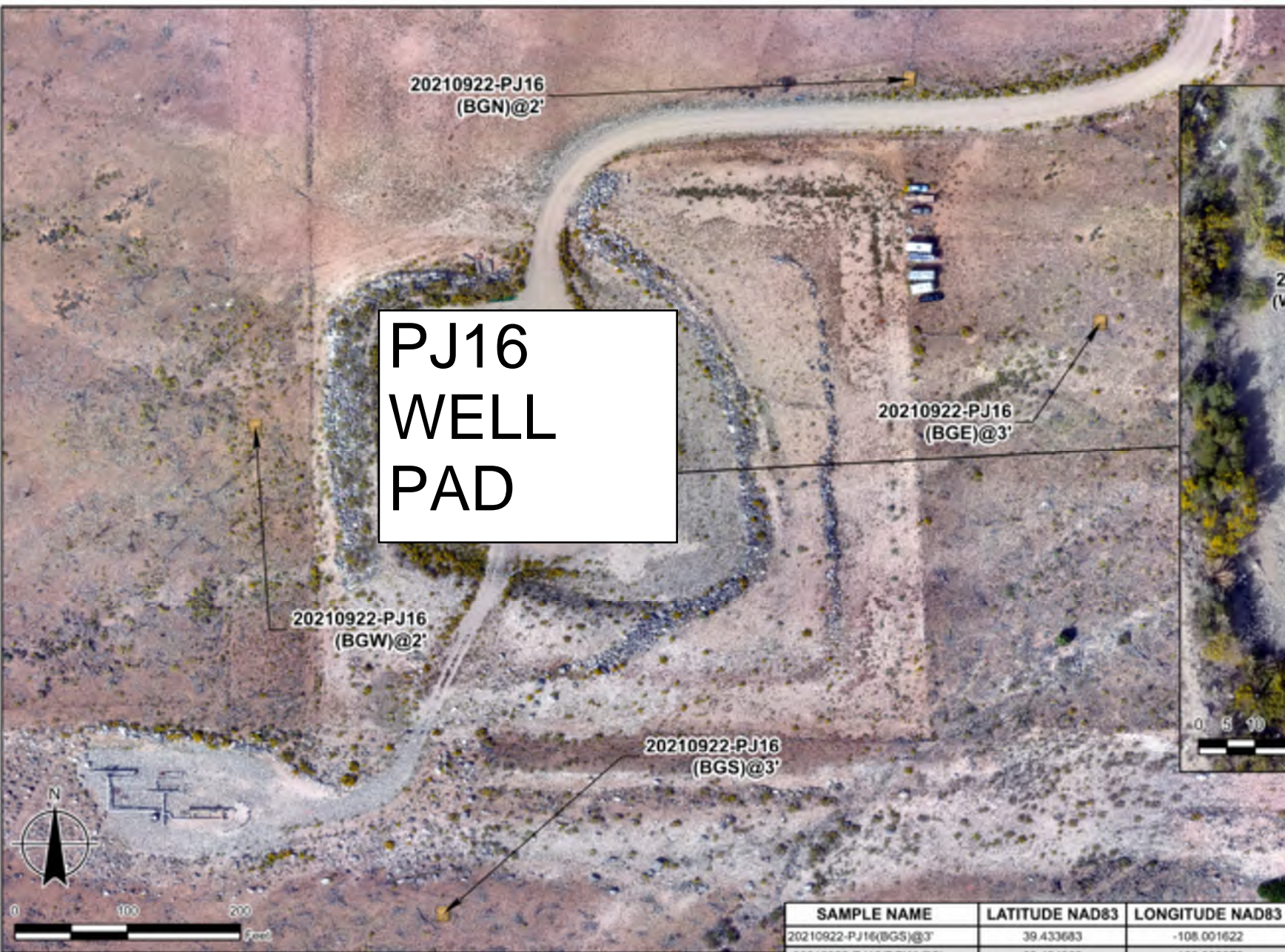
Associated Samples:

Batch GN18693: T41707-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

PJ16 WELL PAD



SAMPLE NAME	LATITUDE NAD83	LONGITUDE NAD83
20210922-PJ16(BGS)@3'	39.433683	-108.001622
20210922-PJ16(BGW)@2'	39.434869	-108.002078
20210922-PJ16(BGN)@2'	39.435712	-108.000489
20210922-PJ16(BGE)@3'	39.435121	-108.000024



PJ16
SHORE-67S95W / 16NWSE
COGCC LOCATION ID: 334656
GARFIELD COUNTY, CO
NWSE SEC. 16 T7S-R95W

Legend
 Soil Sample Location

DRAFTER: RAB DATE: 9/27/2021

COORDINATE SYSTEM
GCS NAD83 / NAD83

Caerus Oil and Gas

Sample Delivery Group: L1408954
Samples Received: 09/24/2021
Project Number: PJ16
Description: PJ16 Well Pad
Site: PJ16
Report To: Steve Sivigliano
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



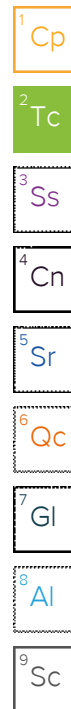
Chris Ward
Project Manager

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 Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20210922-PJ16 (BGN) @ 2' L1408954-01 Solid

Collected by: Evan Mason
 Collected date/time: 09/22/21 14:45
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:14	10/01/21 14:14	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:42	LAT	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

20210922-PJ16 (BGE) @ 3' L1408954-02 Solid

Collected by: Evan Mason
 Collected date/time: 09/22/21 15:00
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:22	10/01/21 14:22	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:54	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:46	LAT	Mt. Juliet, TN

5 Sr

6 Qc

7 Gl

8 AI

20210922-PJ16 (BGS) @ 3' L1408954-03 Solid

Collected by: Evan Mason
 Collected date/time: 09/22/21 14:15
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:25	10/01/21 14:25	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:57	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:49	LAT	Mt. Juliet, TN

9 Sc

20210922-PJ16 (BGW) @ 2' L1408954-04 Solid

Collected by: Evan Mason
 Collected date/time: 09/22/21 14:30
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:28	10/01/21 14:28	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 14:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:52	LAT	Mt. Juliet, TN

CASE NARRATIVE

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	0.0622		1	10/01/2021 14:14	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.94	<u>T8</u>	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-01 WG1750513: 7.94 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	318		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408954-01 WG1748901: at 25C

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.560		0.0167	0.200	1	10/01/2021 13:51	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.74		0.100	1.00	5	10/01/2021 01:42	WG1748271

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0882		1	10/01/2021 14:22	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	<u>T8</u>	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-02 WG1750513: 8.18 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	233		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408954-02 WG1748901: at 25C

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.521		0.0167	0.200	1	10/01/2021 13:54	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.29		0.100	1.00	5	10/01/2021 01:46	WG1748271

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0593		1	10/01/2021 14:25	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-03 WG1750513: 7.9 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	325		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

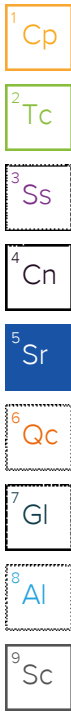
L1408954-03 WG1748901: at 25C

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.582		0.0167	0.200	1	10/01/2021 13:57	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.67		0.100	1.00	5	10/01/2021 01:49	WG1748271



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0949		1	10/01/2021 14:28	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	<u>T8</u>	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-04 WG1750513: 8.03 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	250		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

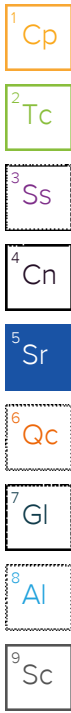
L1408954-04 WG1748901: at 25C

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.425		0.0167	0.200	1	10/01/2021 14:00	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.72		0.100	1.00	5	10/01/2021 01:52	WG1748271



L1408952-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1408952-03 10/02/21 13:00 • (DUP) R3711693-2 10/02/21 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 21.4C
 DUP: 8.51 at 21.5C

L1411250-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1411250-01 10/02/21 13:00 • (DUP) R3711693-3 10/02/21 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.21	7.22	1	0.139		1

Sample Narrative:

OS: 7.21 at 21.3C
 DUP: 7.22 at 21.2C

Laboratory Control Sample (LCS)

(LCS) R3711693-1 10/02/21 13:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.02 at 21.8C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3711029-1 09/30/21 21:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1408952-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1408952-08 09/30/21 21:03 • (DUP) R3711029-3 09/30/21 21:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	326	310	1	5.03		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1408954-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1408954-03 09/30/21 21:03 • (DUP) R3711029-4 09/30/21 21:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	325	327	1	0.613		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3711029-2 09/30/21 21:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	279	104	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3711378-1 10/01/21 13:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3711378-2 10/01/21 13:17 • (LCSD) R3711378-3 10/01/21 13:20

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 %
Hot Water Sol. Boron	1.00	1.02	1.02	102	102	80.0-120			0.622	20

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

Method Blank (MB)

(MB) R3711086-1 09/30/21 23:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3711086-2 09/30/21 23:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.3	93.3	80.0-120	

L1408809-56 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408809-56 09/30/21 23:16 • (MS) R3711086-5 09/30/21 23:26 • (MSD) R3711086-6 09/30/21 23:30

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	35.0	127	126	91.5	91.4	5	75.0-125			0.0709	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

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.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

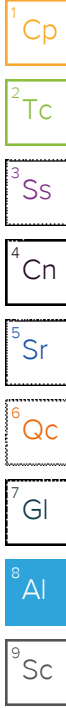
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
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}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.





CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTL Log-In Number Here

G235

Company: **Campos EPC**

Address: **1401 Blake St.**

Report To: **Steve Sivigliano**

Copy To: **Evan Mason - evan.mason@camposepc.com**

Billing Information:
Caerus Oil and Gas, LLC
 Account: **CAERUSPCO**

Email To: **steve.sivigliano@camposepc.com**

Site Collection Info/Address:

ALL SHADED AREAS are for LAB USE O

Container Preservative Type **

Lab Project Manager:

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number:
PJ16 Well Pad

Phone: 9706190600
 Email: see above

Site/Facility ID #: **PJ16**

Compliance Monitoring?
 Yes No

Collected By (print): **Evan Mason**

Collected By (signature): *[Signature]*

Sample Disposal:
 Dispose as appropriate Return
 Archive: _____
 Hold: _____

State: **CO** County/City: **Garfield** Time Zone Collected: **[] PT [x] MT [] CT [] ET**

Purchase Order #: _____
 Quote #: _____

Turnaround Date Required:

Rush:
 Same Day Next Day
 2 Day 3 Day 4 Day 5 Day
 (Expedite Charges Apply)

Field Filtered (if applicable):
 Yes No

Analysis: _____

Analyses

Analyses	Lab Profile/Line:	
COGCC TABLE 915-1 (full list)	Lab Sample Receipt Checklist:	
	Custody Seal Present/Intact	Y N NA
	Custody Signature Present	Y N NA
	Collector Signature Present	Y N NA
	Bottles Intact	Y N NA
	Correct Bottles	Y N NA
	Sufficient Volume	Y N NA
	Samples Received on Ice	Y N NA
	VOL - Headspace Acceptable	Y N NA
	USDA Regulated Soils	Y N NA
	Samples in Holding Time	Y N NA
	Residual Chlorine Present	Y N NA
	Cl Strips:	
	Sample pH Acceptable	Y N NA
	pH Strips:	
Oil-Free Present	Y N NA	
Lead Acetate Strips:		
LAB USE ONLY		
Lab Sample # / Comments:		

LAB USE ONLY

Lab Sample # / Comments:

4408954

-01

-02

-03

-04

* Matrix Codes (insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctrs
			Date	Time	Date	Time		
20210922-PJ16 (B6W) @ 1'	SS	Grab	9/22/21	1415				
20210922-PJ16 (B6E) @ 3'				1500				
20210922-PJ16 (B6S) @ 5'				1615				
20210922-PJ16 (B6W) @ 1'				1430				

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: **Wet** Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): **Y N NA**

SHORT HOLDS PRESENT (<72 hours): **Y N N/A**

Lab Tracking #:

Samples received via:
 FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: **Y N NA**

Therm ID#: **FL011**

Cooler 1 Temp Upon Receipt: **1.4** °C

Cooler 1 Therm Corr. Factor: **0** °C

Cooler 1 Corrected Temp: **1.4** °C

Comments:

Relinquished by/Company: (Signature) *[Signature]*

Date/Time: **9/23/21 1200**

Relinquished by/Company: (Signature) *[Signature]*

Date/Time: **9/23 1500**

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature) *[Signature]*

Date/Time: **9/23 1200**

Received by/Company: (Signature)

Date/Time:

Received by/Company: (Signature) *[Signature]*

Date/Time: **9/23 0945**

Table #:

Account:

Template:

Prelogin:

PM:

PB:

Trip Blank Received: **Y N NA**

HCL MeOH TSP Other

Non Conformance(s): **YES / NO**

Page: _____ of: _____